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Archives of Archaeology

Number 14

# ARCHAEOLOGICAL INVESTIGATIONS NEAR MOBRIDGE, SOUTH DAKOTA

David A. Baerreis

and

John E. Dallman

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# I. FOREWORD

During the months of July and August, 1956, excavations were conducted by a University of Wisconsin field party at four Indian village sites on the Missouri River in the vicinity of Mobridge, South Dakota. The work was supported by funds provided by the Research Committee of the University of Wisconsin and by a cooperative agreement with the U. S. National Park Service through their Inter-Agency Salvage Program in the Missouri Basin. The field work formed part of the salvage operations in this region which was soon to be flooded by water impounded behind a dam constructed near the city of Pierre.

The selection of the sites for study was based primarily on a brief reconnaissance of the area made in April, 1956, in the company of Paul L. Beaubien, Archaeologist on the staff of the National Park Service. Mr. Beaubien, together with other archaeologists having greater experience than the Wisconsin group in the area, were most helpful in the determination of the sites to be worked as well as in other details connected with the study. The basic decision made was to carry out the season's work in the framework of intensive survey operations rather than a single extensive site excavation. Such a large number of sites were located in the basin to be flooded that it was evident that it would not be possible to excavate the total series. In view of this, it was felt a greater contribution could be made to an understanding of the total range of occupation and an estimation of aboriginal population density and cultural continuity by intensive sampling of several sites. It was determined, then, that excavations would be

conducted at the Spiry-Eklo site (39WW3), the Bamble site (39CA6), and the Kvamme site (39CA9). In the course of the actual excavations at the Spiry-Eklo site (39WW3) it became evident that a separate and older component also existed on the Spiry farm. Additional excavations were conducted to sample this component which was designated 39WW10. The additional work involved in obtaining a sample of this component limited the amount of testing which could be conducted at the Kvamme site (39CA9) and because of this limitation the restricted materials from this latter site are not included in this report.

A preliminary analysis of the materials from the Bamble site (39CA6) was made by John A. Dallman who served as field foreman during the excavations and as a Research Assistant during the academic year 1956-57. The analysis by Dallman was submitted in partial fulfillment of the requirements for the M.S. degree at the University of Wisconsin in 1958 under the title, "A Study of Culture Change at the Bamble Site".

The descriptive contents of this report are incorporated in the present study although not all of the methodological aspects included in the report are here repeated.

We are deeply indebted to the owners of the land on which the sites are located, since title had not at that time passed to the Federal government, for permission to work on their property. Dr. A. W. Spiry of Mobridge not only allowed excavation but suffered considerable crop damage since the site area had been planted in corn. Mr. Tom Bamble permitted excavations to be conducted on the site on his farm which had

been preserved from farm damage by being retained in a pasture area and also allowed us to photograph and study objects in his collection which had been obtained from the site. Mrs. K. N. Kvamme similarly was very gracious in permitting excavations on her property.

Much of the success of the excavation was due to the long and skillful work of the field crew which included the following in addition to the authors:

Charlotte Louise Belshe, University of Wisconsin

Bradley A. Blake, University of Wisconsin

Vera Milda Dallman, Madison, Wisconsin

Fred Ehrlich, Washington University, St. Louis

Marvin Irvin Ehrlich, Washington University, St. Louis

Joan Elizabeth Freeman, University of Wisconsin

James Warren Porter, University of Wisconsin

Darrell Joseph Simon, University of Wisconsin

John Henry Steinbring, University of Wisconsin

## II. INTRODUCTION.

The Missouri Valley region in the vicinity of Mobridge, South Dakota, is at present--and probably will continue to be for several years to come--the scene of intensive archaeological activity. Until the waters impounded in the Oahe Reservoir bring to a halt field excavations designed to salvage the remains of historic and prhistoric Indian occupation in the region, we can anticipate that the stress will be upon further excavation rather than the analysis of site collections. The region is a crucial one for the unraveling of the complicated strands and interrelationships of the history of the Arikara, Mandan and Hidatsa. The reports presently published leave unresolved some of the basic problems of cultural identification.

The intensive and precise analysis of materials collected by M. W. Stirling in 1923 chiefly from four burial sites in the vicinity of Mobridge which was prepared by Waldo R. Wedel (1955) reached the conclusion that the four sites though separated in time all represented phases in a single cultural tradition, that of the Arikara. W. D. Strong (1940: 380) however, has suggested that a village site near Cemetery 1 (the Mobridge Site, 39WW1) may represent an early Hidatsa site rather than an Arikara site. The publication of the complete materials from this work may go far toward resolving this question. The situation, however, is further complicated by a recent report of Wesley R. Hurt, Jr. (1957) which presents the results of investigations of the Swan Creek Site (39 WW7) having a more southerly location in Walworth County than the sites previously mentioned. Hurt associates two burial complexes

with the Akaska and Le Beau Foci identified at the site and suggests that ". . . the Indians of the Le Beau Focus may have been one of the group of ancestors of the Mandans or of a closely related tribe such as the Hidatsa. The Indians of the Akaska Focus may likewise have been among the ancestors of the Arikara tribe" (Hurt, 1957: 29). The possibility of but a single cultural tradition being involved, such as was suggested by Wedel on the basis of the data he studied, still appears to be a reasonable interpretation.

A primary attack upon this problem of tribal identification through the materials recovered by the University of Wisconsin excavations is an intriguing possibility yet in many ways inexpedient. Excavations are currently being conducted on documented Arikara villages. It is reasonable to anticipate that sufficient depth of deposit will be encountered to allow the Arikara tradition to be traced back in time in a sound and indisputable fashion. While the major sites excavated by the Wisconsin party (39WW3 and 39CA6) also fall in part in the historic period judging by the presence of trade goods, they are not documented sites where tribal identification can be checked through historic records. We are operating on the assumption that they are Arikara though we recognize that this assumption is subject to verification by current work and have shifted our problem focus to a different but related area.

Fundamental to the tracing of the development of cultural traditions in the area, ultimately to be identified with specific tribal groups, is a careful analysis of the patterns of cultural change as well as stable elements in the culture. It is in relation to this basic goal of all archaeological work that the archaeologist's system of classification

and description of artifacts becomes of crucial importance for these can either obscure or stress differences in the material culture. In planning the preparation of the report on our work, we essentially had to make a choice between two goals. As a salvage project, our study would best further and aid in planning continued salvage operations in the area if it appeared rapidly. Yet we discovered that rapid publication would force us to select a system of nomenclature and artifact classification which we could not test and refine in the light of the goals which we saw for archaeological work in the region. We therefore chose to delay our report until we had time for further comparative study, though admittedly it is still by no means complete. But even aside from the questions of continuity or discontinuity in local traditions previously mentioned, we were also interested in such broad questions as the exact degree of correspondence between the early Upper Republican culture which had been suggested as a possible ancestor of both Pawnee and Arikara (Wedel, 1935: 206-7) and to ultimately test this relationship a system of classification and description was needed that would be adequate for this purpose. The objection might perhaps be raised that rapid publication is still essential and that further detailed descriptions could always follow at a more leisurely pace. Realistically, however, we must concede that archaeological collections are rarely restudied or redescribed. New frontiers of study are always beckoning and new emergency excavations require attention. It may also be maintained that the excellent conferences of the region, the Plains Conferences held annually at Lincoln, do serve the need for rapid communication of broad results.

A detailed focus upon the patterns of change within the specific sites involved in the excavations may therefore be stated as the primary objective of the report. The presentation of this material in considerable detail and the refinement of artifact classification and description necessarily involved in this procedure should at the same time make the data usable for broader comparative studies. It should also be pointed out that the problem of culture change in this region involves several factors that make the data more than locally significant. The period of occupation of the sites spans the initiation of first European contact. The local cultures, then, should demonstrate the results of a contact situation which can be defined with reasonable precision. The initial contacts were by traders who exchanged items of European manufacture for furs. By the very abundance of trade goods we can assume they were valued by the local groups so that the acquisition and processing of pelts must have been accelerated. What impact did this have on the local culture? Did it result in a proportionate increase in skin-dressing tools? Were innovations devised that would permit more rapid and efficient techniques of skin-dressing? Through a consideration of such questions, archaeology may contribute more substantially to the broader body of anthropological data and theory. These questions are touched upon in subsequent sections of the report.

In organizing the materials in the report we have deviated from a common pattern in which the sites and features are described initially with the detailed artifact description and analysis following. Since the question of the time placement of individual features is largely dependent upon associated artifacts, such a pattern of organization inevitably involves some repetition. We have presented in appendix I an analysis

of the implement types recovered in the excavations. These are the implement types utilized in conjunction with the description of the sites and component features which follow. The specialist in the area concerned with comparative work will find it profitable to read this section first. The more general conclusion of the study can be absorbed without the need for such detail in most instances.

One further work of introduction is needed. In attempting to be both precise and detailed in our descriptions so that the report will have maximal utility in comparative study we are also faced with the practical consideration that such a report would be an extremely expensive study to publish. Since such details are needed a means must be found to avoid the high publication expenses. It was in view of this that an early decision was made to prepare the report for publication in microcard form.

## III. INVESTIGATIONS AT 39WW3, THE SPIRY-EKLO SITE.

We began our investigations in 1956 at 39WW3, a site slightly more than a mile due south of the western limits of the town of Mobridge, South Dakota. Since at the present time the site extends over the property of both Mr. Berth Eklo and Dr. A. W. Spiry and is primarily to be found on the latter's land, we have designated the site the Spiry-Eklo site. River Basin Survey notes compiled by Dorothy E. Fraser under the date of August 5, 1949 give as previous designations of the site, the "Frisvold Site" and the "Eklo Site". The Eklo Site would be an appropriate designation since land in this section was orginally homesteaded by John B. Eklo between 1881-83, but the Frisvold homestead was in Section 23 due west of Mobridge (Skaug, Ed.; 1956: 4-16). Since this same volume dealing with the history of Mobridge designates two sites (probably 39WW3 and 39WW10) as the "Eklo Site", complications arising through the confusion of names can be avoided by using the hyphenated name, Spiry-Eklo, for 39WW3.

The site is located in the SW 1/4 of Section 31, T-124 N, R 79 W. The position of the site in the low bottom land would not put it completely out of the reach of high flood conditions, although much of the site is slightly in excess of 1550 feet in altitude being located on a narrow ridge of ground bordered by this contour line. About 500 feet south of the main concentration of the site, this terrace drops off sharply to a lower terrace about ten feet below. This lower terrace, the first immediately above the flood plain of the river, is irregular in surface contours and bears frequent sand dunes of considerable size. The site, therefore, is located in the midst of the lands most suitable for corn

agriculture and must have originally stood in the midst of the fields cultivated by the occupants. By contrast, other sites in this area such as the Mobridge Site (39WW1) and the Larson Site (39WW2) are located on the high terrace roughly 100 feet above 39WW3.

The general extent of the occupied area is roughly 900 feet east and west by 600 feet north and south, an area of approximately 10 acres. It is unlikely, however, that this entire zone was occupied simultaneously and the extent of the occupied village at any given point in time might be much closer to one half this figure.

The general position of 39WW3 and its location in relation to other sites in the region can be seen in Figure 1.

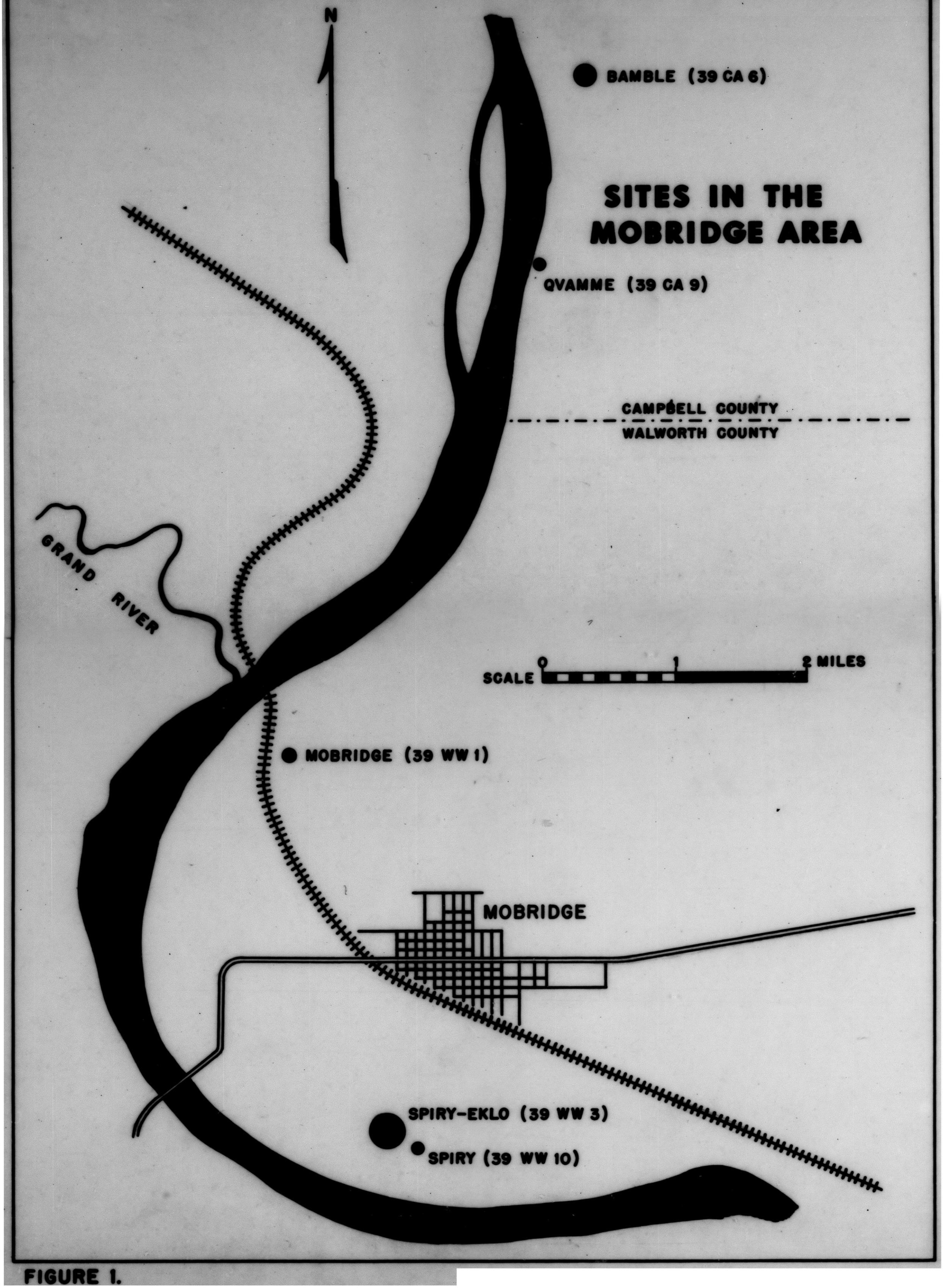

N
BAMBLE (39 CA 6)
QVAMME (39 CA 9)
SITES IN THE MOBRIDGE AREA
CAMPBELL COUNTY
WALWORTH COUNTY
GRAND RIVER
SCALE
0
1
2 MILES
MOBRIDGE (39 WW 1)
MOBRIDGE
SPIRY-EKLO (39 WW 3)
SPIRY (39 WW 10)

FIGURE 1.

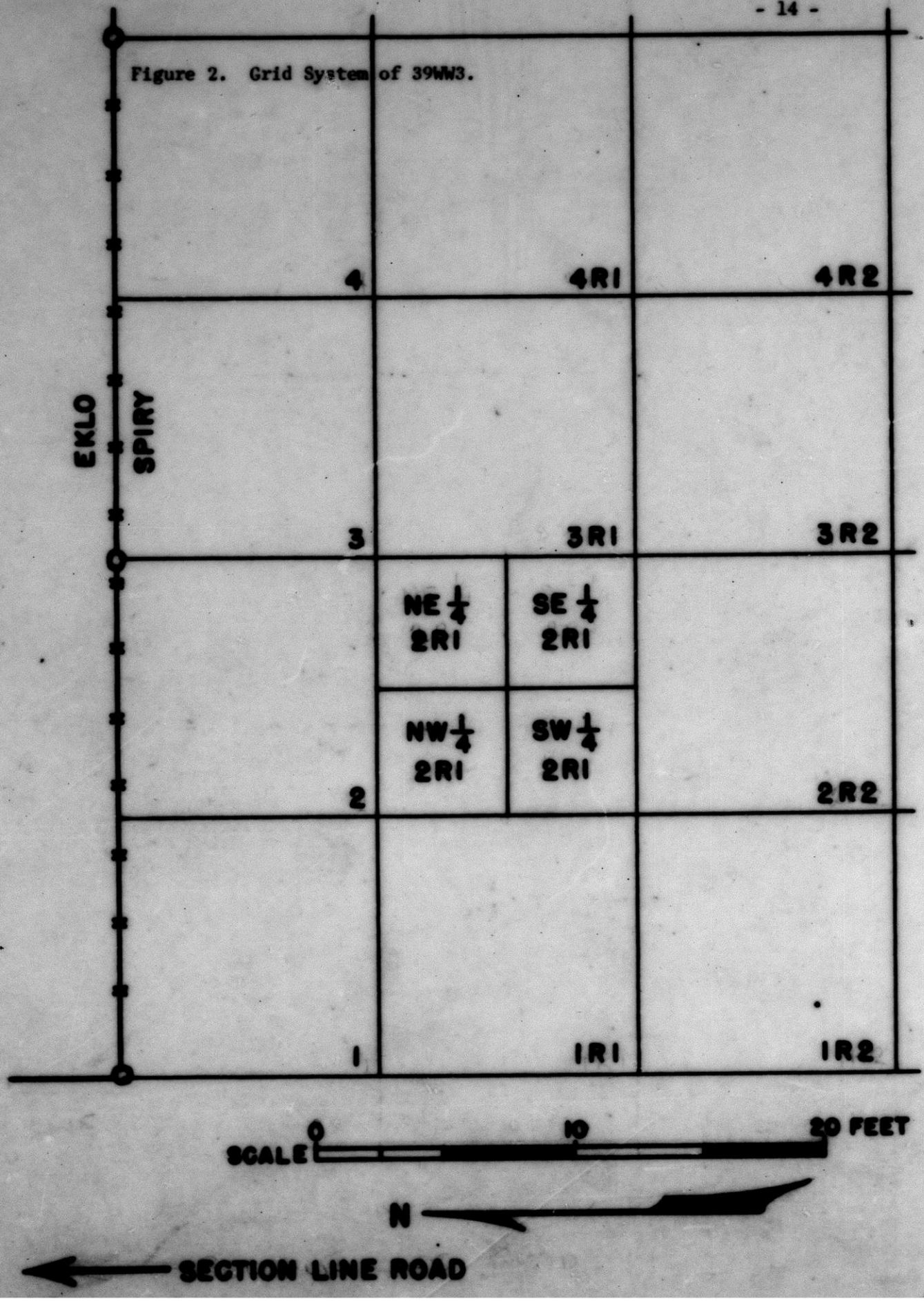
## Excavation Procedure

The Spiry-Eklo site (39WW3) since it covered a very substantial area and contained refuse deposite of considerable thickness, was potentially one that could cover an extended time interval. But even should the occupation cover a restricted time period, it was essential to plan the excavations in such a manner that answers to questions concerning cultural stability or change could be provided. The selection of excavation units within the site, however, was not entirely a matter of free choice governed by the requirements of the problem. At the time our excavations were conducted, the land had not yet been purchased and consequently was still being used for crop production. Although the site extended over property of both Mr. Burt Eklo and Dr. A. W. Spiry, only on the latter's land were surface features relatively clear and not obscured by extended cultivation. It was therefore decided to limit the excavations to Dr. Spiry's property. A small portion of the western end of the site was in pasture and had been in this condition for some years and hence was relatively undisturbed by cultivation. This area, then, seemed potentially of importance to provided stratigraphic information. Immediately adjacent to the fence marking the property line between Mr. Eklo and Dr. Spiry was a strip that had been left open as an access road to the section of the field upon which corn had been planted. Since this sector provided a complete east-west section across the site, it was decided that all midden areas in this strip could be tested to give an indication of horizontal variation in cultural content across the site and at the same time hold crop damage to a minimum.

Excavations were thus initially planned to consist of examination of the midden areas present as rounded mounds in the pasture area at the western extremity of the site and to sample the additional middens and houses indicated by surface contours located along the access road bordering the north edge of the Spiry property. While the extension of these excavation units into the corn involved some destruction of crops it would be held at a minimum, particularly since no damage would be caused in getting to and from the excavation units. Since some of the sharpest contours and seemingly deepest deposits were to be found well within the corn field in the south-eastern sector of the site, one major excavation unit (Feature 17) was also planned to test this area and provide some control on variation in a north-south direction across the site. It might be mentioned at this point that, although we had agreed to pay for crop damage, Dr. Spiry very generously refused to accept compensation for it. Aside from the fact that we did not know he would do this until we had concluded our work, we would still not have felt free to destroy additional portions of the crop. Although a different pattern of excavation might have given us more information or specimens, we felt satisfied that we had sampled the site as a whole.

Prior to the initiation of actual excavations at the site, the base line for a grid of ten foot squares was established so that all excavation units could be keyed to a single grid. The point of origin of the grid was the intersection of the east-west property line which devides the holdings of Mr. Burt Eklo and Dr. A. W. Spiry with the continuation of the eastern margin of the north-south section line road dividing sections 36 and 31 . Figure 2 shows diagrammatically the point of origin of the

Figure 2. Grid System of 39WW3.



grid as well as the numbering system of the squares. In actual practice in the excavation of a series of trenches through midden areas at the site, it was found to be more convenient to limit the width of the trenches to five feet rather than to utilize the full ten foot square. Precise location of material, however, could still be maintained by designating each five foot square as the Northwest $\frac{1}{4}$ of Square 57R6 or the Southeast $\frac{1}{4}$ of Square 57R6, etc.

Other factors than the presence of standing crops also led to modifications in the excavation procedures. Since the site was one which was characterized by the presence of what appear to be discrete refuse piles, our objective was to test them in such a manner as to determine whether any cultural change could be seen within particular middens and to get an adequate sample to allow comparisons to be made between individual middens. So that no time would be lost in recovering usable cultural material for a comparison of levels within the midden, the initial trenches were excavated in six inch levels. Where no natural strata could be detected, the arbitrary six inch level was retained. It will be seen in the description of the features that follows, most midden areas were relatively shallow. Material found in the second six inch level appeared to have largely reached that depth in rodent burrows. Depth would therefore have relatively little significance. When this situation was ascertained, sufficient excavation was continued within the midden in those areas where debris was abundant without regard for vertical and horizontal position. This procedure was designed to quickly increase the size of the pottery sample (and other artifacts as well) to provide at least 250 rim sherds which was arbitrarily set as a lower limit to permit comparison of one

midden sector with another.

Specific excavations procedures followed in connection with the study of houses is described in detail in conjunction with the specific feature. In most instances several feet of soil had accumulated over the original floor level. This general fill of the house pit was kept as a unit to a point about six inches above the floor level. The fill from floor level to six inches above the floor was kept separately. The entire floor was then carefully cleaned at the floor level and the posts and features (caches, fire basin, etc.) mapped. Following this, the hard packed floor area was removed and all additional posts and features were then mapped and designated by a different symbol of the map. In this manner it was hoped that a sequence of features within the house could be obtained. If a cache pit had been filled with refuse and then sealed over by the floor, it obviously might have antedated the house or alternatively had been filled with refuse during the use of the house and a packed floor area formed above it.

Mapping of each feature was accomplished with a plane table and peep-sight alidade. This system was employed with particular facility in the house excavations where, along with a steel tape, locations of posts, pits and artifacts were plotted with a fair degree of accuracy. Internal site mapping was simply accomplished with the 10 foot grid at sites 39WW3 and 39WW10 and by the nine plane table stations at 39CA6. Landmarks were included on each site map to enable the reader to locate the site on a U.S.G.S. map of the area.

Features in general are described in simple numerical order except where for purposes of clarifying the relationship between features it seemed desirable to depart from such an order.

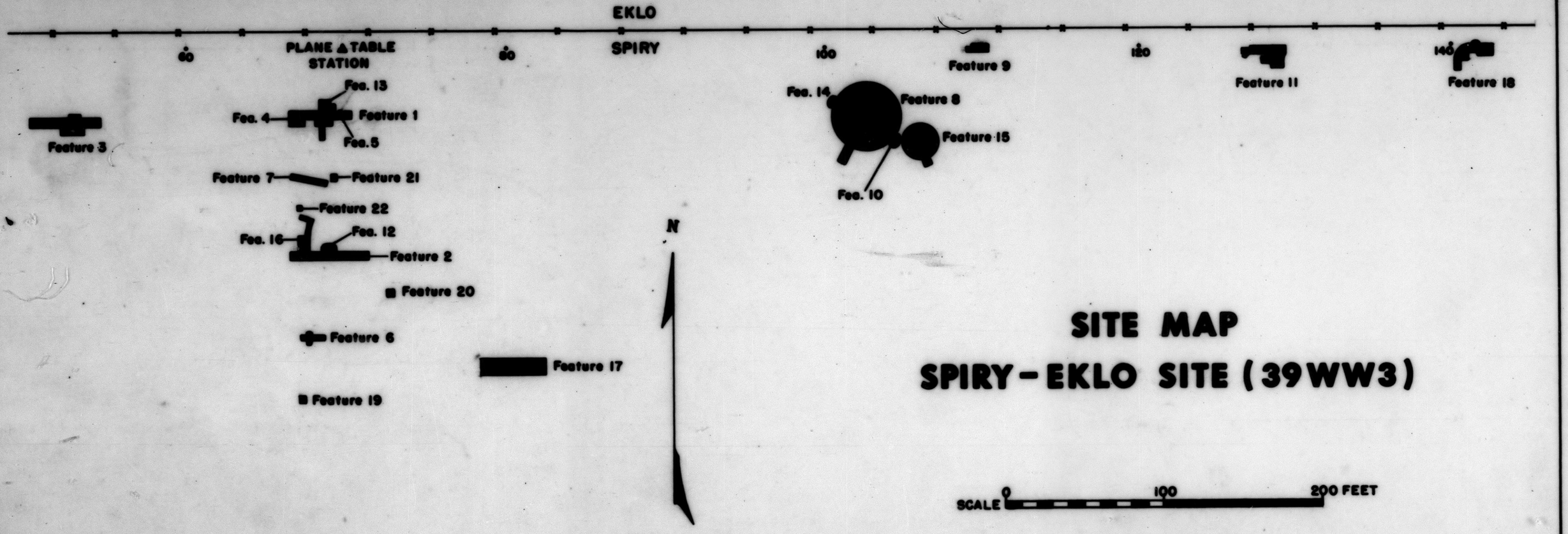

EKLO
SPIRY
PLANE TABLE STATION
60
60
100
120
140
Feature 9
Feature 11
Feature 18
Feature 3
Feature 1
Feature 4
Feature 5
Feature 13
Feature 7
Feature 21
Feature 22
Feature 16
Feature 12
Feature 2
Feature 20
Feature 6
Feature 17
Feature 19
Feature 14
Feature 8
Feature 15
Feature 10
N
SITE MAP
SPIRY-EKLO SITE (39WW3)
SCALE
0
100
200 FEET

FIGURE 3.

## Feature 1

This feature number was given to a low, rounded midden located in the western sector of the site. The midden, then in a pasture area west of the cultivated corn field consequently had not been disturbed by plowing as much as other sectors of the site and must have approximated the original elevation and form. The midden area, as indicated by surface contours, was approximately 35 (North-South) by 50 feet (East-West). The form was a gently rounded dome which rose in the central portion to an elevation of about 2.5 feet above the surrounding field. A slight rise in elevation was also to be seen immediately to the north and east but the remainder of the field in this area was relatively level. It is to be noted that there were no observable depressions in this area indicating the presence of house pits.

A trench, five foot in width, extending in an east-west direction was excavated by six inch levels from the north half of grid squares 66R5 through 70R5. This trench was designed to provide a cross section of the midden and to reveal any stratigraphy or gradual change in artifact content that might be present at various levels. At the margins of the midden a light colored subsoil was encountered at a depth of twelve to thirteen inches. Approaching the center, the dark fill increased in thickness to nearly eighteen inches but this increase in thickness clearly did not match the rise in elevation of the midden as a whole. The dark soil containing midden debris in the form of animal bones, potsherds, stone fragments and other cultural material increased slightly in thickness toward the center but appeared to be capping a natural rise in the subsoil.

A notable feature in the strata observable in Feature 1 was the presence of occasional localized bands of light subsoil alternating with the darker soil richer in humus material. A possible explanation for this phenomenon was noted as the trench reached the lower levels in several squares. In the subsoil at the western end of the trench (squares 67R5 and 66R5), the circular outline of a pit penetrating the subsoil was noted. Excavation revealed that this was a large bell-shaped cache pit (designated Feature 4) which had been excavated by the aboriginal inhabitants of the site. Throwing some of the spoil from such cache pits on the mound would tend to increase its elevation and at the same time account for the zones of light-colored soil derived from the excavation of the deep pit. A second cache pit (designated Feature 5) was encountered near the eastern end of the trench in square 69R5.

Feature 1 was thus seen on the basis of the excavation data as a midden area which essentially capped a natural rise on the flat terrace upon which the site is situated. As the initial refuse began to accumulate some deep storage pits were excavated on these same elevated areas, the natural contours being an asset in providing drainage away from the mouth of the cache pit. Refuse materials accumulated on the domed areas and eventually the pits were filled as well. The top of the cache pits, and hence their point of origin in time, could not be detected in the dark midden soil. It is thus an inference that the superficial deposits and the contents of the pit fill should be of approximately the same age. In any event, the history of Features 4 and 5 is intimately connected with Feature 1 and the cultural materials recovered from these three

units must first be compared and examined for homogeneity. Prior to this, the form of the two cache pits should be discussed.

Feature 4. The circular outline (81 inches in diameter) marking the mouth of this cache pit was discovered at a depth of 15 inches below the surface at the base of the dark midden zone in Feature 1. The diameter of the pit narrowed rapidly to a constricted neck, 35 inches in diameter and then flared out again to a maximum diameter at the base of 97 inches (north-south) and 107 inches (east-west). See Figure 7 for a cross section of the pit. The pit extended to a maximum depth of 5 inches into the subsoil.

It was noted during the course of the excavation of Feature 4 that there were various layers of soil in the pit: ash, dark fill, and sterile zones of sand. Possibly the sterile, sandy zones represent attempts to cover refuse that had been dumped in the pit.

Feature 5. The orifice of this cache was not detected until a depth of 24 inches was reached in the midden area in the NE 1/4 of 69R5. The mouth, seen as a circular area 59 inches in diameter, continued with this diameter for an additional six inches and then a gradual expansion in diameter to a maximum of 94-97 inches continued for 40 inches. The profile of the pit shown on Figure 7 is somewhat idealized since the walls of the pit collapsed before the final drawing could be prepared. What appeared to be the impressions of reeds or rushes were discovered near the mouth of the pit. Particularly noted in the contents of the fill was a lens of reddish ash near the base of the pit.

Feature 13. The most complex situation in the rounded midden area designated Feature 1 was discovered in the sector immediately to the west of the cache pit, Feature 5. A considerable amount of ash and extensive cultural debris had been found in excavating the NW¼ of 69R5. With an increase in depth (at 24-26 inches below the surface) this ash zone clearly appeared to be concentrated in the eastern third of the five foot square with the edge of the ash forming a generally straight north-south line. Obviously the feature, whatever its nature, was only partially exposed in the work in this square. Taking the square immediately adjacent down in the same manner, NE¼ of 68R5, revealed a somewhat similar situation. Refuse was found generally distibuted through the top three levels (18 inches) but below this point the subsoil was sterile on the western margin of the square and contained a mixture of ash and cultural debris on the eastern margin adjacent to the similar material in the next square. It was now becoming clear that this could not be a cache pit similar to those found earlier in Feature 1 and cutting back the bank to the north and south showed that the disturbed area did not terminate as it would had it been a rectangular grave but continued for an indefinite direction forming a refuse-filled trench that had been dug through the feature. A profile was smoothed on the south wall of squares NW¼69R5 and NE¼68R5 (see Figure 4) which revealed it to be a rather steep-sided ditch having a maximum width of about 97 inches at the top. The sides contracted about a foot to a depth of 47 inches with a round-bottomed area in the center, 53 inches in width, continuing for an additional nine inches. Thus the ditch reached, at this point, a maximum depth of 56 inches below the present surface but

had been completely filled with soil, ash and debris so that no trace of its existence could be seen by an examination of surface contours.

Since the dirt removed in the excavation of the east-west trench

Figure 4. Feature 13, ditch, shown in south wall of east-west trench excavated through Feature 1.

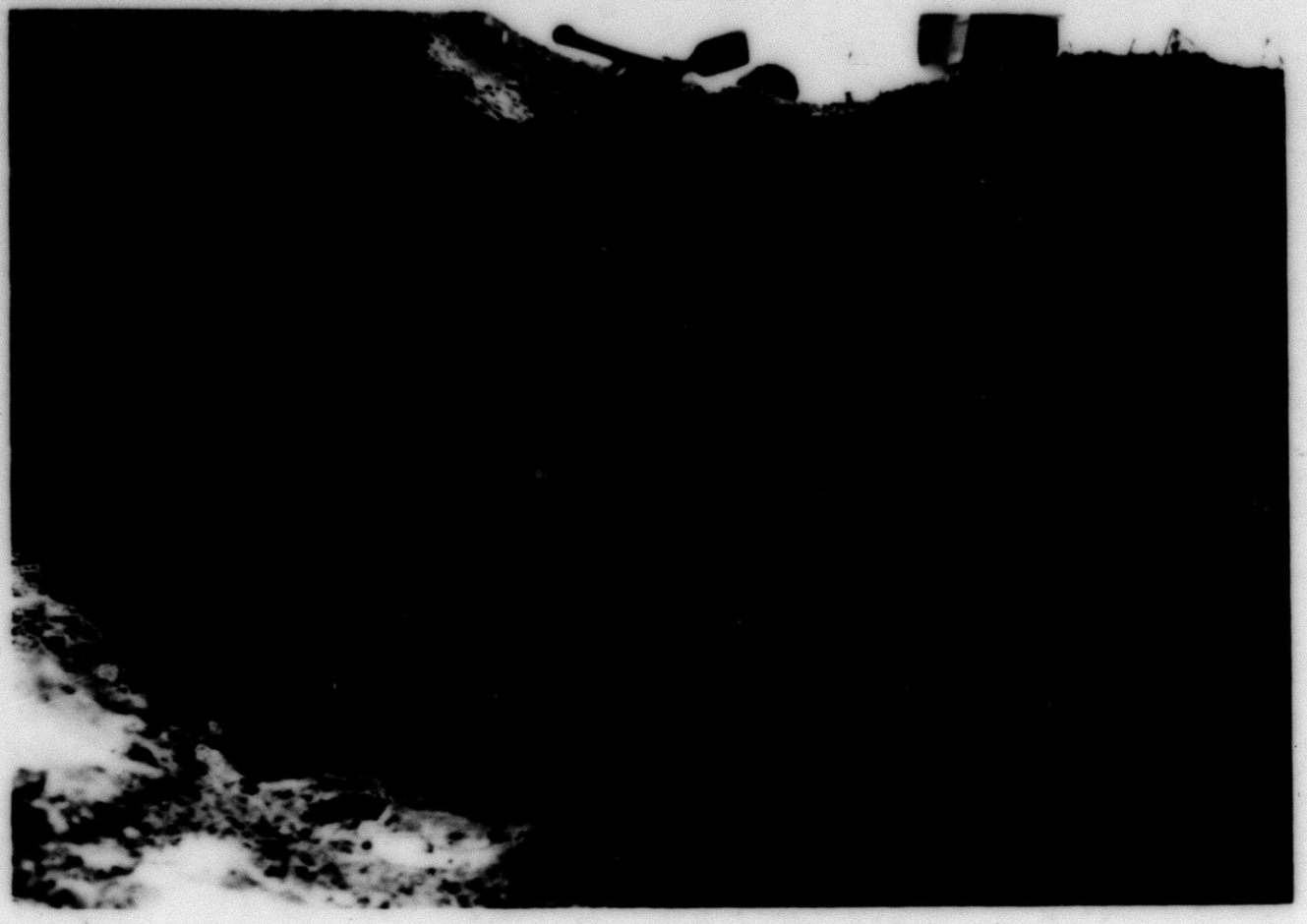


Figure 5. Feature 13, ditch, shown in south wall of east-west trench excavated through Feature 1. Close-up of eastern margin of ditch.

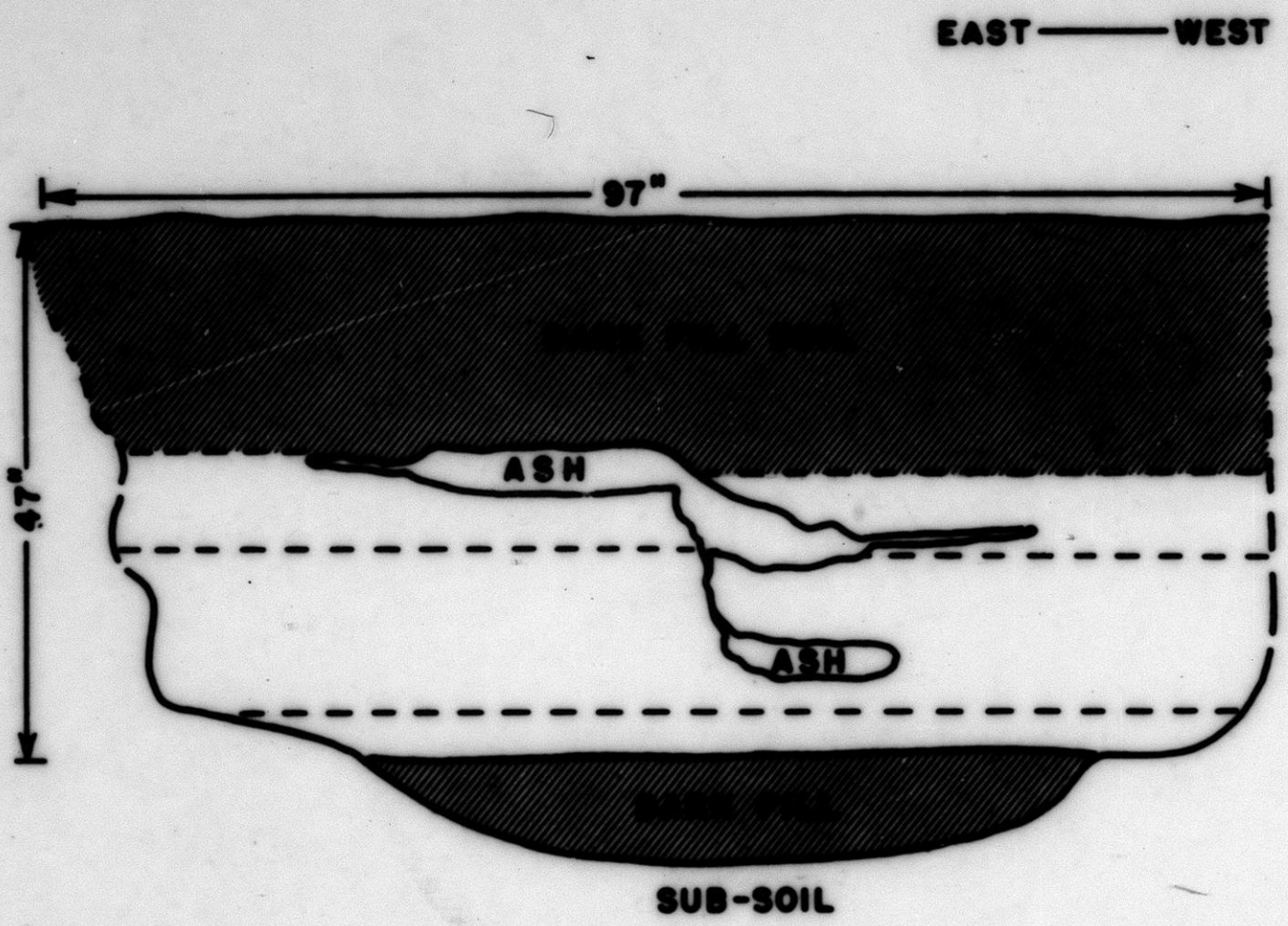



Figure 6. Profile drawing of cross section of Feature 13.

Table 1. Bone Implements, Features 1, 4, 5 and 13.

| | FEATURE | | | |
|---|---|---|---|---|
| | 1 | 4 | 5 | 13 |
| Awl, split cannon-bone | 1 | 1 | 1 | - |
| Awl, quartered metapodial | - | 1 | - | - |
| Rib-edge awl/flaker | - | 8 | 3 | 4 |
| Awl, fragment (unclassified) | - | - | 1 | - |
| Simple scapula hoe | - | 1 | 1 | 1 |
| Notched scapula hoe | - | 3 | 1 | 9 |
| Trimmed scapula hoe | - | - | - | 1 |
| Hoe blade fragment | 2 | 8 | 7 | 8 |
| Tubular beads | - | 2 | 1 | - |
| Fishhook | - | 1 | - | - |
| Pin | - | 1 | 1 | - |
| Hide grainer | 3 | - | 1 | 1 |
| Paint applicator | - | - | 1 | - |
| Rib shaft straightener | - | - | 1 | 4 |
| Knife handle | - | - | - | 2 |
| Antler flaker | - | - | - | 3 |
| Splinter flaker | 1 | 1 | - | - |
| Rough quill flattener | - | 1 | 1 | - |
| Smoothed quill flattener | 1 | - | 1 | - |
| Notched bone knife | - | 1 | - | - |
| Scapula cleaver (median ridge variety) | - | 1 | 1 | 1 |
| Scapula digging tool: | | | | |
| Backed variety | - | 1 | 1 | - |
| Median ridge variety | - | - | - | 1 |
| Backed scapula knife | 1 | 1 | - | - |
| Scapula knife fragment | - | - | - | 1 |
| Utilized rib | - | 1 | - | - |
| Flesher, elk metatarsus | - | 1 | - | - |
| Worked deer mandible | - | - | - | 1 |
| "Needle" - non-grooved variety | - | 5 | - | 2 |
| Three-sided, pointed antler tip | 1 | - | - | - |

Table 2. Stone Implements, Features 1, 4, 5 and 13.

| | FEATURE | | | |
|---|---|---|---|---|
| | 1 | 4 | 5 | 13 |
| Chipped stone projectile points: | | | | |
| Simple triangular | 13 | 7 | 3 | 1 |
| Side-notched triangular | 3 | 1 | 2 | - |
| Heavy triangular | 1 | 1 | - | 1 |
| Unclassified/fragments | 3 | 1 | 1 | - |
| End scrapers: | | | | |
| Variety 1 | 11 | 7 | 3 | - |
| Variety 2 | 2 | 1 | 2 | 1 |
| Variety 3 | 6 | 5 | - | 1 |
| Variety 4 | 4 | 4 | 4 | 1 |
| Variety 5 | 4 | 2 | - | 2 |
| Unclassified/fragments | 3 | - | - | 1 |
| Side scraper | - | 1 | - | - |
| Retouched flakes | 6 | 2 | 2 | - |
| Retouched, parallel-sided flake | 1 | - | 2 | - |
| Chipped stone knives: | | | | |
| Badlands knife | 1 | - | 3 | 2 |
| Dodd knife | 4 | 2 | 3 | 1 |
| Broad, bifacial blades | 1 | 3 | - | - |
| Small, bifacial blade | 1 | - | - | - |
| Chipped stone drill | 2 | 1 | - | - |
| Strike-a-light | 5 | - | 2 | - |
| Hammerstone | 3 | 2 | 4 | 2 |
| Abrader, clinker | 3 | - | 1 | - |
| Grooved abrader, clinker | 3 | - | - | - |
| Grooved abrader, sandstone | - | - | 3 | - |
| Grooved maul | - | - | 1 | - |
| Catlinite Pipe fragment | - | - | - | 1 |

Table 3. Pottery, Features 1, 4, 5 and 13.

| | FEATURE | | | |
|---|---|---|---|---|
| | 1 | 4 | 5 | 13 |
| **Frequency** | | | | |
| Talking Crow Brushed | 26 | 20 | - | 29 |
| Talking Crow Cord Impressed | 36 | 15 | - | 23 |
| Talking Crow Indented | 74 | 29 | 1 | 28 |
| Talking Crow Straight Rim | 12 | 3 | - | 6 |
| Intermediate Plain | 2 | - | - | 1 |
| Intermediate Cord Impressed | 3 | 1 | - | 2 |
| Intermediate Tool Impressed | - | - | - | 3 |
| Stanley Plain | 1 | - | - | - |
| Stanley Cord Impressed | 1 | - | - | - |
| Stanley Tool Impressed | 2 | 1 | - | - |
| S-Rim | 44 | 7 | - | 12 |
| Nordvold Horizontal Incised | 5 | 2 | - | - |
| Le Beau Punctate | 4 | - | - | 1 |
| Bowl | - | 1 | - | - |
| TOTAL | 210 | 79 | 1 | 105 |
| **Percentages** | | | | |
| Talking Crow Brushed | 12.4 | 25.3 | - | 27.6 |
| Talking Crow Cord Impressed | 17.1 | 19.0 | - | 21.9 |
| Talking Crow Indented | 35.2 | 36.7 | - | 26.7 |
| Talking Crow Straight Rim | 5.7 | 3.8 | - | 5.7 |
| Intermediate Plain | 1.0 | - | - | 1.0 |
| Intermediate Cord Impressed | 1.4 | 1.3 | - | 1.9 |
| Intermediate Tool Impressed | - | - | - | 2.9 |
| Stanley Plain | .5 | - | - | - |
| Stanley Cord Impressed | .5 | - | - | - |
| Stanley Tool Impressed | 1.0 | 1.3 | - | - |
| S-Rim | 21.0 | 8.9 | - | 11.4 |
| Nordvold Horizontal Incised | 2.4 | 2.5 | - | - |
| Le Beau Punctate | 1.9 | - | - | 1.0 |
| Bowl | - | 1.3 | - | - |

in Feature 1 had been piled along the sides of the trench, a tractor was used to remove the fill so that the trench could be traced southward. As the trench moved from the midden (Feature 1) it curved slightly to the west. Excavation continued until it seemed clearly established that the trench would continue to where another spot excavation had been made 25 feet south of Feature 1. Here a east-west trench was dug in generally sterile soil and the ditch located. The ditch at this point was found to be 53 inches in width and had a depth of 36 inches. The structure appeared to be part of a comparable ditch located in the excavation of Feature 2 where it had been designated Feature 12. To provide a clear separation of material, the ditch as it appeared in the vicinity of Feature 1 was designated Feature 13. Further discussion of the feature and its possible significance will be found in conjunction with the description of Feature 12, following the description of Feature 2.

## Feature 2

Feature 2, like Feature 1, consisted of a low dome-shaped mound which because of its location in the pasture area of the Spiry farm was also thought to mark a separate midden. A series of squares was excavated in an east-west direction giving a five foot trench which extended from NE¼66R14 to NW¼70R14. The situation here was similar to the one in the preceding feature in that the midden debris appeared to cap a natural rise in the subsoil. Cultural debris was relatively abundant in the top six inches, decreased markedly in the second 6 inches level and was present in the third level only where rodent burrows had penetrated the subsoil. Subsoil appeared at a depth of 12-14 inches

below the surface. In the excavation of square NE¼66R14 a depression 2.5 x 2 feet and 5 inches deep was noted in the first six inch level. The basin was defined by walls that were hard and light red in color, presumably as the result of a fire that had been built on the surface, and contained burned bone, pottery and a scraper that was checked from the heat. Since the material did not differ from that found in the surrounding soil, it probably had already been in place when the fire was built.

In scraping the profile of the north wall of the trench which had been excavated through the center of Feature 2, it was discovered that the soil lines indicated that a large shallow pit (designated Feature 16) was present primarily in squares SE68R13 and SW69R13 (see Figure 7). The pit fill was slightly darker than the surrounding soil and contained abundant bone refuse. The bottom of the pit and the soil beneath it was cemented, perhaps by calcium carbonate dissolved from the bone refuse. The pit had the form of a shallow basin, 142 inches long in a north-south direction and extended to the north (beyond the excavated five foot trench) 55 inches. Its original width may thus have been somewhat less than the north-south axis but it is reasonable to assume that the bulk of the material from squares NE¼68R14 and NW¼69R14 would also be of the pit designated Feature 16. Since the pit extended to the surface, its contents should be slightly later in time than the remainder of Feature 2.

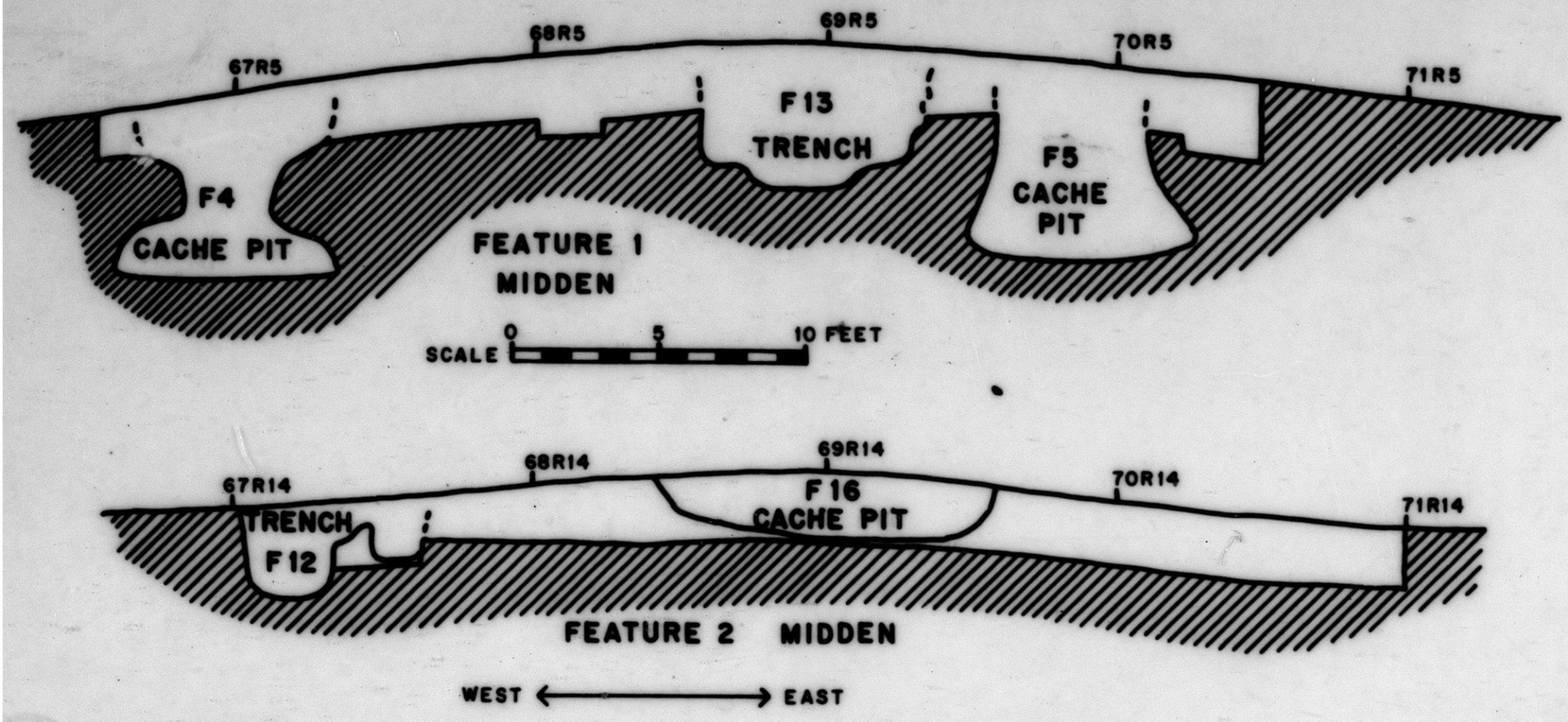



FIGURE 7.

SPIRY-EKLO SITE (39WW3)

NORTH WALL PROFILES OF TRENCHES THROUGH FEATURES 1 AND 2.

## Feature 3

Feature 3 was the third midden area whose presence was suggested in the pasture by its slight elevation. Excavations here were begun in square SW¼52R5 with the intention of excavating a north-south trench across the midden area. The initial pits, however, revealed a situation similar to the other two midden areas (Features 1 and 2) with most refuse concentrated in the top six inches, the yield decreasing sharply in the second six inch level, and cultural material present in the third level only where rodent burrows had disturbed the natural statification. Excavation plans were specifically modified by the discovery of several burials which necessitated the removal of those squares in which they had been placed.

Burial 1, an adult female, was found in the south half of square SW¼52R5 (Figure 8, top). The skull, the highest portion of the burial, was 14 inches below the surface. The individual rested on the right side with the head to the west and the face to the south. The arms extended outward at a right angle to the long axis of the body with the forearms flexed to place them parallel to the body and in front of the face. From the position of the right femur it appeared that the legs had originally been flexed so that the knees might have been nearly touching the elbows. However nearly all of the leg bones were disarticulated and displaced in rodent burrows that surrounded the burial. Small bones of the hands and feet were largely recovered from the rodent burrows. Broken sherds and bone refuse were abundant in the vicinity of the burial. Excavation of the rodent burrows in the vicinity of Burial 1 produced a glass bead

but since one had also been found near the adjacent Burial 2, it would be impossible to determine the original association of the specimen.

Burial 2, the remains of an infant, was found in excavating the second six inch level of square SE¼52R5 during the process of removing the fill in the vicinity of Burial 1 (Figure 8, bottom). The infant had been resting on the right side with the head to the west and the face to the south. The burial was perhaps partially flexed but since only a single femur was in position near the skull the position of the limbs could obviously not be determined. Like Burial 1, extensive rodent disturbance was responsible for this and the light bones of the infant could doubtless be more readily shifted. The remains were only 6-8 inches below the surface and hence considerably shallower than the preceding burial. No outline of a burial pit could be detected. Bone refuse was abundant in the vicinity of the burial and a glass bead and a scraper were also found in the area. Neither could be said to be directly associated with the child.

When the time had been reached to shift excavations from 39WW3 to the other site areas it was desired to test, the minimum sample of 250 rim sherds from each of the midden areas tested had not been recovered from Feature 3. To obtain this additional material in as brief a time as possible, the edges of the excavated area were cut back with trowel and shovel, no attention being paid to specific square and level. In Feature 3 two additional finds of human infant skulls were made. These may represent two separate burials but they were in an area of intensive rodent disturbance and other portions of the skeletons were widely scattered. No information could be obtained on burial position.

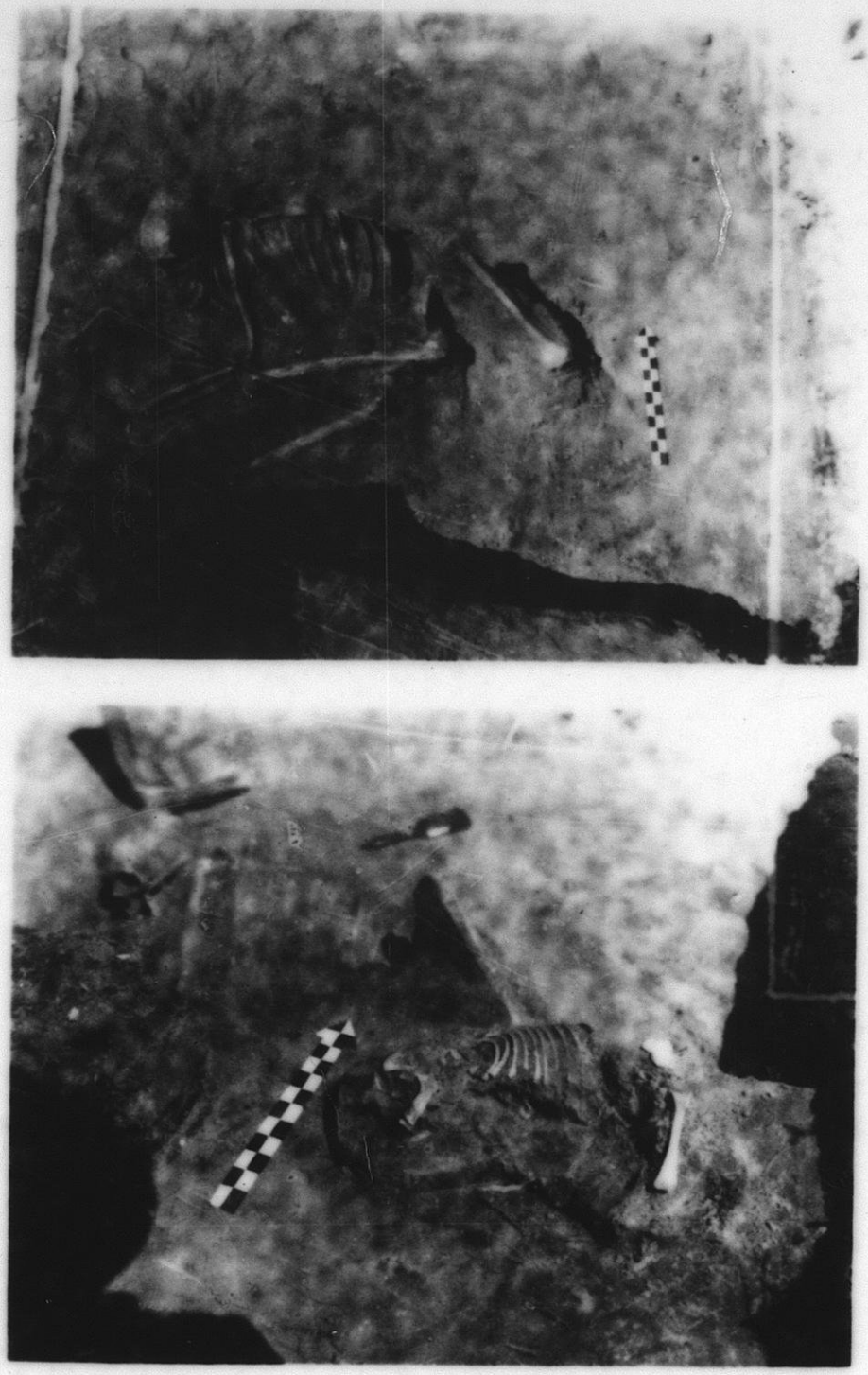


Figure 8. Burials found in Feature 3. Top: Burial 1. Bottom: Burial 2.

Table 4. Bone Implements, Features 2, 16 and 3.

| | FEATURE | | |
|---|---|---|---|
| | 2 | 16 | 3 |
| Awl, split cannon-bone | - | - | 1 |
| Awl, quartered metapodial | - | - | 1 |
| Rib-edge awl/flaker | 1 | 1 | 1 |
| Notched scapula hoe | 5 | 2 | 2 |
| Hoe blade fragment | 6 | 8 | 4 |
| Fishhook | - | 1 | - |
| Hide grainer | 2 | 2 | - |
| Rib shaft straightener | 1 | 2 | - |
| Knife handle | - | 1 | - |
| Antler flaker | - | 3 | - |
| Backed scapula digging tool | 1 | - | 1 |
| Backed scapula knife | - | 1 | - |
| Serrated scapula blade | - | 1 | - |
| Utilized rib | 1 | 1 | 2 |
| Flesher, fragment | 1 | - | - |
| "Needle" - non-grooved variety | - | 1 | 1 |
| Notched ulna | 1 | - | - |

Table 5. Stone, Brass, Shell and Glass Artifacts, Features 2, 16 and 3.

| | FEATURE | | |
|---|---|---|---|
| | 2 | 16 | 3 |
| Chipped stone projectile points: | | | |
| Simple triangular | 7 | 4 | 5 |
| Side-notched triangular | 3 | - | - |
| Heavy triangular | 1 | - | - |
| Unclassified/tip fragments | 4 | 1 | 1 |
| End scrapers: | | | |
| Variety 1 | 5 | - | 3 |
| Variety 2 | 1 | 2 | 2 |
| Variety 3 | 8 | - | 5 |
| Variety 4 | 2 | - | 2 |
| Variety 5 | 4 | - | - |
| Unclassified/fragments | 5 | - | - |
| Side scraper | - | - | 1 |
| Retouched flakes | 5 | - | 1 |
| Chipped stone knives: | | | |
| Badlands knife | 6 | 2 | - |
| Dodd knife | 2 | - | 4 |
| Broad, bifacial blades | - | - | 1 |
| Triangular beveled knife | 1 | - | - |
| Small bifacial knife | 3 | 1 | - |
| Chipped stone graver | - | - | 1 |
| Chopper | - | - | 3 |
| Strike-a-light | 3 | 2 | 2 |
| Planoconvex side scraper | - | 1 | - |
| Hammerstone | 1 | 2 | 1 |
| Pitted hammerstone | 1 | 1 | - |
| Abrader, clinker | 3 | 1 | - |
| Abrader, sandstone | - | 2 | - |
| Grooved abrader, clinker | 2 | 3 | - |
| Grooved abrader, sandstone | 2 | - | - |
| Full-grooved chopper (?) | - | - | 1 |
| Catalinite pipe | 1 | - | - |
| Shell bead, massive | - | - | 1 |
| Glass bead (white opaque, c. 1650-1779) | - | - | 1 |
| Brass knife blade | 1 | - | - |

Table 6. Pottery, Features 2, 16 and 3

| | FEATURE | | |
|---|---|---|---|
| | 2 | 16 | 3 |
| **Frequency** | | | |
| Talking Crow Brushed | 67 | 17 | 24 |
| Talking Crow Cord Impressed | 46 | 14 | 52 |
| Talking Crow Indented | 100 | 26 | 58 |
| Talking Crow Straight Rim | 20 | 7 | 14 |
| Intermediate Plain | 3 | 1 | - |
| Intermediate Cord Impressed | 6 | 1 | 3 |
| Intermediate Tool Impressed | 7 | 2 | - |
| Stanley Plain | 3 | - | - |
| Stanley Cord Impressed | 4 | - | 1 |
| Stanley Tool Impressed | 1 | 1 | - |
| S-Rim | 18 | 6 | 28 |
| Nordvold Horizontal Incised | 1 | - | - |
| Le Beau Punctate | 1 | - | 2 |
| Bowl | 2 | - | 2 |
| TOTAL | 279 | 75 | 184 |
| **Percentages** | | | |
| Talking Crow Brushed | 24.0 | 22.7 | 13.0 |
| Talking Crow Cord Impressed | 16.5 | 18.7 | 28.3 |
| Talking Crow Indented | 35.8 | 34.7 | 31.5 |
| Talking Crow Straight Rim | 7.2 | 9.3 | 7.6 |
| Intermediate Plain | 1.1 | 1.3 | - |
| Intermediate Cord Impressed | 2.2 | 1.3 | 1.6 |
| Intermediate Tool Impressed | 2.5 | 2.6 | - |
| Stanley Plain | 1.1 | - | - |
| Stanley Cord Impressed | 1.4 | - | .5 |
| Stanley Tool Impressed | .4 | 1.3 | - |
| S-Rim | 6.5 | 8.0 | 15.2 |
| Nordvold Horizontal Incised | .4 | - | - |
| Le Beau Punctate | .4 | - | 1.1 |
| Bowl | .7 | - | 1.1 |

## Features 6, 7, 12 and 13 - The West Ditch

The recognition of the presence of a ditch near the western margin of the site has already been mentioned in connection with the description of Feature 13, that portion of the ditch which extended over the refuse area, Feature 1. As was previously mentioned, this ditch could not be detected on the surface and from the abundance of ash and other aboriginal debris, it seems likely that the ditch had been filled in aboriginal times. A series of test pits were dug in the area adjacent to and between Features 1, 2 and 3 in part in a fruitless attempt to locate house structures in this sector. Although the attempt to find houses was not successful, additional information on the location and form of the ditch--here designated the West Ditch since evidence for a similar structure was found in conjunction with the excavation of Feature 17.

Feature 6. Originally dug as one of the test pits in our attempts to find houses in this sector, the excavation was expanded to remove a high concentration of refuse which was found to be superimposed over the ditch. As can be seen on the site map, it represents the southernmost position at which the ditch was detected. Although the refuse was concentrated in a localized area, no evidence was found to suggest it consisted of a refuse-filled cache pit. Rather the trench, at this position, seemed to have been used as a refuse dump. No soil changes could be detected until the hard, light-grey subsoil was reached. The fill above the subsoil was a homogeneous sandy loam. Very few areas in the entire feature were free of disturbance by rodent action. A test pit was sunk two additional feet to make certain that the floor of the trench had not, at one time, been deeper but no changes in soil type could be detected. The ditch

at this position was 66 inches in width at the top and curved gently to a rounded bottom 37 inches below the present surface. Although a careful search was made for post molds adjacent to the ditch, none were found.

Feature 7. Also begun as a test pit to the south of Feature 1 in an attempt to locate house structures, the subsoil in this sector appears to occur at a depth of 22 inches below a homogeneous dark soil. At the eastern end of the trench the base of what was determined to be the trench was found to penetrate deeper into the subsoil. The basal area of the trench resembled a double trench in that a slightly elevated ridge about 6 inches in height occupied a medial position, the trench being deeper on each side and attaining a maximum depth of 34 inches below the surface. Maximum width appears to have expanded markedly in this section, judging by the basal indications since the top of the ditch could not be detected, and varies between 147 inches and 205 inches. The subsoil rose much more sharply on the eastern margin of the ditch where it rose to 14 inches below the surface.

Feature 12. The other position at which the ditch was intersected also suggested the presence of a double ditch. A deeper sector appeared on the western margin, this sector being 82 inches in width and contracting to a rounded base 38 inches below the surface. Immediately adjacent on the east, and separated by a ridge of sterile light soil was a more straight-sided and flat-bottomed ditch, 36 inches in width and with the base 28 inches below the surface. The dual ditch was traced for a distance of 72 inches north, where they narrowed to a single ditch which was traced for a total distance of 23 feet to the north. The ditch had a width of 68 inches in this narrower sector. Profile drawings of Feature 12 are

shown in Figures 9 and 10 and a photograph in Figure 11.

In connection with Feature 12, as elswhere, an attempt was made to determine whether posts marking a fortification wall were present adjacent to the ditch. These could not be found. In the absence of indications of a wall and in view of the shallowness of the ditch, it would not appear possible for it to have served the purpose of fortification as originally was suspected. It is possible, of course, that the ditch was begun but never essentially completed. An alternative possibility and perhaps the most reasonable explanation, is that the ditch was dug for drainage purposes. The land on which the site is located is not particularly high in relation to the Missouri River and could have been occasionally inundated by floods. Aside from this possibility, a drainage ditch would divert rain water from the semi-subterranean houses.

The material recovered in Feature 13 has been previously tallied on Table 1 so that comparisons could be made with the units of Feature 1. This tabulation is repeated in Table 7 below so that a comparison might be made of all materials from different sectors of the ditch.

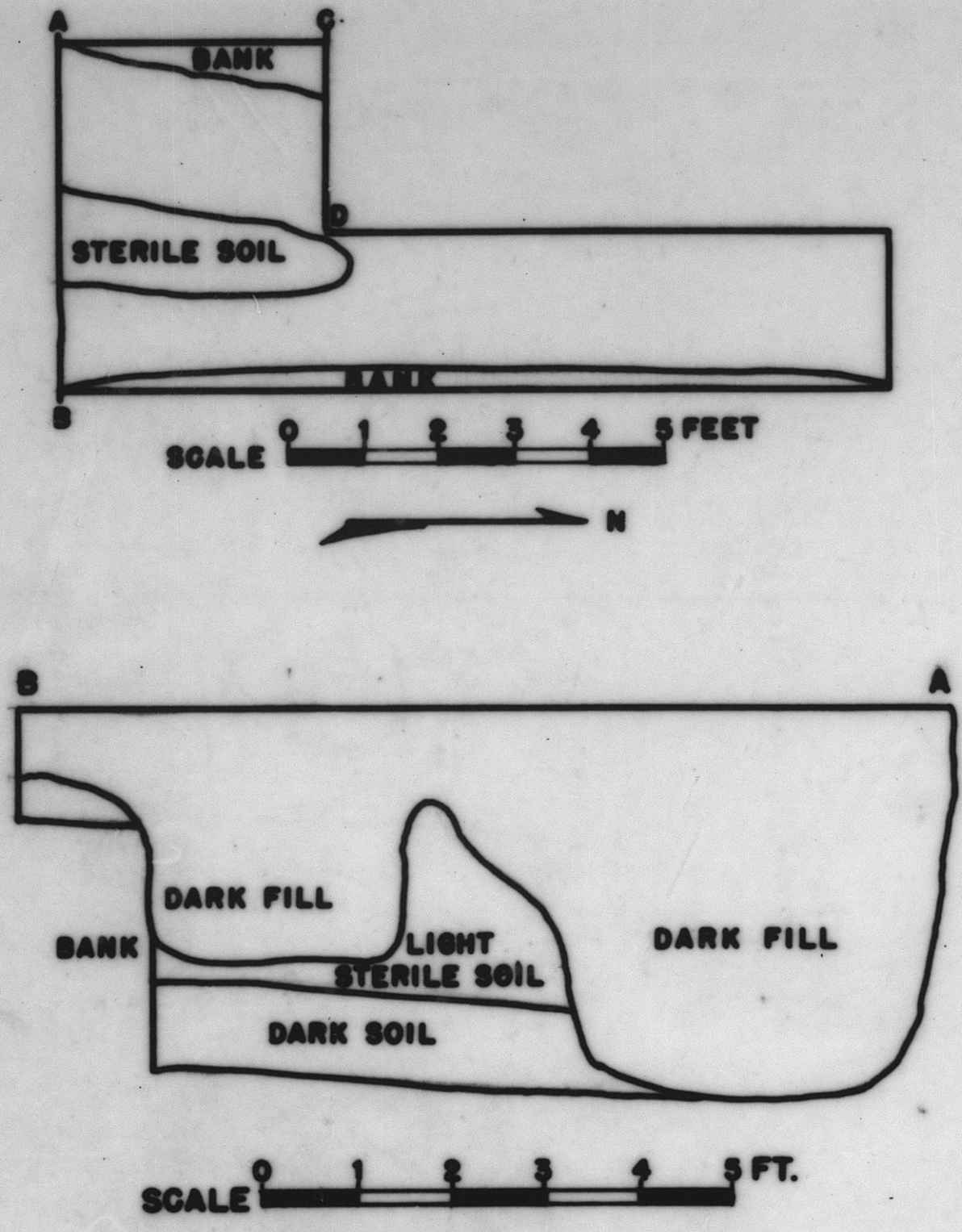



Figure 9. Feature 12. Top view of excavation units is shown above. Profile drawing along axis from B to A below.

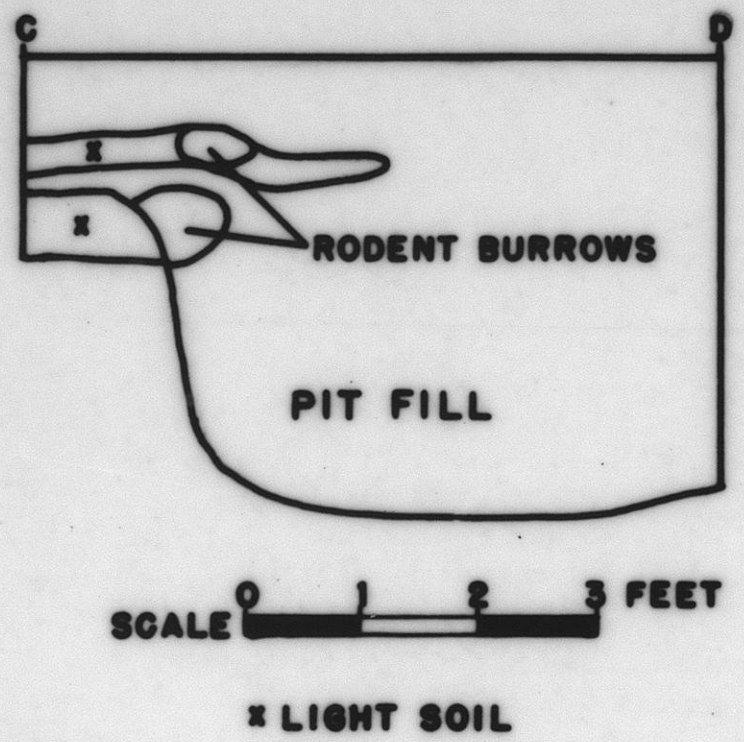



Figure 10. Feature 12. Profile drawing along axis from C to D as shown in diagram at top of Figure 9.

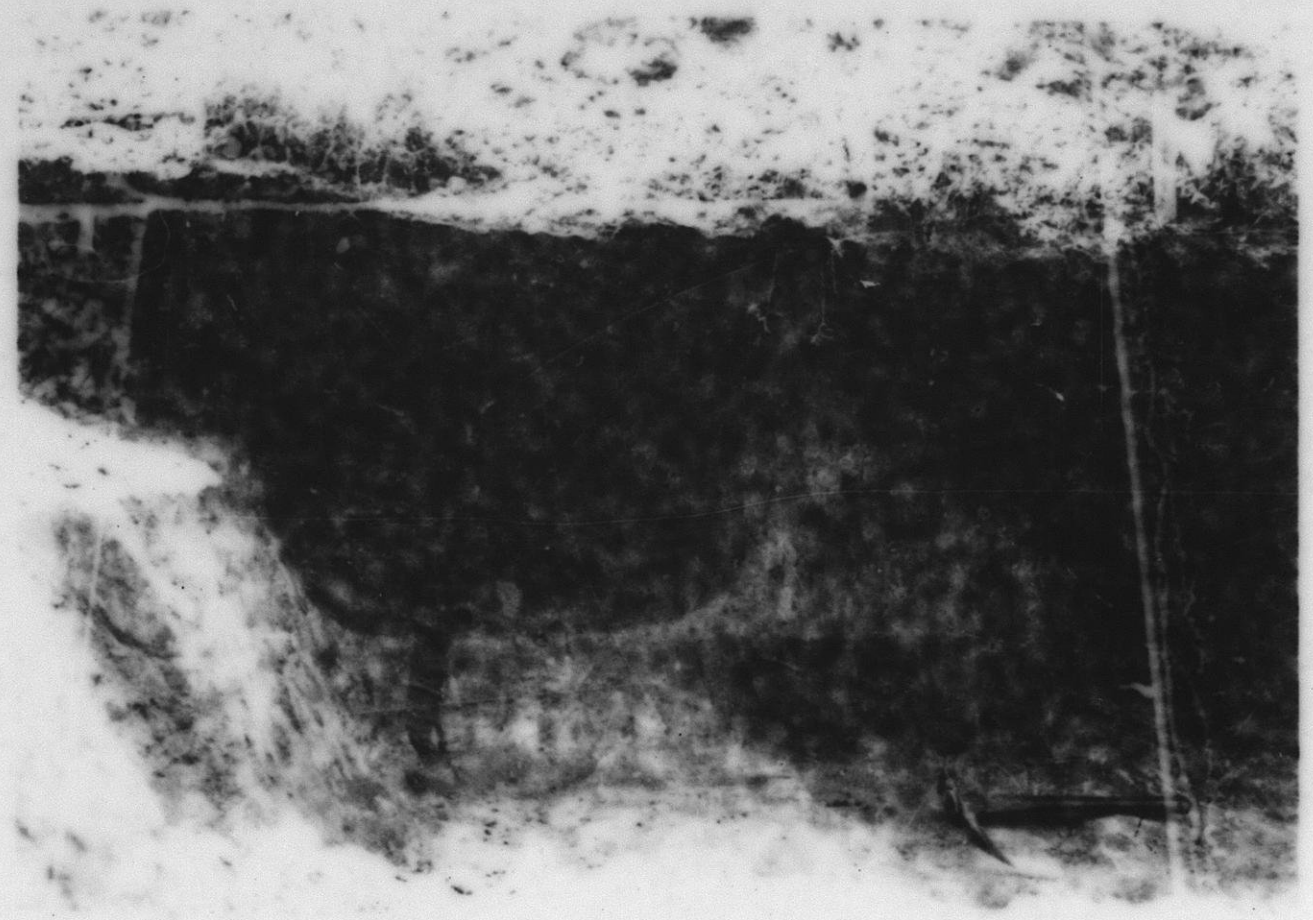


Figure 11. 39WW3, Feature 12. Ditch, eastern margin.

Table 7. Bone Implements, Features 6, 7, 12, 13 (South Ditch).

| | FEATURE | | | |
|---|---|---|---|---|
| | 6 | 7 | 12 | 13 |
| Awl, split cannon-bone | 1 | - | - | - |
| Awl, quartered metapodial | 1 | - | - | - |
| Awl, splinter | - | 1 | - | - |
| Rib-edge awl/flaker | - | - | - | 4 |
| Ulna awl | - | - | 1 | - |
| Simple scapula hoe | - | - | 1 | 1 |
| Notched scapula hoe | 1 | - | - | 9 |
| Trimmed scapula hoe | - | 1 | 1 | 1 |
| Hoe blade fragment | 1 | - | 2 | 8 |
| Hide grainer | - | - | 2 | 1 |
| Rib shaft straightener | - | - | 1 | 4 |
| Knife handle | - | - | 1 | 2 |
| Antler flaker | - | - | 1 | 3 |
| Scapula cleaver (median ridge variety) | - | - | - | 1 |
| Scapula digging tool: | | | | |
| Backed variety | - | - | 2 | - |
| Median ridge variety | - | - | - | 1 |
| Backed scapula knife | 1 | - | - | - |
| Median ridge scapula knife | 1 | - | - | - |
| Utilized rib | - | - | 2 | - |
| Scapula knife fragment | - | - | - | 1 |
| Worked deer manible | - | - | - | 1 |
| "Needle" - non-grooved variety | - | - | - | 2 |
| Ulna pick | - | - | 1 | - |

Table 8. Stone Implements, Features 6, 7, 12, 13 (South Ditch).

| | FEATURE | | | |
|---|---|---|---|---|
| | 6 | 7 | 12 | 13 |
| Chipped stone projectile points: | | | | |
| Simple triangular | 2 | - | 2 | 1 |
| Side-notched triangular | 1 | - | 3 | - |
| Heavy triangular | - | - | - | 1 |
| Unclassified/tip fragments | - | - | - | - |
| End scrapers: | | | | |
| Variety 1 | - | - | - | - |
| Variety 2 | - | 1 | - | 1 |
| Variety 3 | - | 1 | - | 1 |
| Variety 4 | - | 2 | 1 | 1 |
| Variety 5 | 1 | 1 | - | 2 |
| Unclassified/fragments | - | - | - | 1 |
| Chopper | - | 1 | - | - |
| Strike-a-light | - | - | 2 | - |
| Hammerstone | - | - | - | 2 |
| Catlinite pipe fragment | - | - | - | 1 |

Table 9. Pottery, Features 6, 7, 12, 13 (South Ditch).

| | FEATURE | | | | Total | % |
|---|---|---|---|---|---|---|
| | 6 | 7 | 12 | 13 | | |
| Frequency | | | | | | |
| Talking Crow Brushed | 1 | 1 | 7 | 29 | 38 | 21.5 |
| Talking Crow Cord Impressed | 10 | 2 | 12 | 23 | 47 | 26.6 |
| Talking Crow Indented | 7 | 1 | 16 | 28 | 52 | 29.4 |
| Talking Crow Straight Rim | 1 | - | 3 | 6 | 10 | 5.6 |
| Intermediate Plain | - | - | 1 | 1 | 2 | 1.1 |
| Intermediate Cord Impressed | 1 | 1 | 3 | 2 | 7 | 4.0 |
| Intermediate Tool Impressed | - | - | 2 | 3 | 5 | 2.8 |
| Stanley Plain | - | - | - | - | - | - |
| Stanley Cord Impressed | - | - | 1 | - | 1 | .6 |
| Stanley Tool Impressed | - | - | - | - | - | - |
| S-Rim | 1 | - | 1 | 13 | 15 | 8.5 |
| TOTAL | 21 | 5 | 46 | 105 | 177 | |

## Feature 8

The first house excavated at the Spiry-Eklo site, Feature 8, was initially visible as a shallow depression. Initially a test pit was sunk near the center which reached the hard-packed floor level at a depth of 40 inches. Then a trench, 2.5 feet in width, was extended in a roughly east-west direction to locate the outer limits (post holes) of the house. It was a matter of chance that both ends of the trench terminated in large cache pits which obscured the house limits. The cache pit on the east end of the trench was designated Feature 10 and the one at the west end, Feature 14. Both were regarded as post-dating the house since they removed house posts during their construction.

Having located the limits and floor position of the house by hand excavation, a tractor was used to help move the overlying house fill, a dark brown, sandy loam, 2.5 feet in thickness over much of the structure. Excavation with the tractor was stopped six inches above the house floor, the remainder to be removed by shovel and trowel. The northern half of the house was excavated first by following the line of posts to the point where they joined on the opposite side.

Floor - The floor of the house was saucer-shaped, the center of the house being 11 inches below the level of the floor near the walls. The floor was a mottled yellow, brown and reddish color in which bits of charred wood had been mixed. Resting upon the floor where charred beams and sections of burned grass, indications that the house had been destroyed by fire. Several sections of the burned beams were removed in the hope that they might provide useful tree-ring data, the largest

sections having been recovered in the vicinity of the fire pit. Most material (artifacts) discovered on the floor were found in the vicinity of the outer ring of post molds.

Figure 12. Preliminary excavations in houses, Feature 8 (foreground) and Feature 15, 39WW3. Tractor is being used to remove backfill to permit remainder of houses to be uncovered.

Figure 13. Feature 8, 39WW3. Rock lining in large center post of house.

Posts - Most post molds contained rotted wood fragments. Some were semi-circular and tended to appear in groups. The large center posts were usually surrounded by rocks and long bones (often discarded bone implements) that served as wedges. Most of the large post molds had flat stones on the bottoms of the holes which averaged 20-24 inches in depth. One hole of 10 inches in diameter had a depth of 23 inches and two other posts were 21 and 20 inches deep. Several small molds had fleshers and other bone implements placed vertically in the hole and below the level of the floor. These implements, in excellent condition, were doubtless placed in "pocket caches" and lost because of the destruction of the house. A much larger quantity of material was found on the floor along the outer ring of posts--broken pottery, a catlinite pipe, brass sheets, points and scrapers. The supporting posts were generally 4 to 6 inches in diameter and reached an average depth of 9 to 13 inches. These posts were set in trenches that were dug just a few inches wider than the posts to be inserted.

Fire Pit - Located in the center of the house, it was 3.5 feet in diameter and 6 inches deep. Little material was found in the pit other than ash. The lining of the pit was fired very hard and was reddish-brown in color. Adjacent to the pit, the floor was thicker than at other positions in the house and consisted of about 1.5 inches of compacted earth. Elsewhere the average thickness of the compacted floor was only a half inch. A second smaller fire pit lay to the west of the central fire pit. It was 1.5 feet in diameter and 6 inches deep. No material was found within it.

Entrance - Oriented to the southwest, it was about 15 feet long and sloped sharply to permit entrance to the depressed floor level. It was flanked by a wall of posts on either side. The ramp began 6 feet

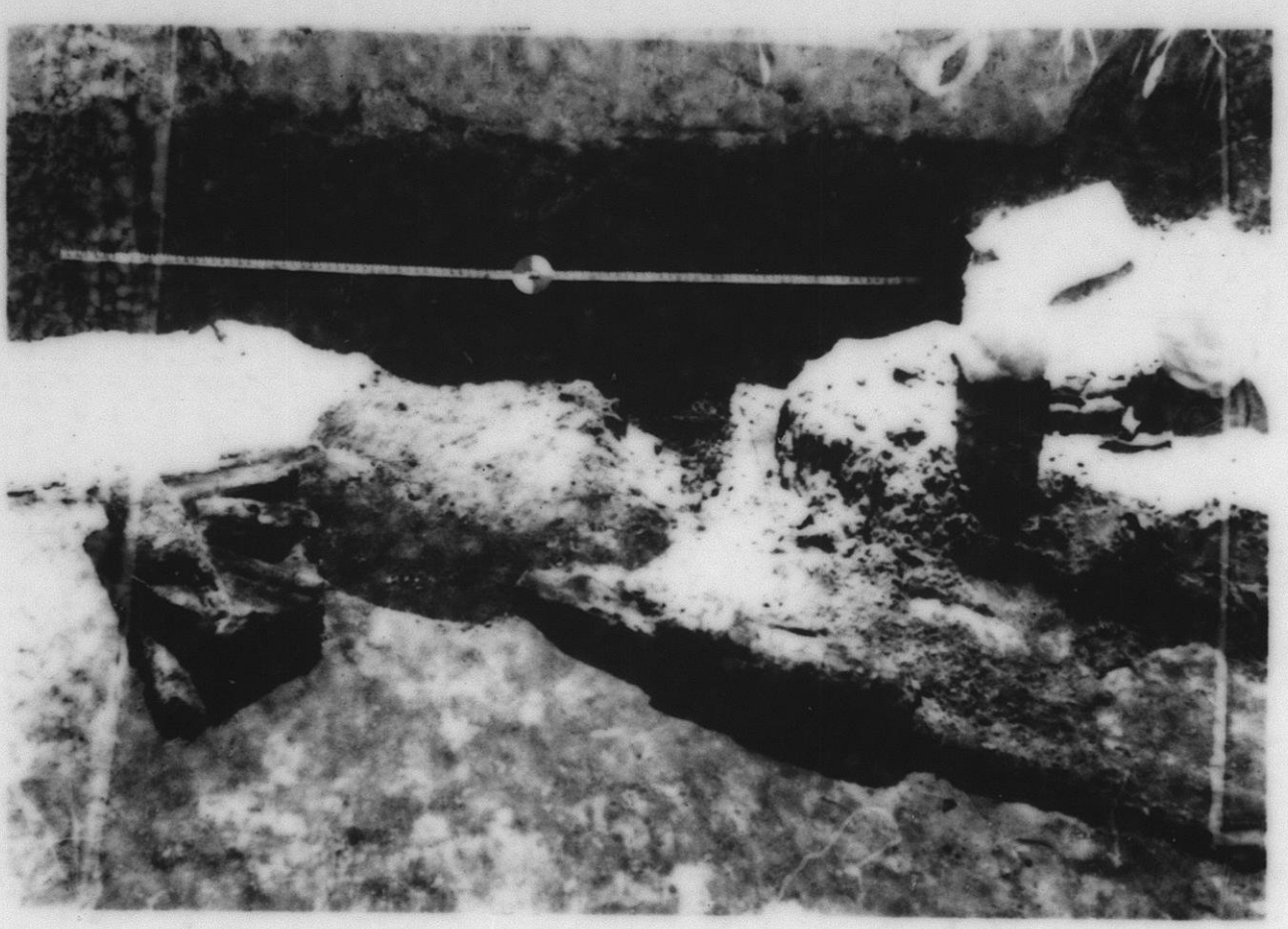


Figure 14. Feature 8, 39WW3. Fire place and burned logs on house floor.

outside the outer ring of posts and sloped downward for 17 inches to the house floor. Most of this ramp was inside the house proper.

Shape - The house was 44 feet in diameter, with the posts of the outer walls running in short, straight sections so that the form was more octagonal than circular.

House Pit - The pit rises sharply about two feet beyond the outer ring of posts.

Cache Pits - 10 cache pits were discovered in, or directly beneath the house floor.

Cache # 1 - found on the northeast side of the house, the pit had obviously been dug out and the dirt piled against the logs making a mound between the pit and the house wall. The pit was 18 inches deep and contained numerous artifacts.

Cache # 2 - found on the north side of the house, it was only 6 inches deep and contained no material.

Cache # 3 - also located on the north side of the house, it may have been an old post hole that had been filled with refuse.

Cache # 4 - found in the wall of the house pit on the east side, the pit was probably constructed after the house since the profile of the pit was visible above that of the house. Further, the pit intersects the outer line of posts and at least one post is believed to be missing as a result of the pit excavation. Several spots of compact ash were within the pit as well as abundant refuse.

Cache # 5 - a small pit about 8 inches in diameter located at the northern margin of the inner ring of center posts.

Cache # 6 - a pit 41 inches in depth, 32 inches in diameter at the neck and 48 inches in diameter at the base. No material was found except for three small sherds and three fragments of splintered bone. The fill was

dark, moist and soft, and fine in texture. The pit may have been later used as a post hole for a center post as some powdered wood was found in its fill. No rocks ringed the neck, however, as was characteristic of the other large post holes. The soil surrounding the pit was of compacted sand.

Cache # 7 - located after having removed an additional five inches of the floor level. Two post molds were also located in the fill at one edge which were 12 inches deep. The pit was filled with loose ash containing abundant material to a depth of 3 feet. The ash tapered off into a sand of light color which continued an additional 10 inches to the pit floor. The overall depth of the pit was 66 inches. It was roughly circular in outline at its base and, when this had been scraped, revealed a pit or step in the floor which penetrated into the dark clay subsoil. The fill of this second step was heavily packed sand and yielded only a few sherds. See Figure 15.

Cache # 8 - a pit located on the western edge of the house floor, it intersected both the inner and outer ring of posts. No trace of posts were found in the pit though one post mold was located 2 inches below the floor of the cache pit. The bottom of the cache pit extended 4 inches below the house floor. Unfortunately most of the fill of the pit had been removed by the tractor so the little remained of its contents. The pit, in the portion of the profile remaining, was about 3 feet in height and disappeared in the plow zone. The dimensions at the house floor indicated a diameter of 6 by 7 feet. See Figure 16.

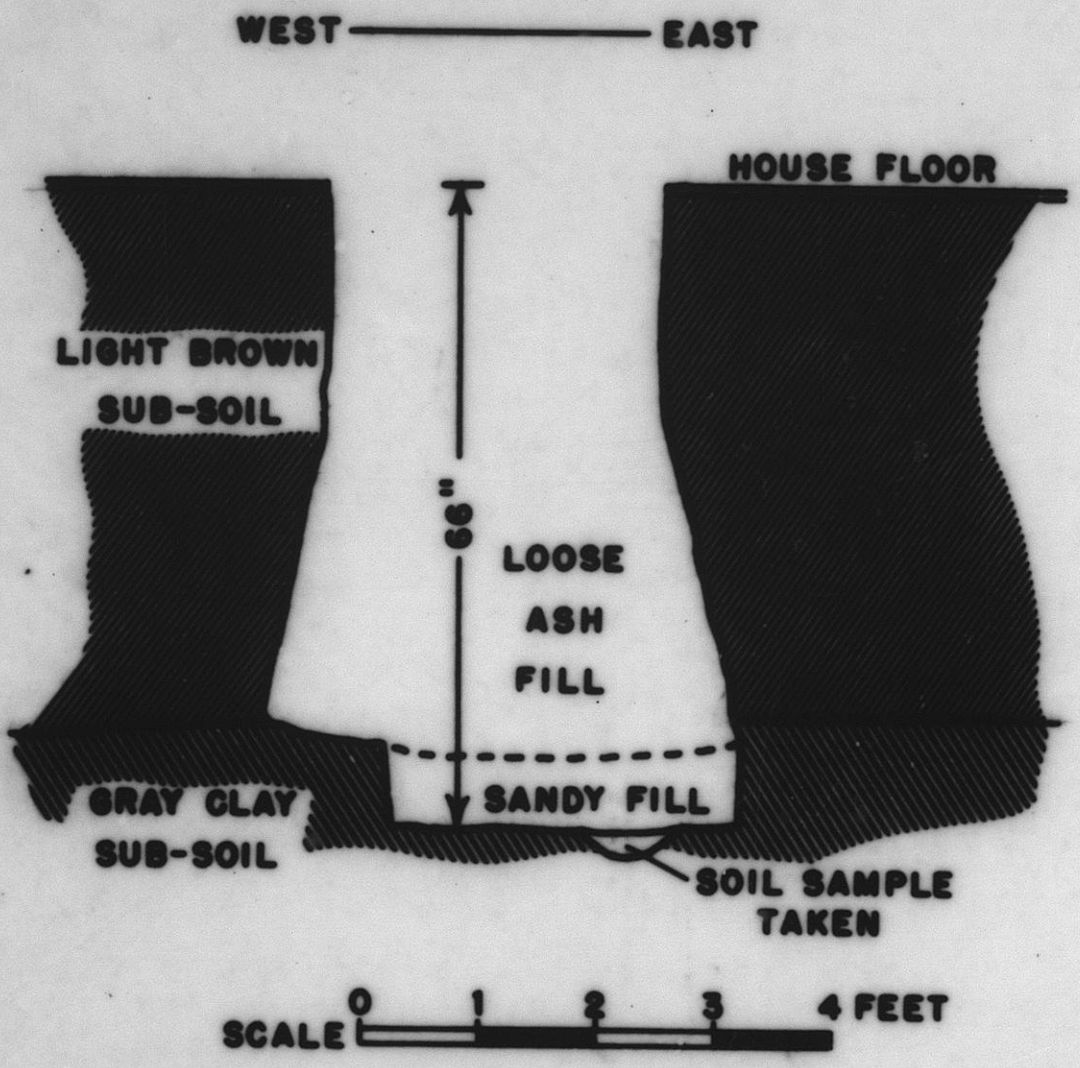



Figure 15. Feature 8, Cache Pit 7. Profile drawing.

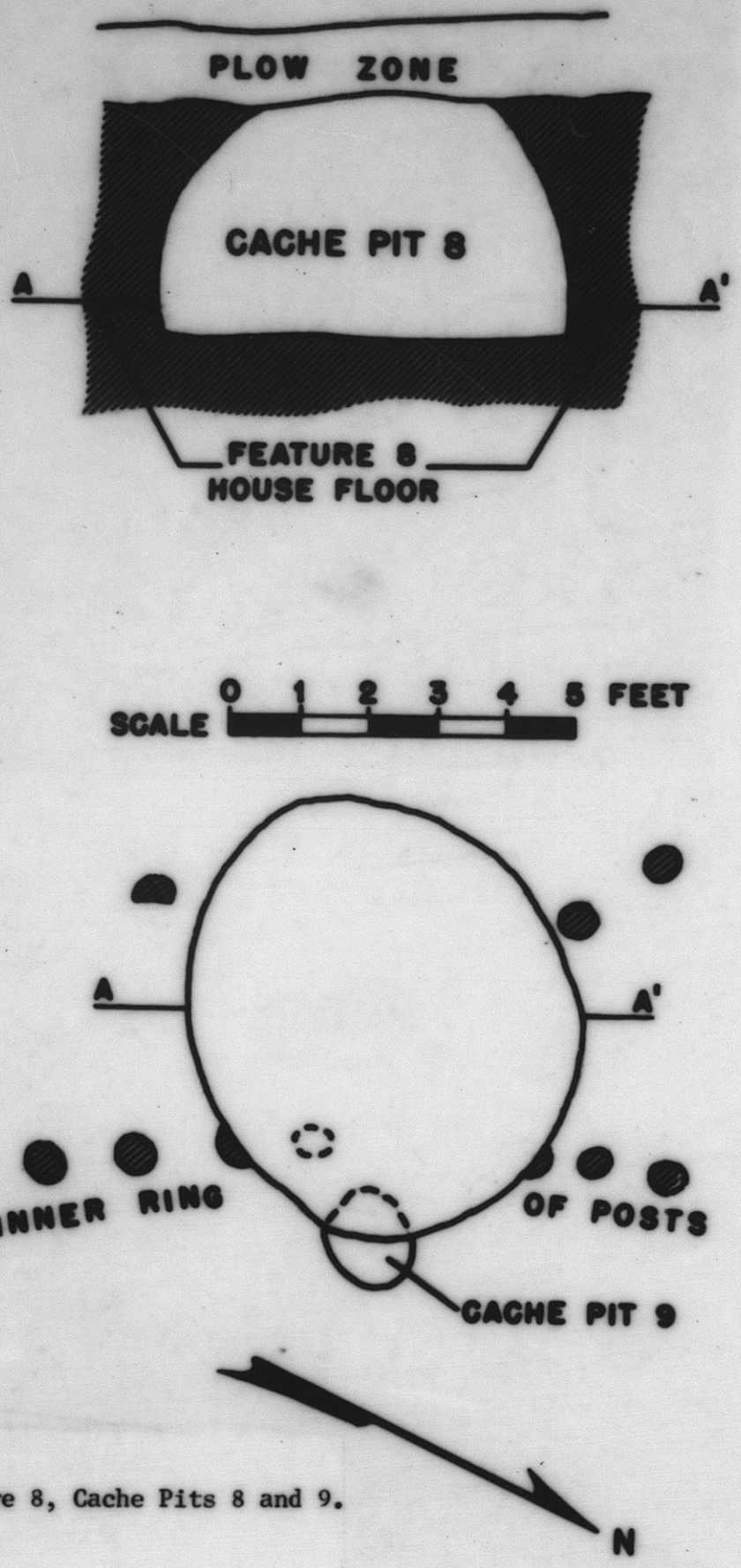



Figure 16. Feature 8, Cache Pits 8 and 9.

Cache # 9 - a small pit, 1 by 1.5 feet in diameter and 8 inches deep, was found running underneath Cache # 8. No material was found in the pit. Cache # 9 was probably coeval with the house with Cache # 8 and was doubtless later than both.

Cache # 10 - a pit, 62 inches in depth and approximately 54 inches in diameter, it was discovered by removing a six inch level beneath the house floor. The pit was relatively straight-sided, having no definable neck. Although the pit undercuts the wall posts, none of the posts are intersected by it. Although its relation to the house is uncertain, its depth almost precludes its being dug after the destruction of the house as indeed would the very discovery beneath the floor level. Very little material was found in the pit. See Figure 17 for profile of pit.

Mapping - The map, prepared with an alidade and plane table, attempts to show the specific condition of the posts when found--whether they contained wood, were hollow, or were doubtful. After the initial mapping an additional five inches of fill were removed and all additional posts then discovered were also mapped and designated by a special symbol.

Artifacts found in the process of removing the additional five inches are tabulated separately. Like specimens actually found on the house floor, these deeper materials probably accumulated during the period of residence in the house. So too, Cache pits 7 and 10, located after the removal of this six inch level may have been used early in the occupancy of the house and then sealed off after having been filled with refuse. As previously mentioned, Cache pits 4 and 8 (like Features 10 and 14), should postdate the construction of the house. The remaining cache pits should be contemporary with the house occupation. Materials representing a

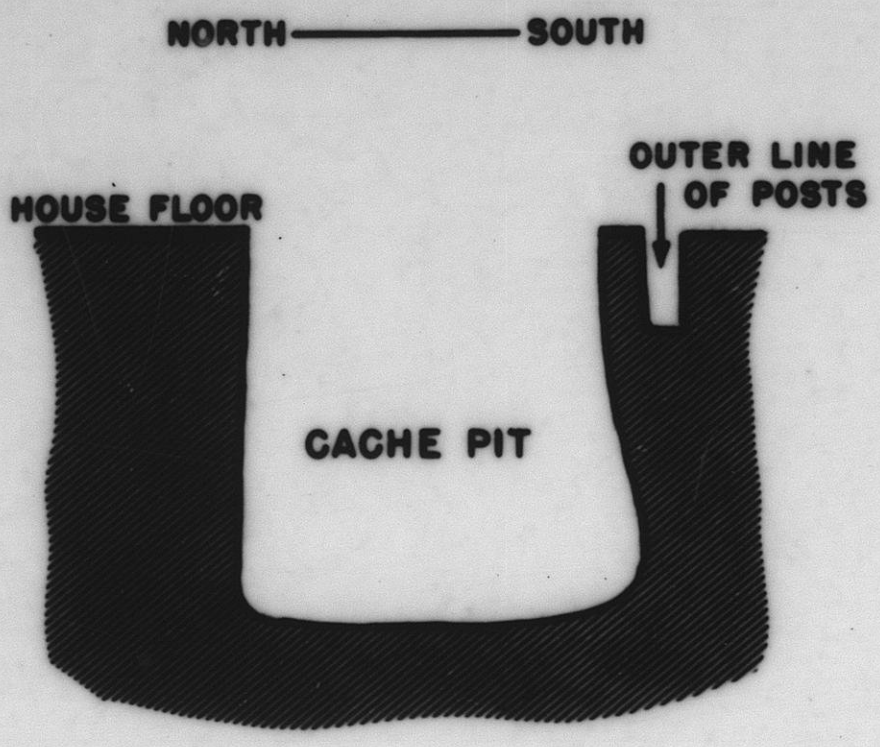



Figure 17. Feature 8, Cache Pit 10.

sequence in occupation at the site can thus be derived from this limited sector. Prior to a tabulation of the cultural material, Features 10 and 14 will be briefly described so that this material can be tabulated in conjunction with the other specimens from Feature 8.

Feature 10. The neck of this pit could not be distinguished in the overlying material. Cultivation certainly contributed to obscuring the location of the neck near the surface. The cache cuts through the hard

packed floor of the house (Feature 8) which would place the pit later in time than the house but presumably earlier than the refuse which had accumulated over the pit and house to a depth of about 6 inches to 1 foot. At a point below the maximum expansions of the pit (5.5 by 6 feet in diameter), a narrower nearly straight-sided sector (42 inches in diameter) continues for an additional 18 inches giving a maximum depth for the structure of 42 inches.

Feature 14. The excavation of the cache pit, Feature 14, intersected the house pit of Feature 8 but with half of the pit dug into sterile subsoil on the west half. The pit had a maximum depth of 59 inches. The bottom was flat with the sides expanding slightly to a maximum diameter of 70 inches and then constricting to 54 inches at the neck. Three hollow post molds were found in the fill of the pit for which no additional data were abtained so far as determining their significance was concerned.

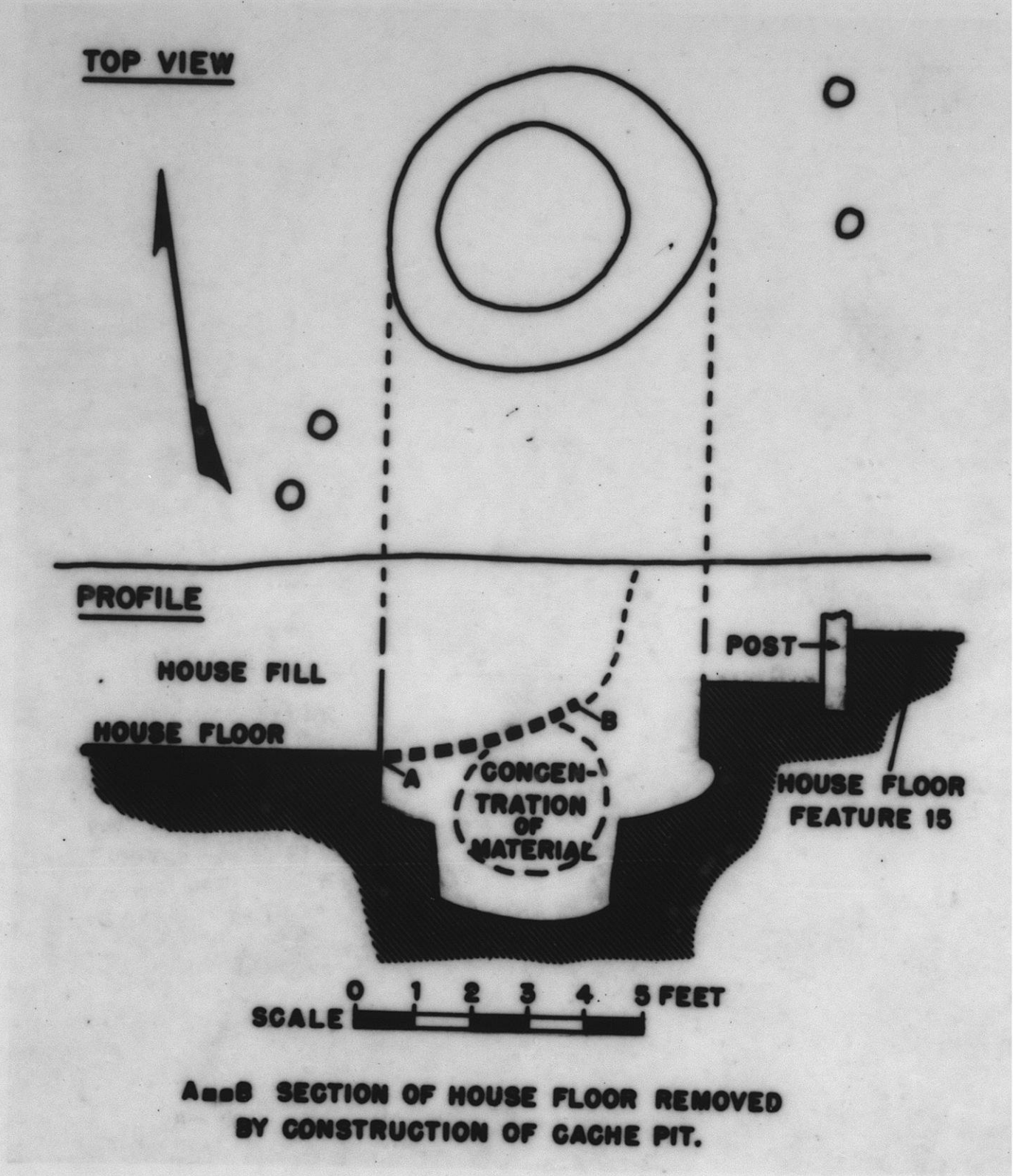



Figure 18. Feature 10 and its relationship to Features 8 and 15.

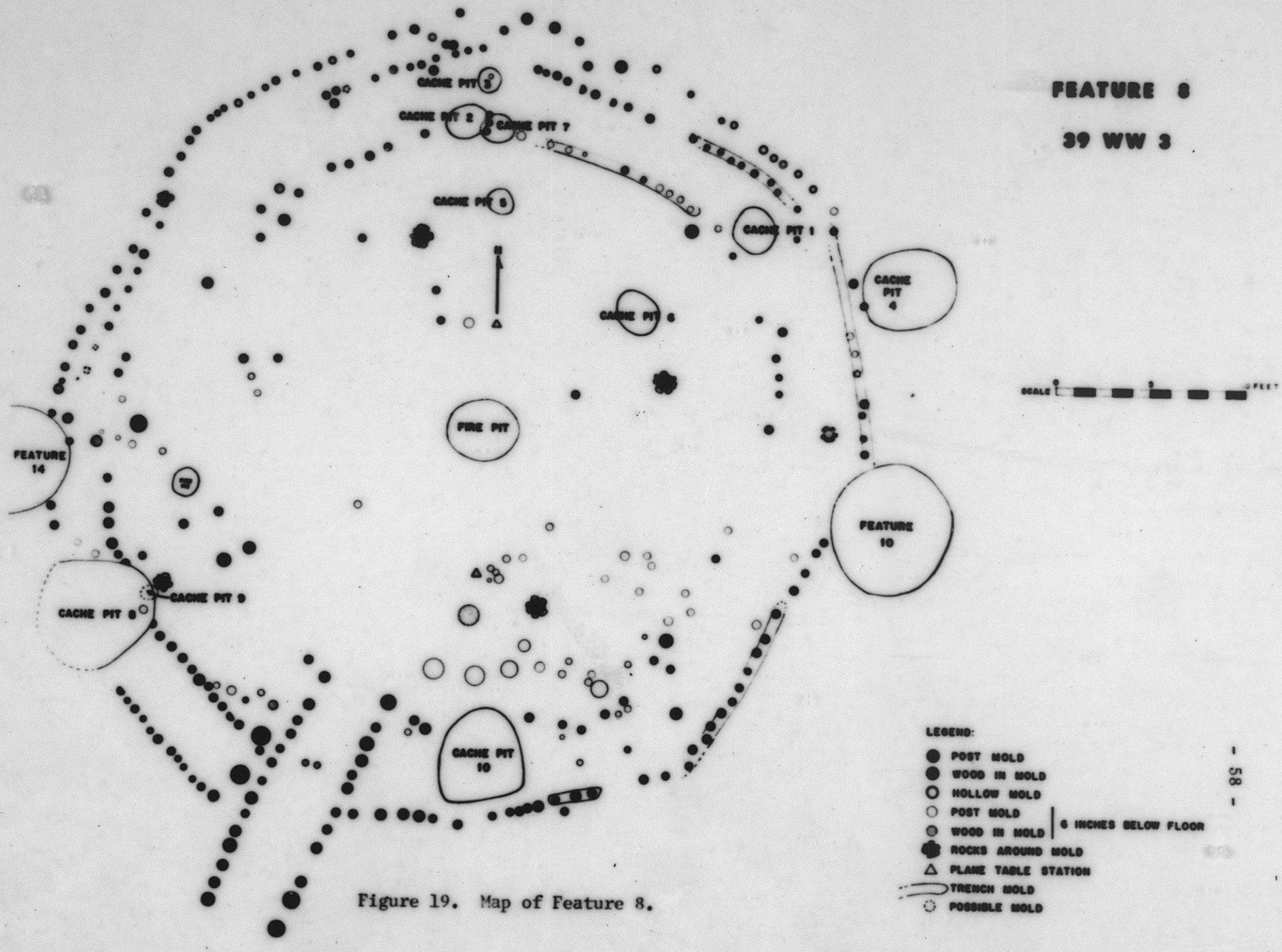



Figure 19. Map of Feature 8.

In the tables which follow, materials from Feature 8 and the associated structures are tabulated from left to right in their postulated sequence in time. Three basic time groups are represented with 1-3 being earliest, 4-6 perhaps being slightly later, and 7-12 being the latest materials. The superimposed numbers refer to the following locations:

1. Material from zone from house floor to 6 inches below house floor;
2. Cache # 10;
3. Cache # 7;
4. Material recovered on house floor;
5. Cache # 5;
6. Cache # 1;
7. Material from zone 6 inches above to house floor;
8. Fill above house
9. Cache # 4;
10. Feature 10;
11. Feature 14;
12. Surface levels over Feature 14;
13. Surface levels over Feature 10.

Table 10. Bone Implements, Feature 8 and Related Units.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rib-edge awl/flaker | - | - | 3 | 1 | 1 | - | 1 | 3 | - | 2 | 1 | - | 1 |
| Cannon-bone awl | - | - | - | - | - | - | - | 1 | - | - | - | - | - |
| Quartered metapodial awl | - | - | - | 1 | - | - | - | - | - | - | - | 1 | - |
| Splinter awl | - | - | 1 | - | - | - | - | 2 | - | - | - | - | - |
| Flat split-rib awl | - | - | - | 1 | - | - | - | - | - | - | - | - | 1 |
| Awl fragments | - | - | - | 1 | - | - | - | - | - | - | - | - | - |
| Simple scapula hoe | - | - | - | - | - | - | - | 1 | - | - | - | 1 | - |
| Notched scapula hoe | 3 | - | - | 5 | 5 | 1 | 1 | 6 | 4 | 1 | 3 | 3 | 4 |
| Trimmed scapula hoe | 3 | - | - | 6 | 1 | 1 | 2 | 2 | 4 | - | 1 | 1 | 1 |
| Hoe blade fragments | 2 | 2 | 2 | 16 | 6 | - | 3 | 13 | 6 | - | 2 | 4 | 5 |
| Bison skull hoe | 1 | - | - | 3 | - | - | - | - | 1 | - | 1 | - | - |
| Fishhook | - | - | 1 | - | - | - | - | - | - | - | - | - | - |
| Hide grainer | 2 | 1 | - | 1 | 2 | - | 1 | 2 | 1 | 1 | 1 | - | - |
| Rib shaft straightener | 1 | - | - | 3 | 3 | - | - | 1 | 1 | 1 | - | 1 | - |
| Same, split-rib variety | - | - | - | - | - | - | - | 1 | - | - | - | - | - |
| Knife handle | - | - | 2 | 3 | 2 | - | - | 2 | - | - | - | - | - |
| Scapula shaft straightener | - | - | - | - | - | - | - | - | - | - | 1 | - | - |
| Antler flaker | 1 | - | - | 7 | - | - | - | 1 | - | - | - | - | 1 |
| Splinter flaker | - | - | - | - | 1 | - | 1 | - | - | - | - | - | - |
| Polished quill flattener | - | - | 1 | - | - | - | - | - | - | - | - | - | - |
| Scapula cleaver | - | - | - | 1 | - | - | - | 1 | - | - | - | - | - |
| Scapula digging tool | - | 2 | - | - | 2 | - | 2 | 4 | 2 | 3 | 2 | - | - |
| Backed scapula knife | - | 1 | - | 2 | - | - | - | - | - | 1 | 1 | - | - |
| Median ridge scapula knife | - | - | - | - | - | - | 1 | 1 | - | - | - | - | - |
| Thin scapula knife | - | - | 1 | 4 | 3 | - | - | - | - | - | - | 2 | - |
| Utilized rib | - | - | - | 5 | 2 | - | - | 1 | - | - | - | - | 1 |
| Flesher | - | - | - | 6 | - | - | - | - | - | - | - | - | - |
| Needle - grooved variety | 1 | - | - | - | - | - | - | - | - | 2 | - | - | - |
| Needle - non-grooved var. | - | - | - | 3 | - | - | - | - | - | - | - | - | - |
| Conical antler point | - | - | - | - | - | - | 1 | - | - | 1 | - | - | - |
| Multi-barbed antler point | - | - | - | 1 | - | - | - | - | - | - | - | - | - |
| Notched rib | - | - | - | - | - | - | - | - | - | - | - | 1 | - |
| Serrated rib | - | - | - | - | - | - | - | - | 1 | - | - | - | - |
| Sharpened rib (edge) | - | - | - | 1 | - | - | - | - | 1 | - | - | - | - |
| Small scapula hoe (?) | - | - | - | - | - | - | - | 1 | - | - | - | - | - |

Table 11. Stone Implements, Feature 8 and Related Units.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chipped stone proj. points: | | | | | | | | | | | | | |
| Simple triangular | - | - | 2 | 5 | 4 | 1 | - | 2 | 1 | - | 1 | 1 | - |
| Side-notched triangular | - | - | 1 | - | 2 | - | - | 1 | - | - | 1 | - | - |
| Heavy triangular | - | - | - | - | - | - | - | 1 | - | - | - | - | - |
| Unclassified/ tip frag. | - | - | - | 3 | - | - | - | 1 | 2 | - | - | - | - |
| End scrapers: | | | | | | | | | | | | | |
| Variety 1 | 1 | - | 2 | 3 | 1 | - | 2 | 2 | - | - | - | - | 1 |
| Variety 2 | - | - | - | - | 2 | - | - | 1 | - | - | 1 | 1 | 1 |
| Variety 3 | 1 | - | 1 | 2 | 4 | - | - | 4 | 1 | - | - | 3 | 2 |
| Variety 4 | - | - | 2 | 1 | 2 | - | 1 | 2 | 1 | 1 | - | - | 1 |
| Variety 5 | 1 | - | 1 | 2 | - | - | 2 | - | - | - | - | - | - |
| Unclassified/fragments | - | - | - | 2 | 1 | - | - | 1 | - | 1 | - | 1 | 1 |
| Retouched flakes | - | - | - | 1 | - | 1 | - | - | - | - | - | - | - |
| Chipped stone knives: | | | | | | | | | | | | | |
| Badlands knife | 1 | - | 3 | 4 | 2 | - | 1 | 1 | - | - | - | - | 1 |
| Dodd knife | - | - | 1 | - | - | 1 | - | - | 1 | - | - | - | - |
| Small, bifacial | - | - | - | 1 | 1 | - | - | - | - | - | 2 | - | - |
| Strike-a-light | - | - | 1 | 1 | 2 | - | 1 | - | - | - | - | - | - |
| Hammerstone | 1 | 1 | 3 | 26 | 4 | 1 | 2 | 10 | 1 | 1 | 1 | - | 2 |
| Pitted hammerstone | 1 | - | - | 1 | 1 | - | 1 | 2 | - | - | - | - | 1 |
| Abrader, clinker | 1 | - | - | 3 | 2 | - | 2 | 3 | 4 | - | - | 1 | 1 |
| Abrader, sandstone | - | - | - | 2 | 1 | - | 1 | 2 | - | 2 | - | - | - |
| Grooved abrader, clinker | 1 | - | 1 | 1 | 1 | - | 1 | 2 | - | 1 | - | - | 2 |
| Grooved abrader, sandstone | - | - | - | - | - | - | - | - | - | - | 1 | - | - |
| Shaft smoother | 1 | - | 1 | - | - | - | - | - | - | - | - | - | - |
| Grinding stone | 1 | - | - | - | 1 | 1 | 1 | 3 | - | - | - | - | 2 |
| Grooved Maul | - | - | 1 | 1 | - | 1 | - | 1 | - | - | - | - | - |
| Catlinite pipe/fragment | 1 | - | - | 2 | - | - | 1 | - | - | - | - | - | - |
| Catlinite scrap | - | - | - | - | - | - | - | 1 | - | 1 | 1 | - | - |

Cache # 2 - 2 hammerstones
Cache # 8 - 1 simple triangular point
1 Clinker abrader
1 small bifacial knife

Table 12. Pottery, Feature 8 and Related Units.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7-8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Talk. Crow Brushed . . . . | 7 | 2 | 12 | 47 | 13 | 1 | 55 | 3 | 9 | 12 | 21 | 11 |
| Talk. Crow Cord Impressed | 3 | 2 | 12 | 28 | 7 | 2 | 33 | 2 | 5 | 5 | 3 | 3 |
| Talk. Crow Indented . . . | 5 | 2 | 10 | 32 | 19 | 2 | 68 | 15 | 9 | 5 | 11 | 17 |
| Talk. Crow Straight Rim . | - | - | - | 5 | 6 | - | 7 | - | - | 1 | 6 | 5 |
| Intermediate Plain . . . . | - | - | 2 | 10 | 1 | - | 8 | 4 | 3 | - | 5 | 2 |
| Intermed. Cord Impressed . | - | - | - | 8 | 5 | - | 13 | 2 | 1 | 1 | - | 3 |
| Intermed. Tool Impressed . | - | - | - | 5 | 7 | - | 8 | 2 | 1 | 1 | 1 | 5 |
| Intermed. Wavy Rim . . . . | - | - | - | - | - | - | 1 | - | - | - | - | - |
| Stanley Plain . . . . . | 5 | - | - | 8 | 1 | - | 18 | 3 | 3 | 2 | 8 | 4 |
| Stanley Cord Impressed . . | 3 | - | - | 5 | 2 | - | 4 | 1 | 2 | - | - | 1 |
| Stanley Tool Impressed . . | - | - | 2 | 7 | 4 | - | 9 | 6 | 3 | 1 | 1 | 6 |
| Stanley Wavy Rim . . . . . | - | - | - | 1 | - | - | 1 | 2 | - | - | - | - |
| Nordvold Horiz. Incised . | - | - | - | 1 | - | - | 1 | - | - | - | - | - |
| Le Beau Punctate . . . . . | - | - | - | - | - | - | 2 | - | - | - | - | - |
| Bowl . . . . . | - | - | - | - | 1 | - | - | - | - | - | 1 | - |
| S-Rim . . . . . | - | - | 6 | 15 | 10 | - | 23 | 4 | 1 | 5 | 4 | 7 |

Table 13. Brass, Iron and Shell from Feature 8 and Related Units.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brass triangles . . . . . | - | - | - | - | 2 | - | - | - | - | - | - | - |
| Brass, celt . . . . . | - | - | - | - | 1 | - | - | - | - | - | - | - |
| Brass, fishhook . . . . . | - | - | - | - | - | - | - | 1 | - | - | - | - |
| Brass, tinkler . . . . . | - | - | - | 1 | 1 | - | 1 | - | - | - | - | - |
| Brass, tube . . . . . | - | - | - | 2 | 1 | - | 1 | - | - | - | - | - |
| Brass, clip . . . . . | - | - | - | - | 2 | - | 1 | - | - | - | - | - |
| Brass, knife . . . . . | - | - | - | 1 | 1 | - | 1 | - | - | - | 1 | - |
| Brass, awl (?) . . . . . | - | - | - | 1 | - | - | - | - | - | - | - | - |
| Brass, sheet fragments . . | 71 | - | - | 3 | 12 | - | 7 | - | 2 | - | - | - |
| Iron fragments . . . . . | - | - | - | 1 | 1 | - | 1 | - | - | - | - | - |

Cache 8: 1 - Brass tube; 1 - Brass sheet fragment; 1 - section worked shell

## Feature 9

This number was given to a feature of uncertain character located in testing operations in square 110. A shallow basin-shaped pit sloped to a maximum depth of 42 inches at its western margin. In the center was a more nearly circular depression 58 inches in diameter which reached a maximum depth of 66 inches. These contours may be largely the result of rodent activity or have been modified by rodent activity. Refuse, however, was relatively abundant in the pit fill.

Bone Implements, Feature 9

| | |
|---|---|
| Rib-edge awl | 1 |
| Notched hoe | 2 |
| Hoe blade fragments | 3 |
| Hide grainer | 2 |
| Knife handle | 1 |
| Utilized rib | 2 |
| Bone rings | 11 |

Stone Implements, feature 9

| | |
|---|---|
| Simple triangular proj. pt. | 2 |
| Proj. point fragment | 1 |
| End scraper, Variety 1 | 4 |
| End scraper, Variety 3 | 1 |
| End scraper, Variety 4 | 2 |
| End scraper, Variety 5 | 1 |
| Dodd knife | 1 |
| Broad, bifacial blade | 2 |
| Hammerstone | 2 |
| Pitted hammerstone | 1 |
| Abrader, clinker | 1 |
| Grooved abrader, clinker | 1 |
| Shaft smoother | 1 |
| Brass knife | 1 |

Pottery, Feature 9

| | Freq. | % |
|---|---|---|
| Talking Crow Brushed | 16 | 10.9 |
| Talking Crow Cord Impressed | 40 | 27.2 |
| Talking Crow Indented | 47 | 32.0 |
| Talking Crow Straight Rim | 6 | 4.1 |
| Intermediate Plain | 1 | .7 |
| Intermediate Cord Impressed | 5 | 3.4 |
| Intermediate Tool Impressed | 3 | 2.0 |
| Stanley Plain | 1 | .7 |
| Stanley Cord Impressed | 2 | 1.4 |
| S-Rim | 26 | 17.7 |
| TOTAL | 147 | |

## Feature 11

Feature 11, because of its rounded mound-like contours, was presumed to be a midden similar to Features 1 through 3. The area had been plowed, this action revealing an abundance of refuse. The initial square, NW¼127R1, was excavated in the highest portion of the midden. Refuse material was found to be abundant in the top twelve inches but declined markedly below this point with sterile subsoil reached at a depth of 17 inches. In the top foot fragments of both adult and infant skeletal material were found. The small fragments, presumably distributed by rodent action, suggested that the area had been used for burial purposes. This was confirmed upon the excavation of the adjacent quarter square, NE¼127R1, where an infant burial was found.

Burial 3. This infant burial was lying directly within an area of intense rodent disturbance. The top of the cranium was at a depth of 16.5 inches below the surface and its position suggested the body had been extended on an east-west axis with the head to the west. The post-cranial skeletal material, however, was largely scattered throughout the rodent burrows so that information on position is not reliable. The burial was located immediately adacent to the southern margin of NE¼127R1 and while no grave goods could be definitely associated with the infant, two blue glass beads were found in the north half of the square at depths of 12 and 18 inches.

Excavations in the NW¼128R1 and the NE¼128R1 again led to the discovery of scattered fragments of human bone amidst the refuse. Their proximity to the SW¼ of 128 led to the extension of the digging into this sector led to the location of a second infant burial.

Burial 4. This infant had been placed in a pit which extended from the NW¼128R1 into the SW¼128. A canopy of logs, badly decayed, and measuring approximately 12 by 36 inches covered the burial, the top of the wood covering being 10.5 inches below the surface. Beneath the covering were the cranial fragments of an infant plus scattered post-cranial parts. Again, rodent disturbance had been so extensive that virtually nothing can be said of burial position. The wood covering, however, had as its long exis a northwest-southeast orientation and the cranial fragments were located at the northwest end. Twenty glass beads, similar in form and appearance to those previously mentioned as being found in the NE¼127R1, were scattered in the burial area and presumably were placed with the infant.

Burial 5. Further extension of the excavations in Feature 11 into the NE¼128R1 disclosed an additional burial of an adult male, again provided with a covering consisting of a canopy of logs that extended over the long axis of the burial. The long axis of the burial was in a northwest-southeast direction with the head toward the northwest. The log covering extended from over the skull where they reached the plow zone about six inches below the surface and had been scattered by this activity. The logs, ranging in diameter from 1.5 to 3.5 inches, sloped downward at about a thirty degree angle and were embedded in the subsoil about one foot to the south of the feet of the burial. Thus the logs formed a sort of lean-to above the burial, protecting it from the earth placed upon it. The approximate dimensions of the log cover were 67 by 39 inches.

The burial itself rested upon the back with the arms extended along the sides. The legs were tightly flexed to the left side of the body, forming a right angle with the long axis. The left hand rested under the knees while the right hand was partially under the right margin of the pelvis. Traces of red ochre were present above and in the vicinity of the right and left forearm as well as remains of a decomposed, calcareous material, the latter also appearing on the lower thoracic vertebrae. This was the only suggestion of grave goods accompanying the burial.

Extension of the excavation area immediately to the north and east of Burial 5 revealed the presence of a central fire pit and two center posts of a house. Thus the burials previously described would appear to have been placed in refuse that had accumulated over an original house site, presumably subsequent to its abandonment. The fire pit was 30 inches in diameter and basin-shaped, reaching a depth of 3.5 inches in its central portion. Stratified ash and charcoal were present in the basin. Two large center posts were located to the southwest and southeast of the central fire basin. The southwesterly post was 72 inches from the fire basin, had a diameter of 11 by 13 inches and a depth of 6 to 8 inches below the floor level. The southeasterly post was 61 inches from the fire basin and had a diameter of 15 inches, and penetrated 9.5 inches below the floor level. Additional posts which might represent portions of this house were not discovered despite the clearance of a sector that should have shown additional center posts.

Further excavations to increase the pottery sample led to the discovery of an articulated lower leg (tibia, fibula and patella) evidently disturbed by rodent action. The same general area also yielded a portion of a mandible.

Figure 20. Burial 5 found in Feature 11

## Bone Implements, Feature 11

| | |
|---|---|
| Rib-edge awl/flaker | 8 |
| Split cannon-bone awl | 1 |
| Awl fragments | 2 |
| Notched scapula hoe | 4 |
| Hoe blade fragments | 4 |
| Hide grainer | 1 |
| Rib shaft straightener | 4 |
| Knife handle | 1 |
| Shaped flaker | 1 |
| Backed scapula digging tool | 1 |
| Backed scapula knife | 1 |
| Median ridge scapula knife | 1 |
| Thin scapula knife | 4 |
| Utilized rib | 4 |
| Bone whistle (unfinished) | 1 |

## Stone Implements, Feature 11

| | |
|---|---|
| Simple triangular proj. point | 13 |
| Side-notched triangular point | 5 |
| Unclassified/tip fragments | 4 |
| End scraper, Variety 1 | 2 |
| End scraper, Variety 2 | 1 |
| End scraper, Variety 3 | 2 |
| End scraper, Variety 4 | 1 |
| End scraper, Variety 5 | 2 |
| End scraper, Unclass./fragments | 2 |
| Badlands knife | 1 |
| Dodd knife | 3 |
| Hammerstone | 5 |
| Abrader, clinker | 3 |
| Abrader, sandstone | 4 |
| Grooved abrader, clinker | 2 |
| Grooved abrader, sandstone | 2 |
| Shaft smoother | 2 |
| Retouched flake | 1 |
| Small, bifacial knife | 4 |
| Strike-a-light | 2 |
| Catlinite scrap | 1 |

| | |
|---|---|
| Pottery disc | 1 |
| Worked sherd | 1 |

## Pottery, Feature 11

| | Freq. | % |
|---|---|---|
| Talking Crow Brushed | 67 | 29.4 |
| Talking Crow Cord Impressed | 29 | 12.7 |
| Talking Crow Indented | 75 | 32.9 |
| Talking Crow Straight Rim | 15 | 6.8 |
| Intermediate Plain | 5 | 2.2 |
| Intermediate Cord Impressed | 7 | 3.1 |
| Stanley Plain | 1 | .4 |
| Stanley Cord Impressed | 1 | .4 |
| Stanley Tool Impressed | 3 | 1.3 |
| S-Rim | 24 | 10.5 |
| Le Beau Punctate | 1 | .4 |
| TOTAL | 228 | |

## Feature 15

This feature, a circular house, was discovered by continuing the trench that ran across the first house found (Feature 8). In continuing this trench to the southeast, a cache pit (Feature 10) was first found, then abundant refuse in an ashy deposit and finally a series of charred posts and roof timbers that indicated the presence of a house. The trench was continued, actually 15 feet beyond the limits of the house, and then the area in the northern sector of the house was stripped down to floor level.

In most of the house the floor was easily detected. It consisted of a hard-packed layer covered with black carbon material including twigs ¼ to ½ inch in diameter and occasional larger pieces of wood two to three inches in diameter. These timbers, roof timbers perhaps, were found both on the floor level and two to three inches above the floor level and lacked a consistent orientation. The floor proper was mottled in color, ranging from dark brown to red-orange, suggesting that it had been burned as the house was destroyed.

The central fire basin was circular in outline (32-33 inches in diameter) having a slightly rolled rim below which it was undercut and then curved in a shallow basin form to a depth of 12 inches below the floor level.

The wall posts were located, for the most part, by the presence of charred vertical posts ranging in diameter from two to seven inches. Those on the eastern margin of the house were not well preserved.

The house floor sloped upward from the central fire pit to the margins of the wall. The slope was not uniform over the entire area, varying

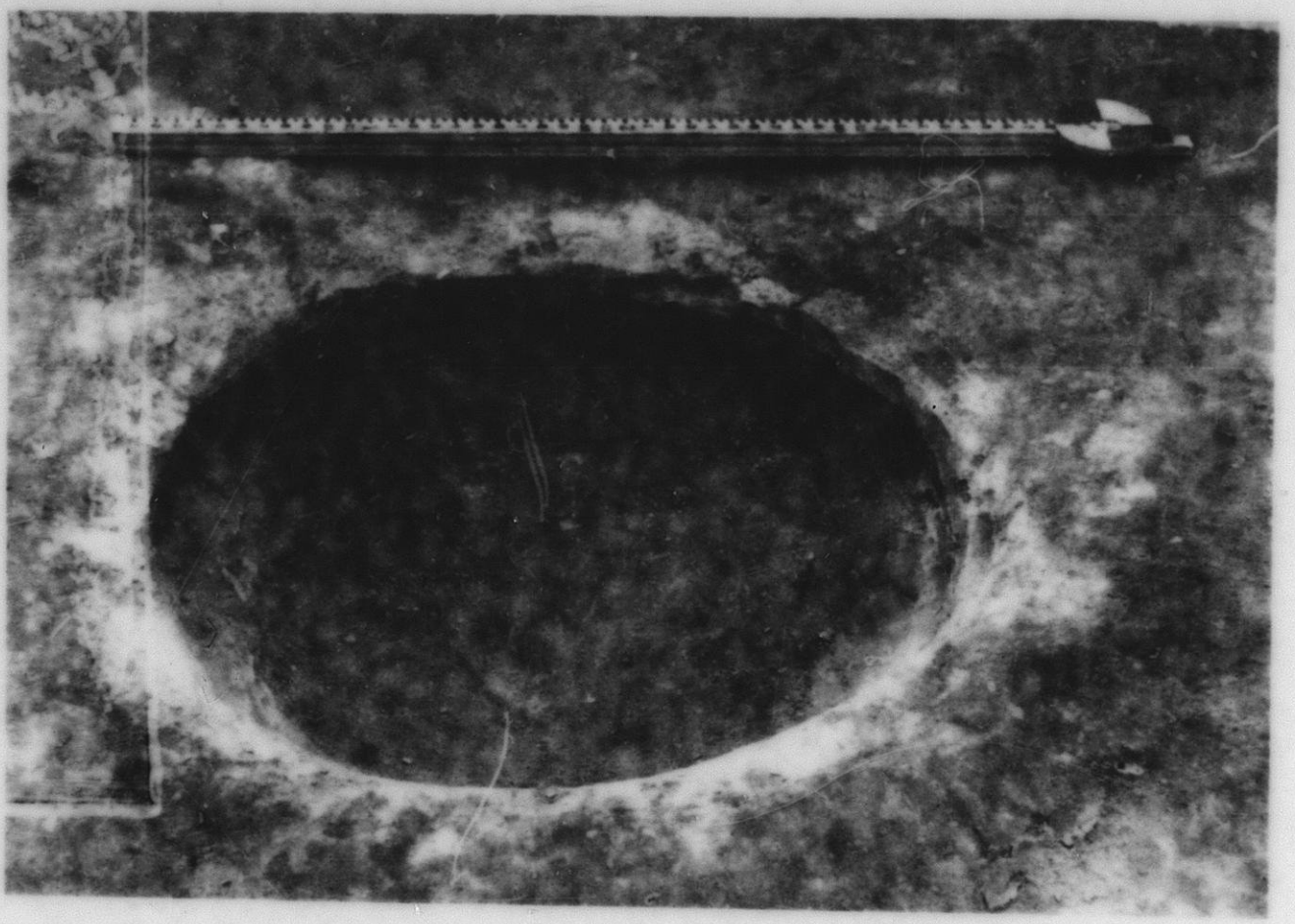


Figure 21a. Feature 15, 39WW3. Central fire pit in house.

between 4 and 9 inches. In some sectors, immediately adjacent to the wall posts at the north edge of the house, the floor appeared to rise sharply as though at the edge of a house pit. Elsewhere, particularly at the eastern and western margins, the floor level continued beyond the house shifting into an ashy, refuse-filled deposit. In the center of the house

the floor was 21 inches below the present surface level.

The center posts were paired, a small post being adjacent to the larger posts which extended 19 inches below the floor level. The large posts were 10 to 12 inches in diameter, the small posts 5 to 7 inches in diameter.

Caches:

Cache # 1 - first located in stripping the floor, it was detected only as an irregular black or disturbed patch with no clear outline to indicate form. Since patches of floor appeared to extend over the pit, it seems clear that it was filled and abandoned prior to the destruction of the house. The mouth of the pit was immediately adjacent to the west wall of the house. The fill of the cache contained large quantities of ash, highly consolidated. Animal bones were numerous, particularly small fragile bones of fish and birds. The flat base of the cache extended into a light sand. The diameter at the mouth was 44 to 45 inches and at the base 74-76 inches. The pit extended 51 inches below the floor level of the house.

Cache # 2 - the dark area which formed the basis for the initial designation of the feature as Cache 2 was first detected in a similar manner to that connected with Cache # 1. Patches of floor extended over the dark area indicating that it must have been filled and abandoned prior to the destruction of the house. Upon excavation, however, this area on the north side of the house continued beyond the limit of the post holes marking the house wall. It never attained a depth of greater than 12 inches and was irregular in shape. Since the post holes cut into this deposit, it would appear to be part of a refuse area upon which Feature 15 had subsequently been constructed and cut into.

Cache # 3 - consisted of a small basin-shaped pit, 18 inches in diameter and 10 inches deep which contained only a small quantity of refuse. While the floor did not extend over this pit, it was not well preserved in this sector of the house.

Cache # 4 - was located when the floor of the house was stripped down four inches to see what additional posts and features might be revealed. Two possible posts had been mapped in the area embraced by the orifice of the pit. While these may not be regarded with certainty as posts, it would appear that the pit was filled with ash and refuse at the time the house burned. The outline of the pit was readily detected since the contents peeled off sharply from the sides. The fill contained large blocks of consolidated white ash. The mouth of the pit was 27 by 28 inches in diameter and increased to 37 inches in diameter at a point 2 inches above its floor. At this position the walls of the pit curved in sharply to a flat base. The pit was 27 inches in depth.

Cache # 5 - located immediately adjace to Cache # 2, the cache pit originated as a basin shaped depression which constricted to a narrow neck 32 inches in diameter. Below this neck the cache expanded abruptly to a maximum diameter of 96 inches. It reached a depth of about 5 feet below the house floor extending to a yellow-brown sand. It appeared that post holes of the wall of the house intruded into the top of the north side of the pit suggesting that the cache pit was older than Feature 15 proper.

Cache # 7 - located southeast of the fire basin in a line with the entrance of the house. The outline was not discovered until the excavation had been carried six inches below the floor level. The cache has a narrow, constricted orifice, 32 inches in diameter and expands below this to a maximum width of 64 inches at the floor level. The pit penetrated 42

inches first through a hard-packed light grey soil and finally into a fine-textured grey sand.

Cache # 12 - a pit 24 by 20 inches in diameter was excavated to a depth of 6 inches. The pit was not detected on the original floor level but was discovered four inches below the floor. A post was located in the base of the pit but could not be detected in the fill. Presumably the pit was dug some time after the post had been placed in this position.

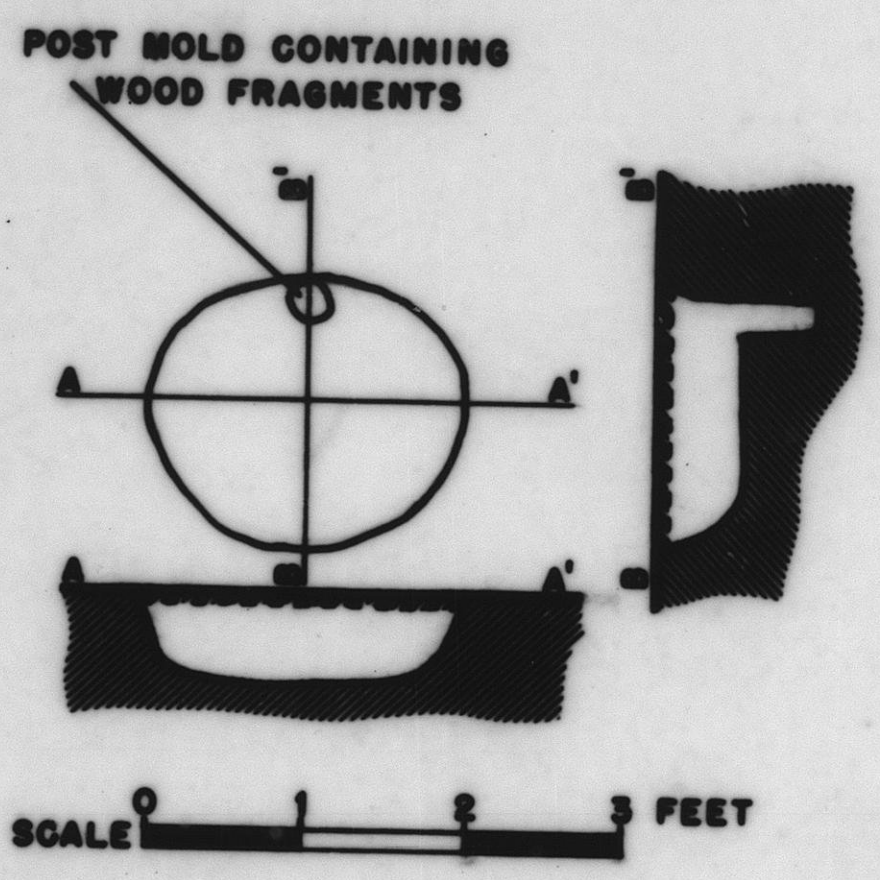



Figure 21b. Feature 15, Cache pit 12.

Table 14. Bone Implements, Feature 15 and Related Units.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rib-edge awl/flaker | - | - | - | 1 | 3 | 1 | 1 | 1 | - | 2 | 1 | 1 |
| Split cannon-bone awl | - | - | - | - | - | - | - | 1 | - | 1 | - | - |
| Quartered metapodial awl | - | - | - | - | 1 | - | - | - | - | - | - | - |
| Splinter awl | - | - | - | - | - | - | - | - | - | - | 1 | - |
| Flat split-rib awl | - | - | - | - | - | - | - | 1 | - | - | - | - |
| Notched scapula hoe | - | 9 | - | - | 2 | - | - | 4 | 3 | 3 | - | 2 |
| Trimmed scapula hoe | - | 4 | 2 | - | - | - | - | 1 | 1 | 1 | - | - |
| Hoe blade fragments | 6 | 5 | 4 | 3 | 5 | 1 | - | 2 | 1 | 11 | 2 | 9 |
| Hide grainer | 2 | - | 1 | - | 1 | - | - | 1 | 1 | 1 | - | 1 |
| Paint applicator | - | - | - | - | - | - | - | - | - | 1 | - | - |
| Rib shaft straightener | - | - | - | - | 1 | 1 | - | - | - | - | - | - |
| Knife handle | - | 1 | - | - | 1 | 1 | - | 1 | - | 1 | 1 | 2 |
| Antler flaker | - | - | 3 | - | 5 | - | - | 3 | - | - | - | - |
| Shaped flaker | - | - | - | - | - | - | - | - | - | 1 | - | - |
| Smoothed quill flattener | - | 1 | - | - | 1 | - | - | - | - | - | - | - |
| Polished quill flattener | - | - | 1 | - | - | - | - | - | - | 1 | - | - |
| Scapula cleaver | - | - | - | - | 1 | - | - | 1 | - | - | 1 | - |
| Scapula digging tool | - | - | - | - | 1 | - | - | - | - | 4 | - | - |
| Backed scapula knife | - | - | - | - | 2 | - | - | 2 | - | 1 | 1 | 1 |
| Median ridge scapula knife | - | - | 2 | - | - | - | - | - | - | - | - | - |
| Thin scapula knife | - | - | - | - | 1 | - | 1 | 2 | - | - | - | - |
| Utilized rib | - | 3 | - | - | 2 | - | - | 4 | - | - | - | - |
| Tubular bead | - | - | - | - | - | - | - | - | - | - | - | 1 |
| Bone whistle | - | - | - | - | - | - | - | - | - | 1 | - | - |
| Worked elk antler sections | - | - | - | - | 1 | - | - | - | - | 1 | - | - |

1. House floor to 6 inches below floor.
2. House floor.
3. House floor to 6 inches above floor.
4. Surface levels above house.
5. Cache 1.
6. Cache 2.
7. Cache 4.
8. Cache 5.
9. Cache 7.
10. Cache 9.
11. From refuse north of Fea. 15, (between Fea. 8 and 15).
12. Refuse east of Fea. 15.

Table 15. Stone, Brass and Pottery Implements, Feature 15 and Related Units.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chipped stone proj. points: | | | | | | | | | | | | | |
| Simple triangular | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 3 | 1 | 1 | 3 | 1 | 1 |
| Side-notched triangular | - | - | - | 1 | 1 | 1 | 1 | - | - | 1 | - | - | - |
| Heavy triangular | - | - | 1 | - | - | - | - | - | - | - | 1 | - | - |
| Unclassified/tip fragments | 1 | - | - | - | - | - | - | - | - | - | 2 | - | - |
| End scrapers: | | | | | | | | | | | | | |
| Variety 1 | - | 1 | 2 | - | 2 | 2 | 2 | - | 1 | 1 | - | 1 | 1 |
| Variety 2 | - | - | - | 1 | - | 1 | - | 2 | - | 2 | - | - | - |
| Variety 3 | - | 1 | - | - | - | 2 | - | 3 | - | 3 | 2 | 2 | - |
| Variety 4 | - | 2 | 1 | - | 1 | - | 2 | - | 1 | 1 | 2 | - | - |
| Variety 5 | - | 1 | 1 | - | 1 | - | - | 1 | - | 2 | 1 | 2 | - |
| Unclassified/fragments | - | - | - | - | - | 1 | - | - | 1 | - | - | 1 | - |
| Side scrapers | - | - | - | - | 1 | 1 | - | - | - | - | - | - | - |
| Retouched flake | - | 1 | - | - | - | - | - | - | - | 1 | - | - | - |
| Retouched parallel-sided fl. | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| Chipped stone knives: | | | | | | | | | | | | | |
| Badlands knife | - | 1 | - | 1 | 1 | 1 | - | 2 | 1 | 1 | 1 | 1 | - |
| Dodd knife | 1 | 3 | - | - | - | - | - | 1 | - | - | - | - | - |
| Broad, bifacial blade | - | - | - | - | 1 | - | - | - | - | - | - | - | - |
| Small, bifacial knife | - | - | 1 | - | - | 3 | - | - | - | - | - | - | - |
| Strike-a-light | 2 | 1 | 1 | - | - | 2 | - | - | - | 1 | - | - | 1 |
| Hammerstone | 4 | 6 | 3 | - | 3 | - | 2 | 1 | 2 | 5 | - | - | 1 |
| Abrader, clinker | - | 1 | 3 | - | 3 | 2 | 2 | 2 | - | 1 | - | 1 | - |
| Abrader, sandstone | 2 | 1 | 1 | 3 | 1 | - | 1 | 1 | - | - | - | - | - |
| Grooved abrader, clinker | - | 2 | - | - | 2 | - | - | 1 | 1 | - | - | - | - |
| Grooved abrader, sandstone | - | - | 1 | - | - | - | - | - | - | - | - | - | - |
| Shaft smoother | - | 1 | - | - | - | - | - | - | - | - | - | - | - |
| Grinding stone | 2 | 2 | - | - | - | - | - | - | - | - | - | - | - |
| Polishing stone | - | - | - | - | - | 1 | - | - | - | - | - | - | - |
| Full-grooved axe | - | 1 | - | - | - | - | - | - | - | - | - | - | - |
| Grooved maul | - | 2 | - | - | - | - | - | - | - | 1 | - | - | - |
| Catlinite pipe fragment | - | - | - | - | - | - | - | - | - | - | - | - | 1 |
| Brass tube | 1 | 1 | - | - | - | - | - | - | - | - | - | - | - |
| Brass clip | - | - | - | 1 | - | 1 | - | - | - | - | - | - | - |
| Brass sheet fragments | - | - | - | 1 | 1 | 1 | - | - | - | - | - | - | - |
| Pottery disc | 1 | - | - | - | - | - | - | - | - | - | - | - | - |

1.-12. see preceding table
13. Cache 12.

Cache # 8 - 1 clinker abrader

Table 16. Pottery, Feature 15 and Related Units.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Talk. Crow Brushed . . . . | 21 | 54 | 3 | 20 | 9 | 2 | 21 | 18 | 34 | 2 | 1 | 2 |
| Talk. Crow Cord Impressed | 5 | 14 | 3 | 16 | 10 | - | 24 | 6 | 16 | - | - | 6 |
| Talk. Crow Indented . . . | 22 | 59 | 2 | 40 | 14 | 1 | 29 | 10 | 41 | 1 | 2 | 3 |
| Talk. Crow Straight Rim . | 2 | 5 | 1 | 9 | 5 | 1 | 2 | 2 | 7 | - | - | - |
| Intermediate Plain . . . . | 1 | 6 | 4 | 2 | 3 | - | 4 | 2 | 7 | - | 1 | - |
| Intermed. Cord Impressed . | 1 | 1 | 2 | - | 3 | 1 | 1 | 2 | 10 | - | - | 1 |
| Intermed. Tool Impressed . | 2 | 8 | - | 2 | 1 | - | 1 | - | 2 | - | - | - |
| Intermed. Wavy Rim . . . . | 1 | - | - | - | - | - | 1 | 1 | - | - | - | - |
| Stanley Plain . . . . . | 5 | 9 | - | 1 | - | - | - | - | 3 | - | - | - |
| Stanley Cord Impressed . . | - | 4 | - | 2 | 2 | - | - | - | 3 | 1 | - | - |
| Stanley Tool Impressed . . | 2 | - | 2 | - | 1 | 4 | 1 | 1 | - | 1 | - | - |
| S-Rim . . . . . | 6 | 13 | 1 | 21 | 8 | 1 | 4 | 1 | 16 | - | - | - |
| Le Beau Punctate . . . . . | - | - | - | - | - | - | - | - | - | - | - | 1 |
| Bowls . . . . . | - | 1 | - | - | - | - | 1 | - | 2 | - | - | - |

1 - Fill above floor
2 - Floor level
3 - Floor to 6 inches below
4 - Cache 1
5 - Cache 2
6 - Cache 4
7 - Cache 5
8 - Cache 7
9 - Cache 9
10 - Cache 12
11 - Refuse between Fea. 8 and 15
12 - Refuse east of Fea. 15

Cache 3: 1 - Talking Crow Indented; 1 - Intermediate Cord Impressed.
Cache 6: 1 - Talking Crow Indented; 1 - Stanley Tool impressed; 1 - S-Rim.
Cache 8: 1 - Intermediate Tool Impressed; 1 - Stanley Cord Impressed.

Table 17. Pottery Totals, Feature 15 and Related Units.

| | Total Sherds | % |
|---|---|---|
| Talking Crow Brushed . . . . . | 187 | 25.2 |
| Talking Crow Cord Impressed . . . . . | 100 | 13.5 |
| Talking Crow Indented . . . . . | 226 | 30.5 |
| Talking Crow Straight Rim . . . . . | 34 | 4.6 |
| Intermediate Plain . . . . . | 30 | 4.1 |
| Intermediate Cord Impressed . . . . . | 23 | 3.1 |
| Intermediate Tool Impressed . . . . . | 17 | 2.3 |
| Intermediate Wavy Rim . . . . . | 3 | .4 |
| Stanley Plain . . . . . | 18 | 2.4 |
| Stanley Cord Impressed . . . . . | 13 | 1.8 |
| Stanley Tool Impressed . . . . . | 13 | 1.8 |
| S-Rim . . . . . | 72 | 9.7 |
| Le Beau Punctate . . . . . | 1 | .1 |
| Bowls . . . . . | 4 | .5 |
| TOTAL . . . | 741 | |

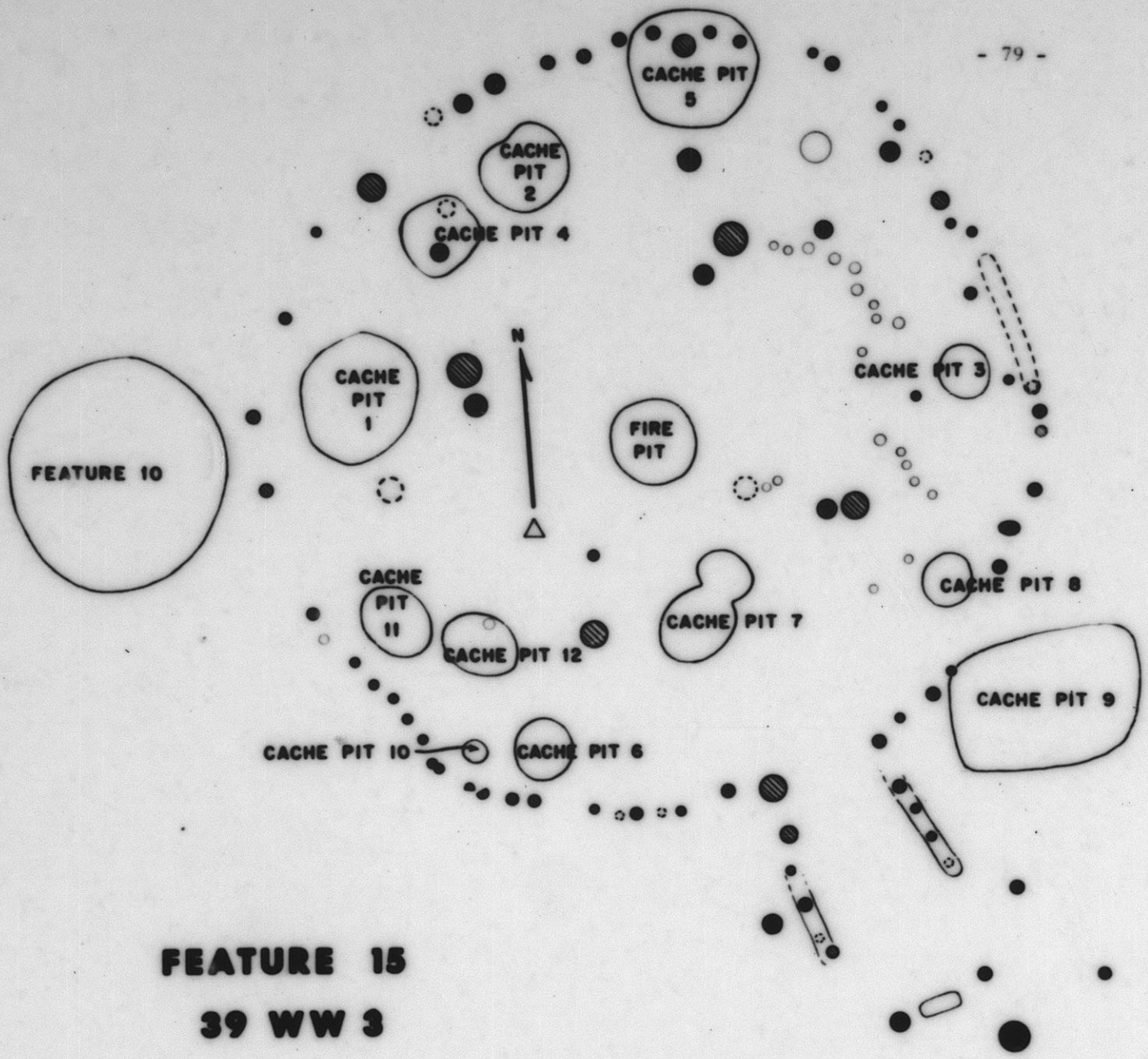



Figure 22. Map of Feature 15.

## Feature 17

This feature consists of a deep refuse area, the highest zone of midden material in the site as suggested by surface contours, which extends as a tall ridge several hundred feet in length ( interrupted by one low section in the center) in an east-west direction at the southern margin of the site. A trench was excavated in this area 45 feet in length to sterile subsoil, running from the west half of square 78R21 to 82R21, for a full width of ten feet. In the western portion of the trench subsoil was encountered at a depth of 40 inches. The deposit gradually thickened to the eastern end where a hard-packed house floor was found at a depth of 48 inches.

The most notable feature in the western end of the test trench was a ditch encountered in square 79R21. The ditch is 64 inches in width near its top, tapering slight in width toward the base where it was 46 inches wide. The beginning of the pit could be traced from a depth of 30 inches below the surface and it extended to a maximum depth of 71 inches below the surface. No pattern of post molds was found adjacent to it that would mark a palisade. Possibly it represents a drainage ditch comparable to the one previously described as the West Ditch.

While the thickness of the deposit suggests that some change in artifact content with depth might be detected, the situation was complicated by the fact that squares frequently had pits cutting through them and these often could not be detected until the lower levels were reached.

At the eastern end of the trench a series of superimposed house floors were noted. Due to lack of time, no attempt was made to trace out the post mold patterns in this area.

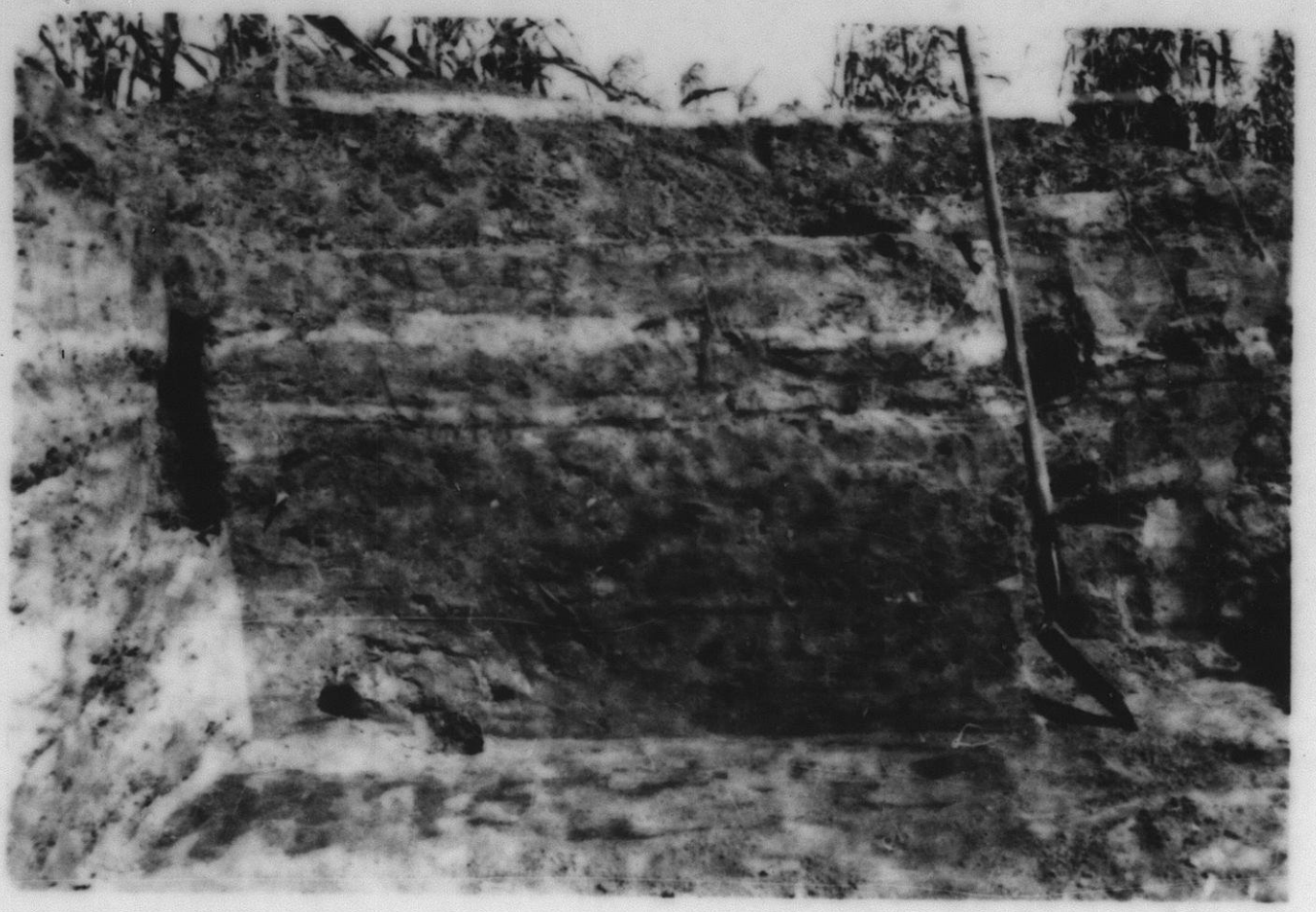


Figure 23. 39WW3, Feature 17. East profile wall showing superimposed house floors.

Pit 1. Located in the SW¼81R21, it appeared to have been a cache pit with a restricted mouth which began immediately at the plow zone. Presumably some of the upper portion of the pit had been removed by plow action. Abundant rodent burrows which extended through the pit makes it likely that the contents could be contaminated by the surrounding zones. The base of the pit reached 4 feet below the surface.

Pit 2. A second pit was discovered at the southern edge of square SW¼81R1. This pit was discovered immediately below the plow zone and had a maximum diameter of 41 inches.

Pit 3. The outer margin of a large cache pit was seen at the base of the profile of square SW¼81R1. The base of the pit was 80 inches from the surface of Feature 17 with the bottom diameters being 72 by 70 inches. Excavation revealed that the pit contained three burials and an additional skull.

Skull. The skull was found in Pit 3 at a depth of 54 inches below the surface. Three large sections of a pottery vessel were immediately below the skull, suggesting that it had been placed to rest upon them.

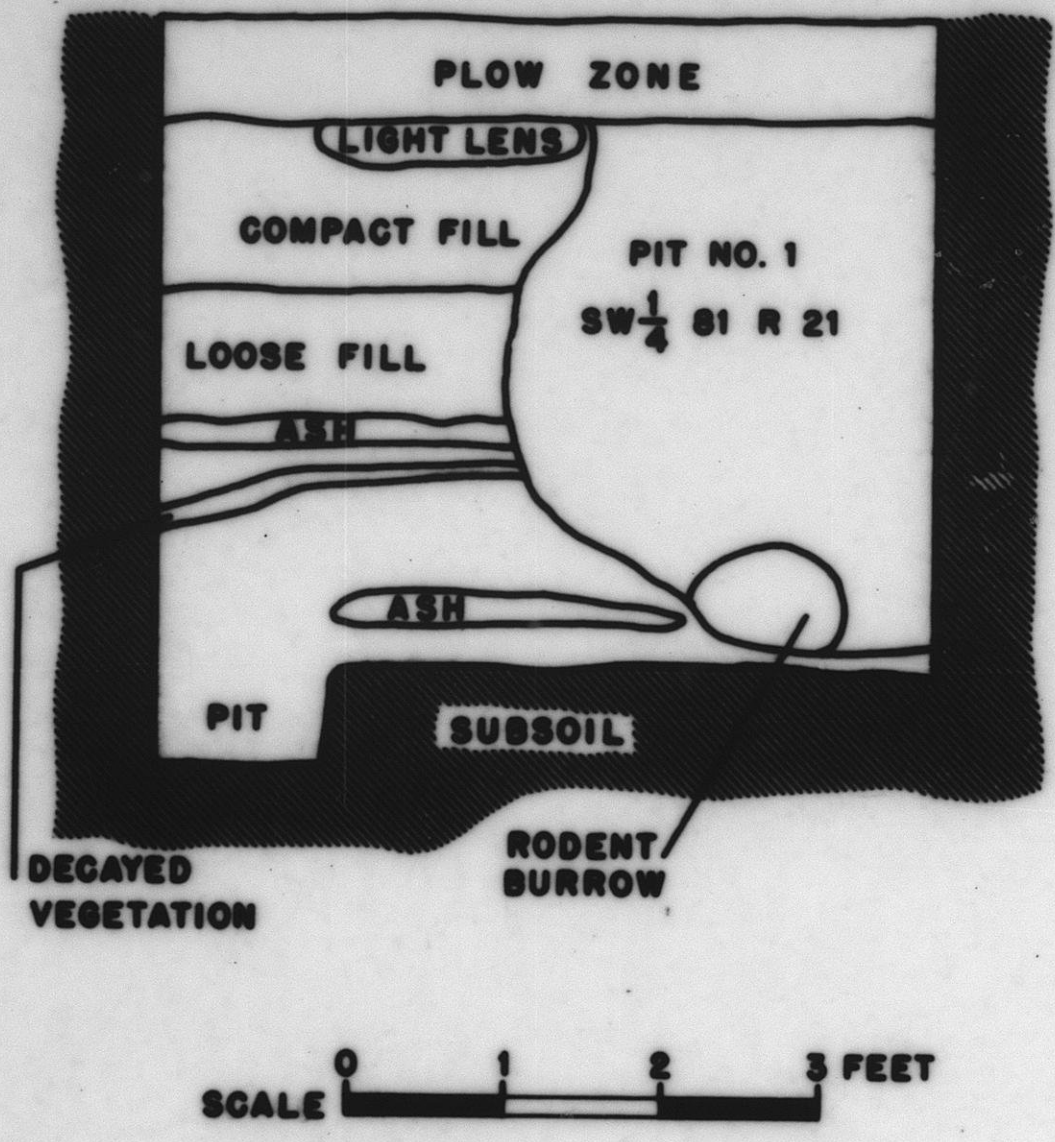



Figure 24. Feature 17. West profile wall of square SE¼81R21 showing Pit 1.

Burial 9. 20 inches below the skull or a total of 74 inches below the surface in Pit 3 was found the burial of an adult female. The individual was partially flexed on the left side with the head oriented to the south-east. The arms were loosely flexed so that the hands were brought opposite the face. The legs were also loosely flexed with the femora extending at nearly a right angle from the long axis of the body. A thin line of decayed organic matter was found over the burial which may have been the remains of a wood covering. However no actual sections of identifiable wood were found. The soil around the skeleton was grey in color unlike the brown of the general pit fill.

Burial 10. 24 inches to the east and at the same level as the burial of the adult were the remains of a child and an adolescent, the child being placed on top of the adolescent. The burial of the child was face downward, the skull being oriented to the south. The legs were slightly flexed to the individuals left side and the arms were also flexed and placed under the body. Two sections of a pottery vessel were found under the knees of this individual and thus over the ribs of the burial below. In general the child rested above the arms and legs of the lower burial.

The burial of the adolescent was partially flexed on the right side, the long axis being oriented north-south with the skull to the south. The rib case and pelvic region of this individual had been crushed over so that it rested with the dorsal surface downward. Consequently the right arm was flexed beneath the rib cage with the left arm flexed in front of the face. Due to this crushing the left leg was flexed rested partially below the right leg which was loosely flexed with the femur at a right angle to the long exis of the body. Traces of wood were found near the

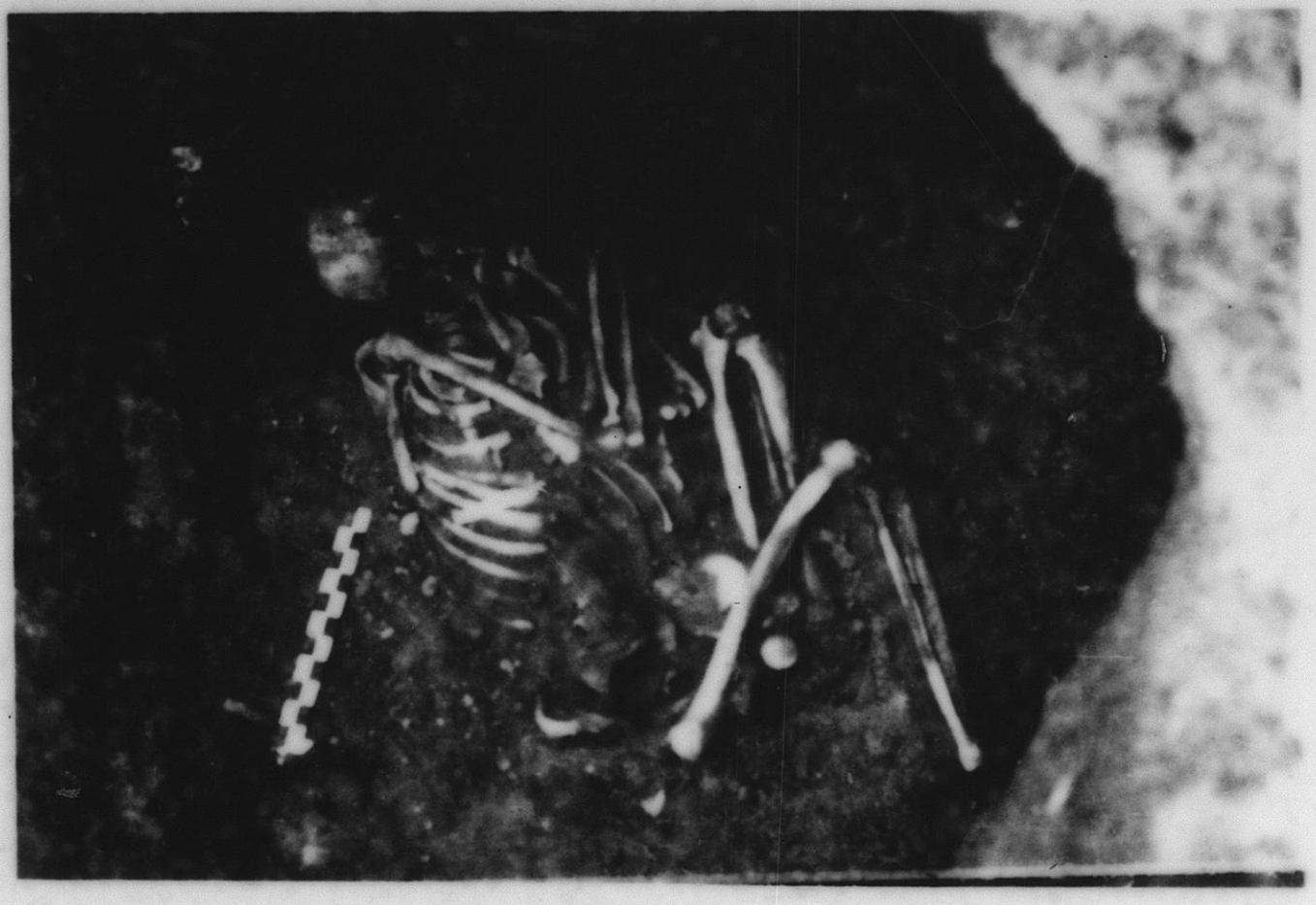


Figure 25. Feature 17. Burial 9, placed in cache pit in SW¼ of square 81R21.

Figure 26. Feature 17. Burial 10, a child placed below Burial 10 in the same cache pit.

Figure 27. 39WW3, Feature 17. Burial 10, details of position of adolescent adjacent to infant burial illustrated in preceding figure.

bottom burial suggesting that these individuals had a wood covering. It is probable that Burials 9 and 10 most have been inserted in the Cache pit at the same time.

Pit 4. This pit, representing the base of a cache pit, was discovered in squares NW¼82R21 and NE¼81R21. The pit was not detected until a depth of 36 inches was reached. The top (of this section of the pit) was 55 by 50 inches in diameter, with the diameter rapidly increasing to a diameter of 78 inches at the flat bottom which was 28 inches below the point at which the pit had been detected. A possible house floor was indicated at the position where the initiation of the pit was detected.

Table 18. Bone Implements, Feature 17.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| Rib-edge awl/flaker | 4 | 3 | 1 | - | - | 1 | - | - | - |
| Cannon-bone awl | 1 | - | - | - | - | - | - | - | - |
| Splinter awl | - | 1 | - | - | - | - | - | 1 | - |
| Simple scapula hoe | - | 1 | - | - | - | - | - | - | 1 |
| Notched scapula hoe | 1 | - | 1 | 2 | 6 | - | - | 1 | 3 |
| Trimmed scapula hoe | 2 | 4 | 1 | - | 4 | - | - | 3 | - |
| Hoe blade fragments | 24 | 8 | 9 | 1 | 10 | - | 2 | 8 | 2 |
| Unfinished hoe | - | - | - | - | - | - | - | 1 | - |
| Hide grainer | 3 | 3 | - | - | 1 | - | - | - | 1 |
| Rib shaft straightener | 3 | 2 | 1 | 3 | 1 | - | - | 1 | 3 |
| Knife handle | 1 | - | 2 | - | 1 | - | - | 1 | - |
| Antler flaker | 1 | 4 | - | - | 2 | - | - | - | 1 |
| Rough quill flattener | - | - | 1 | - | - | - | - | - | - |
| Scapula cleaver | 1 | 1 | - | - | - | - | - | - | - |
| Scapula digging tool | 2 | 2 | 1 | 1 | 1 | - | - | 4 | 1 |
| Backed scapula knife | 1 | - | - | - | 1 | - | - | - | - |
| Thin scapula knife | - | - | 1 | - | - | - | - | - | - |
| Utilized rib | 2 | 1 | 2 | - | 3 | 1 | - | - | 2 |
| Utilized scapula spine | 1 | - | - | - | - | - | - | - | - |
| "Needle" - non-grooved | - | - | - | 1 | - | - | - | - | - |
| "Needle" - grooved | - | 1 | - | - | - | - | - | 2 | - |
| Flesher, bison metatarsus | - | 1 | - | - | - | - | - | - | - |
| Notched bone point | - | - | 1 | - | - | - | - | - | - |
| Antler phallus | 1 | - | - | - | - | - | - | - | - |

1. Top one foot of deposit.
2. Second foot of deposit.
3. Third foot of deposit.
4. Fourth foot of deposit.
5. Miscelaneous pits/no placement as to depth.
6. Pit 1.
7. Pit 2.
8. Pit 3.
9. Pit 4.

Table 19. Stone and Brass Implements, Feature 17.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| Chipped stone projectile points: | | | | | | | | | |
| Simple triangular | 8 | 2 | 2 | - | 4 | - | - | 2 | 1 |
| Side-notched triangular | 6 | 2 | - | - | 2 | - | - | 2 | 1 |
| Heavy triangular | - | 1 | - | - | 1 | - | - | 1 | - |
| Unclassified/tip fragments | 3 | 1 | 1 | - | 3 | - | 1 | - | - |
| End scrapers: | | | | | | | | | |
| Variety 1 | 5 | 1 | 3 | - | 1 | - | 1 | 3 | - |
| Variety 2 | 1 | 1 | 2 | - | 1 | - | - | - | - |
| Variety 3 | 5 | 5 | - | - | 2 | - | - | - | 1 |
| Variety 4 | 4 | 1 | 1 | - | 1 | - | - | - | 1 |
| Variety 5 | 2 | 4 | 2 | - | - | - | - | - | - |
| Unclassified/fragments | 1 | - | 1 | - | - | - | - | - | - |
| Retouched flakes | 2 | - | - | - | - | - | - | - | - |
| Chipped stone knives: | | | | | | | | | |
| Badlands knife | 2 | 2 | 1 | 1 | - | - | - | 2 | - |
| Dodd knife | - | 1 | 1 | - | 1 | - | - | - | - |
| Beveled knife | 2 | 1 | - | - | - | - | - | - | - |
| Strike-a-light | 2 | - | - | - | 1 | - | - | 1 | - |
| Hammerstone | 3 | 5 | 2 | - | - | - | - | 2 | - |
| Pitted hammerstone | 1 | - | - | - | - | - | - | - | - |
| Abrader, clinker | 4 | 4 | 1 | - | - | - | - | 3 | - |
| Abrader, sandstone | 1 | - | - | - | - | - | - | - | - |
| Grooved abrader, clinker | 3 | 1 | 1 | 1 | - | - | - | - | - |
| Grooved abrader, sandstone | - | 1 | 1 | - | - | - | - | - | - |
| Grinding stone | 1 | - | - | - | - | - | - | - | - |
| Grooved maul | 2 | - | - | - | 1 | - | - | - | - |
| Catlinite pipe fragment | 2 | - | - | - | - | - | - | - | - |
| Catlinite counter | 1 | 1 | - | - | - | - | - | - | - |
| Catlinite scrap | - | 1 | - | - | - | - | - | - | - |
| Brass, projectile point | 1 | - | - | - | - | - | - | - | - |
| Brass, tinkler | - | - | - | - | - | - | 1 | - | - |
| Brass, tube | - | - | - | - | - | - | 1 | - | - |
| Brass, knife | - | - | - | - | 1 | - | - | - | - |
| Brass, wire, coiled | - | - | - | - | - | - | - | 1 | - |
| Brass, sheet fragments | 1 | 1 | - | - | 2 | - | - | 2 | - |

Table 20. Pottery, Feature 17.

| | Top Foot | 2nd Foot | 3rd Foot | Pits | Total | % |
|---|---|---|---|---|---|---|
| Talking Crow Brushed | 127 | 22 | 3 | 50 | 202 | 24.7 |
| Talking Crow Impressed | 59 | 23 | 4 | 17 | 103 | 12.6 |
| Talking Crow Indented | 95 | 30 | 10 | 47 | 182 | 22.3 |
| Talking Crow Straight Rim | 19 | 9 | 4 | 8 | 40 | 4.9 |
| Intermediate Plain | 31 | 13 | - | 8 | 52 | 6.4 |
| Intermediate Cord Impressed | 19 | 4 | - | 9 | 32 | 3.9 |
| Intermediate Tool Impressed | 14 | 3 | - | 5 | 22 | 2.7 |
| Intermediate Wavy Rim | 2 | - | - | - | 2 | .2 |
| Stanley Plain | 50 | 2 | - | 8 | 60 | 7.3 |
| Stanley Cord Impressed | 13 | 3 | 1 | 10 | 27 | 3.3 |
| Stanley Tool Impressed | 16 | 10 | 2 | 10 | 38 | 4.7 |
| S-Rim | 24 | 9 | 6 | 15 | 54 | 6.6 |
| Le Beau Punctate | - | 1 | 1 | - | 2 | .2 |
| Bowls | - | - | - | 1 | 1 | .1 |
| TOTAL | | | | | 817 | |

## Feature 18

This feature was the easternmost to be found along the east-west lane that formed the major axis along which testing operations were carried out to give a cross-section of the site. Like the other midden areas it was marked by a mound-like eminence but again since midden material was virtually limited to the upper foot, the debris would appear to cap a natural rise. The initial excavations were carried out in the NE¼140R1 and the NW¼141R1, a position marking the central portion of the midden area. It will be recalled that the central portion of Feature 3, the westernmost midden deposit at the site was in square 52R5. A distance of 900 feet thus marks the approximate east-west dimensions of the site.

Excavations of midden material in the area also produced occasional scattered fragments of human bone, particularly infant material. Both plowing and rodent activity had severely disturbed material in the unit.

Three such finds are specifically designated burials.

Burial 7, located 9 inches south of stake 142 and 8 inches below the surface of the midden, consited of an infant burial. It is represented by some cranial sections and ribs. Various long bones and vertebrae scattered by rodent action and plowing also probably are remains of this individual. The burial itself was interrupted by a large bison rib that passed through its center in an east-west direct. No grave goods were found.

Burial 8, located 6 inches west of stake 141R1 at a depth of 14 inches, also consisted of the remains of a crushed infant cranium plus a few additional bones that may belong to the same individual. Disturbance is again indicated here. Five feet to the east of this burial some fragments of decayed wood were found sloping at a 45 degree beginning at the plow zone, 5 inches below the surface, and extending to a depth of 16 inches. A glass bead was found adjacent to this structure. The traces of a wood covering are of a size that would be appropriate for an infant burial and would conform to the practices previously observed in connection with adult burials (Burial 5 of Feature 11, for example). Possibly either Burial 7 or Burial 8 had originally been buried below this canopy and moved from the original position by rodent activity.

The final excavations at Feature 18 designed to increase the ceramic sample yielded an additional fragment of infant skull and also the discovery of two additional burials.

Burial 11, an adult female, had been placed on the right side with the head to the north and the face to the west. Although the postcranial skeleton was in good condition only a portion of the frontal bone was adjacent to the original position of the skull although the mandible was still in place.

This disturbance was probably due to plow action since the position of the skull was only 6-8 inches below the surface. The legs were tightly folded at a right angle to the long axis of the body. The humerus of the left arm was extended along the axis of the body with the radius and ulna flexed outward at a right angle to the long axis. The right arm was in a generally extended position though actually bent downward at the elbow region so that the forearm extended upward at about a 30-degree angle to rest on top of the left wrist. A glass bead was present between the femora and a large rim sherd in the chest region. A layer of decayed wood, 2-3 inches in thickness, covered the pelvic and leg region. The wood doubtless

Figure 28. 39WW3, Feature 18. Burial 11 from South.

originally covered the entire burial but evidence for it would doubtless be destroyed by plow action. This burial was located 54 inches east of 141R1.

Burial 12, an additional burial located to the east of Burial 11 at the same level as this burial, was found by Mr. Leonard Spiry, son of the operator of the farm after our work had terminated. The head of the individual was also reported as being to the south with the burial badly disturbed by plow action. A lump of what appeared to be hematite was reported as found with the burial.

Table 21. Bone, Stone and Brass Artifacts, Feature 18

| | |
|---|---|
| Rib-edge awl/flaker | 5 |
| Split cannon-bone awl | 1 |
| Quartered metapodial awl | 1 |
| Awl fragment | 1 |
| Notched scapula hoe | 1 |
| Hoe blade fragments | 3 |
| Rib shaft straightener | 2 |
| Rough quill flattener | 1 |
| Scapula digging tool | 2 |
| Backed scapula knife | 1 |
| Thin scapula knife | 2 |
| Antler drift | 1 |

Stone Implements, Feature 18

| | |
|---|---|
| Simple triangular point | 2 |
| End scraper, variety 1 | 6 |
| End scraper, variety 2 | 1 |
| End scraper, variety 3 | 4 |
| End scraper, variety 4 | 2 |
| End scraper, variety 5 | 1 |
| Parallel-sided flake, retouched | 1 |
| Badlands knife | 1 |
| Dodd knife | 4 |
| Hammerstone | 1 |
| Hammerstone, pitted | 1 |
| Abrader, clinker | 2 |
| Small, bifacial knife | 1 |

| | |
|---|---|
| Brass: | |
| tube | 1 |
| disc | 1 |
| Iron, sheet fragment | 1 |

Table 22. Pottery, Feature 18.

| | Freq. | % |
|---|---|---|
| Talking Crow Brushed | 20 | 9.9 |
| Talking Crow Cord Impressed | 21 | 10.4 |
| Talking Crow Indented | 87 | 43.1 |
| Talking Crow Straight Rim | 7 | 3.5 |
| Intermediate Plain | 1 | .5 |
| Intermediate Cord Impressed | 1 | .5 |
| Intermediate Tool Impressed | 4 | 2.0 |
| Stanley Cord Impressed | 3 | 1.5 |
| Stanley Tool Impressed | 1 | .5 |
| S-Rim | 41 | 20.3 |
| Le Beau Punctate | 2 | 1.0 |
| Nordvold Horizontal Incised | 14 | 6.9 |
| TOTAL | 202 | |

## Features 19 - 22

These final feature numbers were assigned to a series of test pits designed to locate the position of houses. Although they were not successful in doing this, the negative evidence they provide on the absence of structures in these areas is of some importance. Their positions may be specifically located on the site map.

Feature 19. A test pit located south of Feature 6, 2.5 feet square, which reached subsoil at a depth of 17 inches. No material or evidence of a structure was found.

Feature 20. A test pit located 32 feet southeast of stake 70R13. It was 2.5 feet square and reached subsoil at 15 inches. No material or evidence of a structure was found.

Feature 21. A test pit, 2 feet square, excavated to a depth of 15 inches to the light grey subsoil. Its position was immediately southeast

of stake 69R8. No evidence of a structure was found though a few potsherds were obtained.

Feature 22. A test pit, located between Features 7 and 2, excavated to a depth of 17 inches with dimensions of 2 feet square. No evidence of a structure was found and no material other than some bone fragments found in the upper 2 inches.

## IV. 39WW10 - THE SPIRY SITE

In the discussion of 39WW3, the Spiry-Eklo site, it was mentioned that the easternmost portion of this site was Feature 18. Surface collections from the general area in cultivation had revealed that at a very considerable distance east of the concentration of debris marking 39WW3 and separated by a sterile area lacking evidence of human occupation, was another area productive of cultural debris. This area was 763 feet east and 1100 feet south of Feature 18. In view of the physical separation of the two areas, it seemed desirable that a separate site number be assigned to it although this had not been done in the original River Basin survey work in this area. The units are too distant to have formed part of a single village occupation. The site number 39WW10 was assigned to the area by the headquarters of the Missouri Basin Project at Lincoln, Neb.

Two distinct sectors were excavated at the Spiry site. Initially, test pits were sunk in the area by hand in the hope that house pits could be located that would be adapted to excavation by power machinery. The time available for excavation was passing rapidly and work in the Spiry-Eklo site had demonstrated that the excavation of house units provided abundant cultural material and, of course, information on architectural pattern. But although low areas in the undulating terrace that might represent a house pit were tested by means of a series of test pits, no trace of a house structure could be detected. It was therefore concluded that the houses might be located in the high points of the field--slightly elevated areas initially thought to be small midden accumulations comparable to those that had been excavated at 39WW3. Testing one of these revealed traces of what appeared

to be a burned house floor at a position approximate 10-12 inches below the present surface. This area was immediately below the plow zone and, in fact, the floor was furrowed by plow action. Excavation of a preliminary trench in this area, three feet in width and twenty feet in length, failed to reveal a post mold pattern but it was concluded that further excavation was warranted and the area was designated Feature 1. Feature 2 was a slightly elevated midden area, approximately 35 feet in diameter which rose about 18 inches above the adjacent field. While Feature 1 was located 86 feet from the margin of the slight terrace which corresponds to the terrace upon which 39WW3 is located, Feature 2 was immediately adjacent to its margin. A grid of five foot squares was placed over both regions and further excavations carried out to locate structural features.

## Feature 1

Stripping the soil from this feature resulted in finding a complicated pattern of post molds (see Figure 29) representing a circular house, approximately two-thirds of which was excavated. However, sufficient additional posts were present to indicate the possibility of a superposition of structures in the area, or at the very least extensive rebuilding.

# 39WW10

# FEATURE 1

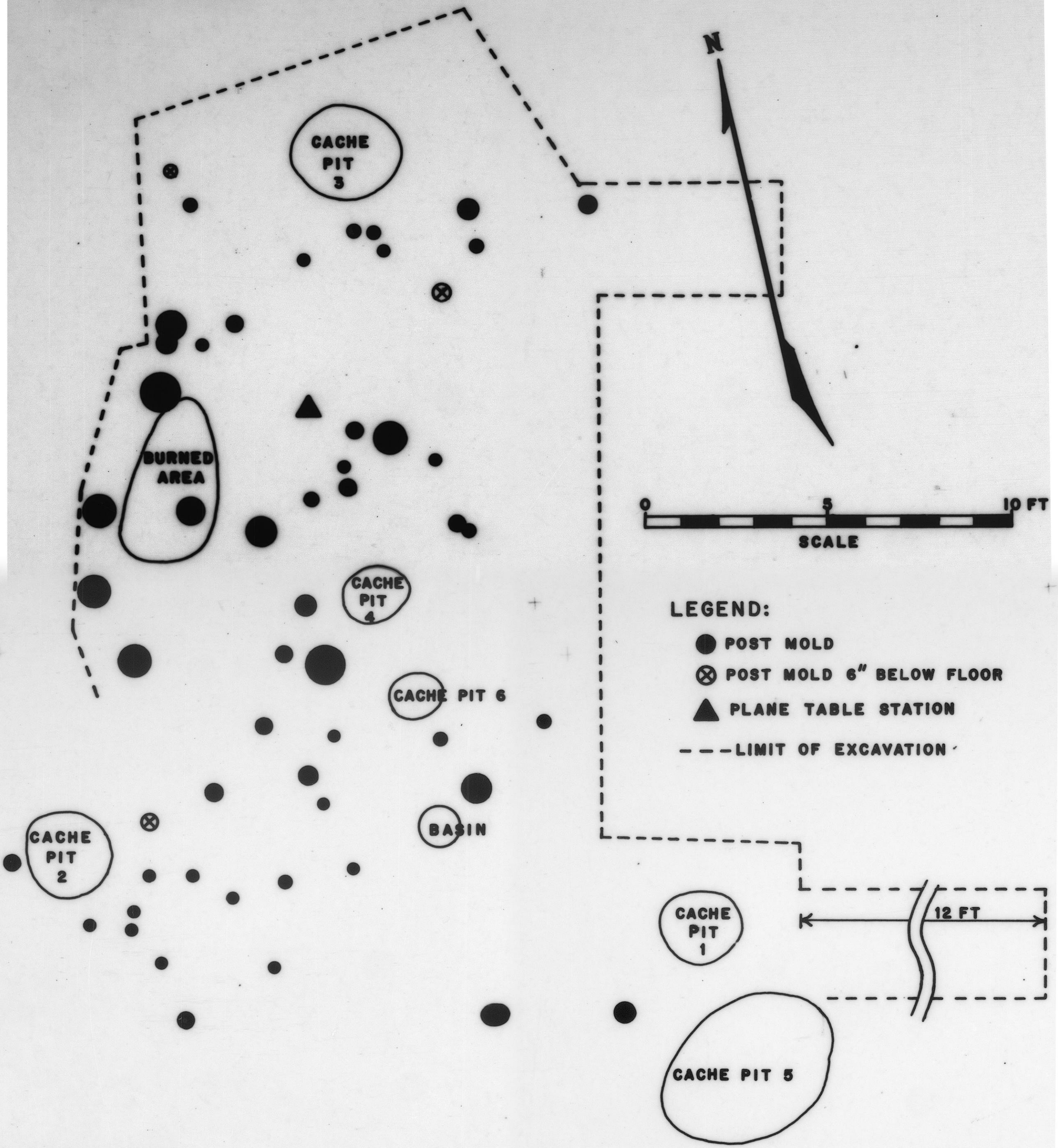



FIGURE 29.

A series of cache pits were also located in the area of Feature 1, each of these being numbered serially. Their precise horizontal position may be seen on the map of the feature.

Cache 1. The pit was located at the southeastern edge of the house at a depth of approximately 16 inches below the surface. The fill was a sandy soil. The contricted mouth of the pit had a diameter of 24-26 inches, this collar being 18 inches in height. Below this, the pit flared out abruptly to a maximum diameter at the base of 87 by 82 inches. The total height of the pit from the point at which the mouth was located was 44 inches.

Cache 2. This pit was located at a depth of 18 inches below the surface while exploring below the house floor. Its position places it within and near the presumed southwestern wall of the structure. Measuring from the house floor, the pit had a maximum depth of 52 inches. The diameter at the mouth was 29 inches and at the base 72 inches. The cache penetrates into and has a flat base composed of clear white sand. The fill consisted of sand with a considerable admixture of ash and charcoal.

Cache 3. The pit was located north of the house wall and found at a depth of 16 inches below the surface while attempting to locate post molds. The general form was bell-shaped with a slightly convex base. The diameter at the mouth was 32 inches and at the base 53 inches. The depth of the pit was 37 inches measured from the floor level.

Cache 4. A small pit located near the probable center of the house. The diameter at the mouth, slightly below the floor level, was 22 inches. The pit expanded sharply to a flat base with a diameter of 32 inches.

The depth of the pit, from the floor level, was 21 inches. The cache contained abundant ash but little in the way of cultural material or bone refuse.

Cache 5. A pit, located immediately to the south and outside the house wall near Cache 1, found while attempting to locate wall posts. It contained abundant refuse and cultural material. Extensive rodent activity had obscured the outline and depth but the form indicated was a shallow basin, 14 inches in depth below the floor level, and oval in outline with dimensions of 45 by 23 inches. Its shallow depth may reflect the fact that the cache began on or near the surface levels and that the top portion was not recognized in the dark soil. The maximum dimensions of the base of the pit were 68 by 70 inches.

Cache 6. Perhaps this pit was a large post mold, rather than a cache or storage pit but the fill contained large rocks, a grooved maul, ceramic material and bone. The pit is somewhat barrel-shaped with a slightly convex base. The diameter at the mouth, at the floor level of the house, was 16 inches. The maximum diameter was 18 inches and the depth from the floor level was 26 inches.

## Feature 2

Feature 2 was the most prominent midden area at the Spiry site and several trenches were excavated in any attempt to locate structural features associated with it. The area of midden debris had a maximum thickness of approximately 18 inches and contained abundant beds of ash with some charcoal. Bone debris and cultural material, however, were notably less abundant than at 39WW3. A typical soil profile indicated

plowing penetrated from 8 to 10 inches deep in the sandy soil. Below this in restricted areas appeared the beds of ash or light sand charged with charcoal. This was then superimposed upon a sterile dark, sandy soil or a mottled sandy soil that may represent an old surface level.

No indications of a house floor or posts were found. At the northern and southern margin of the excavation a single cache pit was found.

Cache 1. The first indication of the presence of the pit was at a depth of 22 inches below the surface. Here the neck of the pit, 29 inches in diameter, was found. The straight-sided neck continued for 18 inches and below that point the pit belled out to a maximum diameter of 93 inches at the flat base. Much of the pit fill was a sterile sand though sparse material was present. The most notable item in its contents was a nearly intact bison skull, lacking the teeth, which had been placed in an inverted position on the west side of the pit one foot from the bottom. The base of the pit consisted of a white river sand. The pit was located in the southeast corner of square 50.

Cache 2. This cache was located on the southern margin of the area tested, near the edge of the terrace. It was discovered at the base of the plow zone, 8.5 inches below the surface and had the form of a shallow basin and rather subtriangular in outline. The dimensions at the top was 59 inches (east-west) by 62 inches (north-south). The slightly flattened base was 38 inches (east-west) by 25 inches (north-south). The maximum depth of the pit was 33 inches.

Table 23. Bone Implements, 39WW10, Spiry Site.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| Rib-edge awl/flaker | - | 2 | - | - | - | 1 | 5 | 1 | - |
| Split cannon-bone awl | 1 | - | - | - | - | 1 | - | - | - |
| Quartered metapodial awl | - | - | 1 | 3 | 1 | - | 2 | - | - |
| Splinter awl | - | - | - | 1 | 1 | - | 1 | 1 | - |
| Awl fragment | - | 1 | - | - | - | - | - | - | - |
| Simple scapula hoe | - | - | - | 1 | - | - | - | - | - |
| Notched scapula hoe | - | 2 | 3 | - | 1 | 2 | 2 | 2 | 3 |
| Hoe blade fragments | - | 1 | 7 | 4 | - | 1 | 14 | 4 | 1 |
| Hide grainer | - | - | - | 1 | - | - | - | - | - |
| Rib shaft straightener | - | - | - | 2 | - | - | - | - | - |
| Antler flaker | - | - | - | 1 | - | - | - | - | - |
| Splinter flaker | - | - | 1 | - | - | - | - | - | - |
| Shaped flaker | - | - | 1 | - | - | - | - | - | - |
| Scapula cleaver | 1 | - | - | - | - | 1 | - | - | - |
| Scapula digging tool | - | - | - | 1 | - | 1 | 3 | - | - |
| Backed scapula knife | - | - | - | 2 | - | - | 1 | 1 | - |
| Median ridge scapula knife | - | - | - | - | - | - | - | 1 | - |
| Thin scapula knife | - | - | - | 1 | - | - | 1 | - | - |
| Utilized rib | - | - | - | - | - | - | - | 1 | - |
| Utilized scapula spine | - | - | - | - | - | - | - | 1 | - |
| Needle - non-grooved variety | - | - | - | 7 | - | - | 1 | 1 | - |
| Bone fishhook | - | - | - | 1 | - | - | - | - | - |
| Unfinished fishhook (?) | - | - | - | - | - | - | 1 | - | - |
| Tubular bead | - | - | - | - | - | - | 2 | - | - |
| Bone pin | - | - | - | - | - | - | - | 1 | - |

1. General surface material from 39WW10.
2. Feature 1 - various locations in vicinity of house.
3. Feature 1, Cache 1.
4. Feature 1, Cache 2.
5. Feature 1, Cache 3.
6. Feature 1, Cache 5.
7. Feature 2 - various locations in midden area.
8. Feature 2, Cache 1.
9. Feature 2, Cache 2.

Table 24. Stone Implements, 39WW10, Spiry Site.

| | 1 | 2 | 3 | 4 | 5 | 6 | 6a | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| Chipped stone projectile points: | | | | | | | | | | |
| Simple triangular | 1 | 1 | - | - | - | - | - | 7 | - | - |
| Side-notched triangular | - | 2 | - | - | - | - | - | 1 | - | - |
| Heavy triangular | - | - | - | - | - | - | - | - | - | 1 |
| Unclassified/tip fragments | 1 | 4 | - | 2 | - | 1 | 1 | - | - | - |
| End scrapers: | | | | | | | | | | |
| Variety 1 | 4 | 4 | - | - | - | 1 | - | 9 | - | - |
| Variety 2 | - | 1 | - | - | - | - | - | - | - | - |
| Variety 4 | 2 | 8 | 1 | - | - | 1 | - | 8 | 2 | - |
| Variety 5 | 4 | 4 | 1 | - | - | - | - | 4 | - | - |
| Unclassified/fragments | - | 1 | - | - | - | - | 1 | 1 | - | 1 |
| Side scrapers | - | 1 | 2 | 1 | - | - | - | 10 | - | - |
| Retouched flakes | 6 | 5 | - | 4 | - | 1 | - | 19 | 2 | 2 |
| Retouched parallel-sided flake | - | 2 | - | 1 | - | - | - | 3 | - | - |
| Chipped stone knives: | | | | | | | | | | |
| Badlands knife | 1 | 2 | - | 2 | - | - | - | 1 | - | - |
| Dodd knife | 3 | - | - | - | - | - | - | 3 | - | 2 |
| Broad, bifacial blade | 2 | 3 | - | 5 | - | - | - | 8 | - | - |
| Small, bifacial blade | - | 1 | - | - | - | - | - | - | - | - |
| Beveled | 1 | 1 | - | - | - | - | - | - | - | - |
| Chipped stone graver | - | 2 | - | - | - | - | - | 1 | - | - |
| Chopper | 2 | 1 | - | 2 | - | 2 | - | 2 | - | - |
| Strike-a-light (?) | 3 | 2 | - | - | - | - | - | 4 | - | - |
| Chipped stone drill | - | - | 1 | - | - | - | - | - | - | - |
| Hammerstone | - | 1 | - | 1 | - | 1 | - | 7 | 1 | 1 |
| Abrader, clinker | - | 6 | - | 1 | - | - | - | 2 | - | 1 |
| Abrader, sandstone | - | 1 | - | 1 | - | - | - | 1 | - | - |
| Grooved abrader, clinker | 1 | 1 | 1 | - | - | 1 | - | 2 | - | 1 |
| Grooved abrader, sandstone | - | - | 1 | - | - | - | - | - | - | - |
| Shaft smoother | - | - | - | 1 | - | - | - | - | - | - |
| Grinding stone | - | - | 2 | - | - | - | - | - | - | - |
| Polishing stone | - | 1 | - | - | - | - | - | 1 | - | - |
| 3/4 grooved axe | - | - | - | - | - | 1 | - | - | - | - |
| Full-grooved maul | - | - | - | - | - | - | 1 | - | - | - |
| Shell scraper | 2 | - | 1 | - | - | - | - | 5 | 1 | - |

6a - Feature 1, Cache 6.
Other numbers same as preceding table.

Table 25. Pottery Distribution, 39WW10, Spiry Site.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Total | % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Le Beau S-Rim: | | | | | | | | | | | |
| Horiz. Cord Impressed . | 3 | 5 | - | 6 | - | - | 23 | 5 | - | 42 | 13.6 |
| Rygh Rainbow Corded . . | 2 | 1 | - | 1 | - | - | 2 | 2 | - | 8 | 2.6 |
| Incised . . . . . | 27 | 42 | 9 | 27 | 3 | 5 | 113 | 10 | 4 | 240 | 77.9 |
| Punctated . . . . . | - | 3 | - | - | - | 1 | 9 | 2 | - | 15 | 4.9 |
| Diag./Vert. Cord Imp. . | - | 1 | - | 1 | - | - | 1 | - | - | 3 | 1.0 |
| Total Le Beau S-Rim . . . | 32 | 52 | 9 | 35 | 3 | 6 | 148 | 19 | 4 | 308 | 46.6 |
| Le Beau Cord Impressed . | 5 | 7 | - | 1 | - | 9 | - | - | - | 22 | 3.5 |
| Le Beau Tool Impressed . | 12 | 13 | 3 | 4 | 1 | - | 58 | 5 | 1 | 97 | 15.6 |
| Steamboat Cord-Wrapped Rod | - | 2 | - | - | - | - | - | - | - | 2 | .3 |
| Le Beau Punctate . . . . | - | 3 | - | 4 | - | - | 12 | - | - | 19 | 3.0 |
| Wheeler Ridged Rim . . . | 1 | - | - | - | - | - | - | 1 | - | 2 | .3 |
| Akaska Stab & Drag . . . | 2 | 5 | - | 2 | - | 1 | 11 | 3 | - | 24 | 3.9 |
| Nordvold Horizontal Incised . . . . . | 12 | 13 | 2 | 15 | - | 4 | 80 | 3 | 1 | 130 | 20.9 |
| Akaska Plain . . . . . | 1 | 3 | - | 1 | - | - | 12 | - | 2 | 19 | 3.0 |
| Unclassified Rims . . . . | 6 | 12 | 2 | 5 | - | - | 27 | 1 | - | 53 | |
| TOTAL . . . | 71 | 110 | 16 | 67 | 4 | 20 | 348 | 32 | 8 | 623 | |

1. General surface material.
2. Feature 1 - various locations in vicinity of house.
3. Feature 1, Cache 1.
4. Feature 1, Cache 2.
5. Feature 1, Cache 3.
6. Feature 1, Cache 5.
7. Feature 2 - various locations in midden area.
8. Feature 2, Cache 1.
9. Feature 2, Cache 2.

## V. THE BAMBLE SITE - 39CA6

The final 2 weeks of the 1956 field season were devoted to excavations at the Bamble site, a fortified village situated on the higher of two river terraces which extend along the east bank of the Missouri River in section 21, T 125 N, R 30 E. The site is located on the property of Mr. Tom Bamble of Mobridge, South Dakota, who kept the site in pasture with the result that surface contours still indicate the position occupied by most of the lodges that existed on the site. His interest in the site also included making a collection of materials from the site so that through his generous cooperation we not only were able to freely conduct our excavations but also could include in our descriptions scarcer material represented only in his collection. The limited time available for excavation was enhanced through the use of a power shovel operated by Mr. James Gunderson of Mobridge to remove the sterile overburden from house pits and to cut preliminary trenches to reveal the deepest midden deposits and indicate what natural stratigraphy might be present.

The site was approximately ¼ mile east of the river and 6 miles north of the town of Mobridge in Campbell County. It had originally been placed on the projecting tongue of a terrace carved by an intermittant stream so that the land slopes away from the site on all sides but the east. Basin-shaped depressions from 20 to 60 feet in diameter and up to 6 feet in depth conspicuously identified the location of collapsed subterranean houses within the area. Another outstanding feature was a trench, varying in width from 15 to 35 feet, which surrounded the village on all sides except that facing the river (see site map, Figure 30). Both houses de-

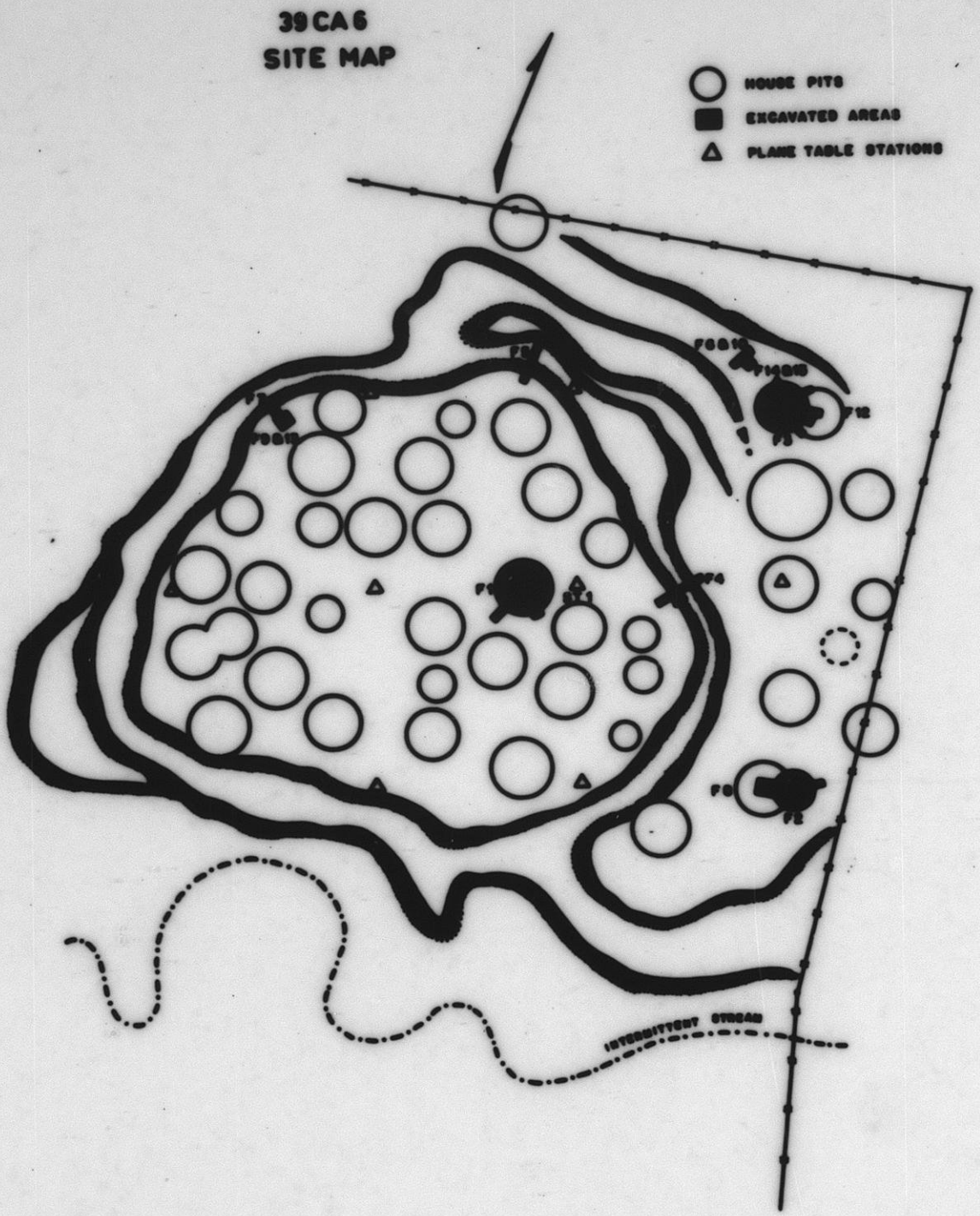



Figure 30. 39CA6, Map of Site.

pressions and trench were emphasized by a heavy growth of sunflowers which grew only in those sunken areas, the remainder of the site being thickly covered with grass. The area had never been plowed and at the time of excavation was being used for a pasture.

The village can be divided into two major zones; the first being the village proper confined within the limits of the fortification ditch surrounding 29 house depressions. These houses were located in close proximity to each other and the general tendency was for the diameter of the houses to be smaller nearer the ditch. Outside the ditch was the second zone where the houses, 12 in all, appeared more widely scattered. At the time of occupation, the village may have been somewhat larger but subsequent cultivation has at least partially encroached on the northern and eastern edges. When the excavations took place, the whole village covered an area of approximately 6½ acres.

The distribution of houses, both within the fortified area and scattered beyond its limits, posed an initial problem for investigation. Either the central area within the confines of the ditch represented an early fortified village with a subsequent expansion beyond the ditch or the entire area embraced a contemporary occupation which was later obliged to withdraw behind their defensive ditch. In any case, fill in the fortification ditch should reflect, primarily, material from the later levels with, perhaps, some stratified material providing us with a relative chronology of occupation.

We expected that a comparison of material from opposite sides of the trench would reveal significant differences, particularly in pottery. With this in mind, we proceeded to test a number of likely areas for excavation

that would provide us with adequate samples amenable to statistical analysis. Of these test areas, one house inside and two houses outside the fortification ditch plus two transverse trenches across the ditch were selected for intensive excavation. In addition, two other areas, thought to be midden deposits, were excavated.

The test pits immediately showed a great deal of sterile fill overlying the house floors. Consequently, arrangements were made with Mr. James Gunderson of Mobridge to assist us with his power shovel in removing the sterile overburden. In the houses, the general technique was to dig, by hand, a two foot wide trench from the approximate center of the depression to a point several feet beyond the intersection with the outer ring of wall posts, the purpose being to determine the depth and the maximum diameter of the houses. Then, with the power shovel, we removed the fill to a level 6 inches above the floor, the height of which was occasionally checked by a small trowelled hole dug to the unmistakably hard and dark colored floor.

When the floor was completely exposed, the features and post holes were plotted with the aid of a plane table and alidade, using a scale of ½ inch to the foot (later much reduced to facilitate publication). A 6 inch level below each floor was removed on the possibility of finding features covered by the floor. In most cases, this technique amply repaid our efforts with additional post molds, cache pits and earlier house floors. This additional information was recorded by a second visit with the plane table and alidade.

The transverse trenches across the fortification ditch were more easily accomplished. Both trenches were dug across the entire width of the ditch with the power shovel and deep enough to penetrate well into the sterile, sandy subsoil. The main purpose of these trenches was to obtain good cross-sections of the fortification ditch in the hope that they might reveal a stratified deposit and thus shed light on the sequence of occupation.

As the excavation progressed, we collected a large number of brass implements and fragments which indicated a relatively late span of occupation. Glass beads were picked up from the surface by Mr. Tom Bamble who lent them to us for study. The occurrence of brass in the upper levels of our stratified areas presented an ideal situation for a study of cultural change. We generally concentrated on securing abundant samples from areas which exhibited clear relative chronological relationships. This situation was particularly prevalent in the houses which were superimposed over older cache pits, both areas yielding a large number of artifacts. Other opportunities for analysis are expected to be forthcoming from the plant material such as seeds and charred corn cobs. The materials from the Bamble site as well as from 39WW3 and 39WW10 are under study by Dr. Hugh Cutler of the Missouri Botanical Gardens. A considerable amount of bone refuse was also collected which was sent to the River Basin Laboratory at Lincoln, Nebraska, together with the materials from 39WW3 and 39WW10. Information pertinent to these last two facts has not been received at the time this report was written.

Detailed descriptions of the artifact types recovered from the Bamble site are to be found in a descriptive section which follows the report on the site where they are presented together with the materials from 39WW3 and 39WW10. Immediately following is a description of the Bamble site

by feature, based on the notes and illustrations made in the field. To facilitate the study of each feature, the summary paragraph is highlighted by a table lumping stratigraphically similar components, thereby generally increasing the number of artifacts within each cell and consequently magnifying trends in artifact types. This summary organization was expanded to include all features which could be studied as an integral unit within the site. Feature 7, for instance, along with Features 9, 11 and 13, was considered as an integral unit and was so treated in the summary. For a better appreciation of this approach, reference may be made to the site map, Figure 30, which indicates the location of these overlapping features.

## Feature 1: House and Midden Deposit

Feature 1 was originally observed as a deep basin in the east central portion of the site within the fortification ditch. A test pit was dug in the approximate center to determine the depth of the floor and a trench was then dug from this point to the perimeter in an effort to locate the outer ring of post molds. This done, the power shovel was used to remove all the fill to a depth of 6 inches above the floor, the remaining 6 inch level being left for careful hand removal. Completion of the excavation to the floor level exposed the plan of a circular, semi-subterranean house which had been buried under earth and sod from the collapsed roof and subsequent accumulation of soil due to periodic inundations by the Missouri River. The floor on this feature was 3½ to 5 feet below the present surface and was 32 feet in diameter. Artifacts found within the fill were collected in two lots, general fill and fill above the eastern edge of the house which was suspected to be the scattered contents of a disturbed midden deposit.

Posts: The hand removal of the 6 inch level above the floor was first conducted along the perimeter to locate the extent of the house, using the outer ring of post molds as our guide. The molds were easy to find since all were filled with a soft, dark earth, many still containing small bits of decaying wood. Molds in this outer ring varied from 3 to 12 inches in diameter and were generally 8 to 10 inches in depth. Posts placed in the softer earth filling of abandoned cache pits had usually been sunken 18 to 24 inches in depth. One of these large post molds were surrounded by a ring of stones, probably used to wedge the post tightly in the hole,

but broken bone hoes served as wedges in most of the other holes. Because, as often occurred, the same post holes were used for both an upper (later) and lower (earlier) house (see Figure 31), the assignment of artifacts found therein to either house seemed dubious. Scattered post molds throughout the floor area suggested periodic bracing to offer additional support to the heavy roof. Several of the posts in the outer ring on the west side were inserted with an inward lean. A few of these molds contained decaying wood and, toward the center, like spokes of a wheel, traces of fallen roof timbers could be seen lying parallel to the floor. One log, 5 feet in length, was found on the north side lying horizontally in a north-south direction, 1 foot above the floor. This log was remarkably well preserved and gave no indication of having been burned. Post holes from the west side of the house yielded two stones painted with red ocher and two hammerstones.

Floors: Excavation of the floor area clearly revealed two periods of occupation or a second rebuilding of the house by the presence of two separated floors. Both floors were hard-packed layers approximately 1 inch in thickness. The floors were separated by a 4 inch layer of sterile, less dense material which precluded the possibility of an accumulation of soil through a continuous occupation. Hard baked, red-orange patches around additional post molds found while uncovering the lower floor seemed to indicate that at least a portion of the earlier house had been burned, although no charred wood fragments were found. Presumably, traces of the burned house were removed and a layer of fill was spread to provide a clean, fresh floor. The upper floor did not appear to have been burned. Two

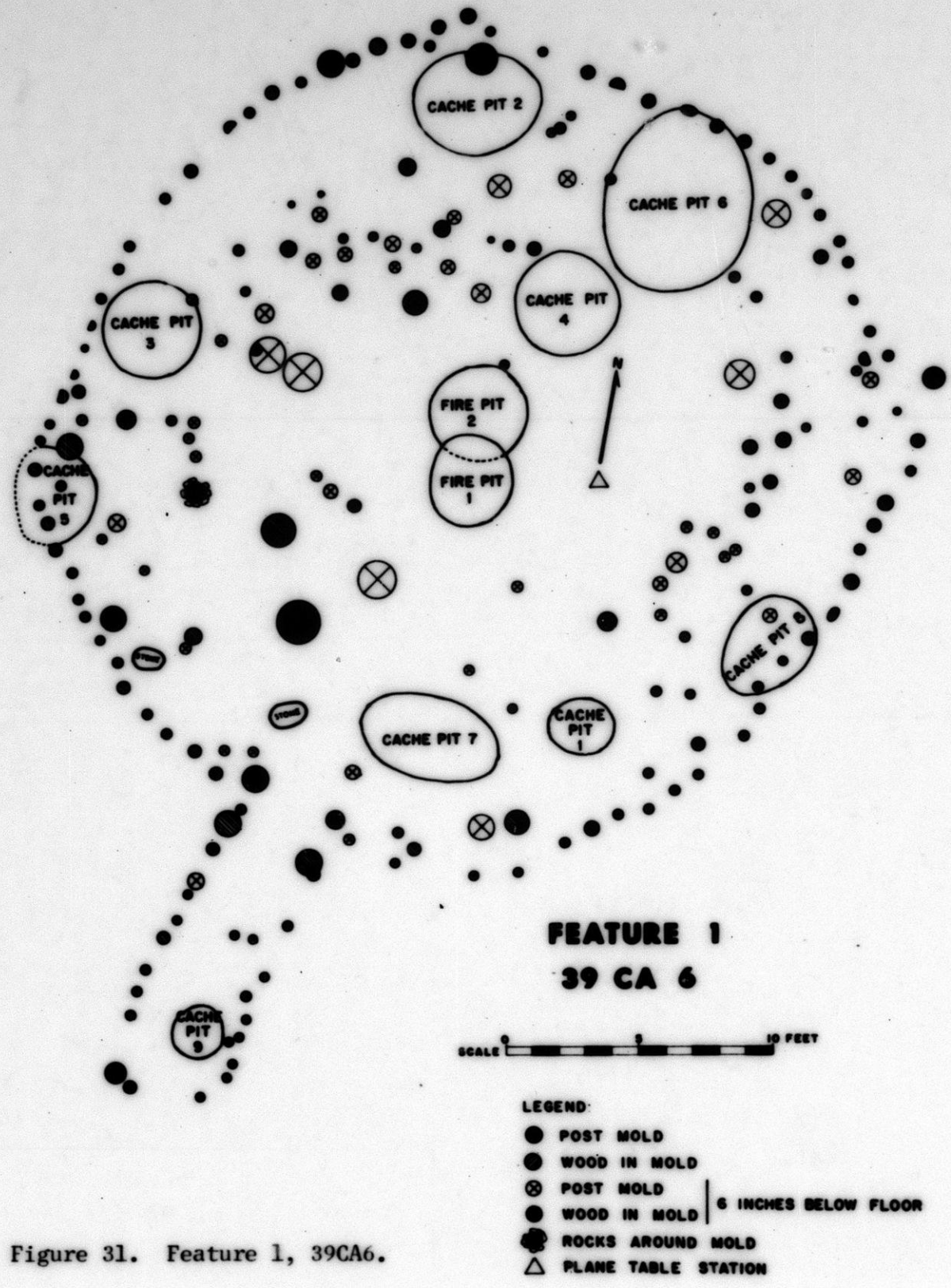



Figure 31. Feature 1, 39CA6.

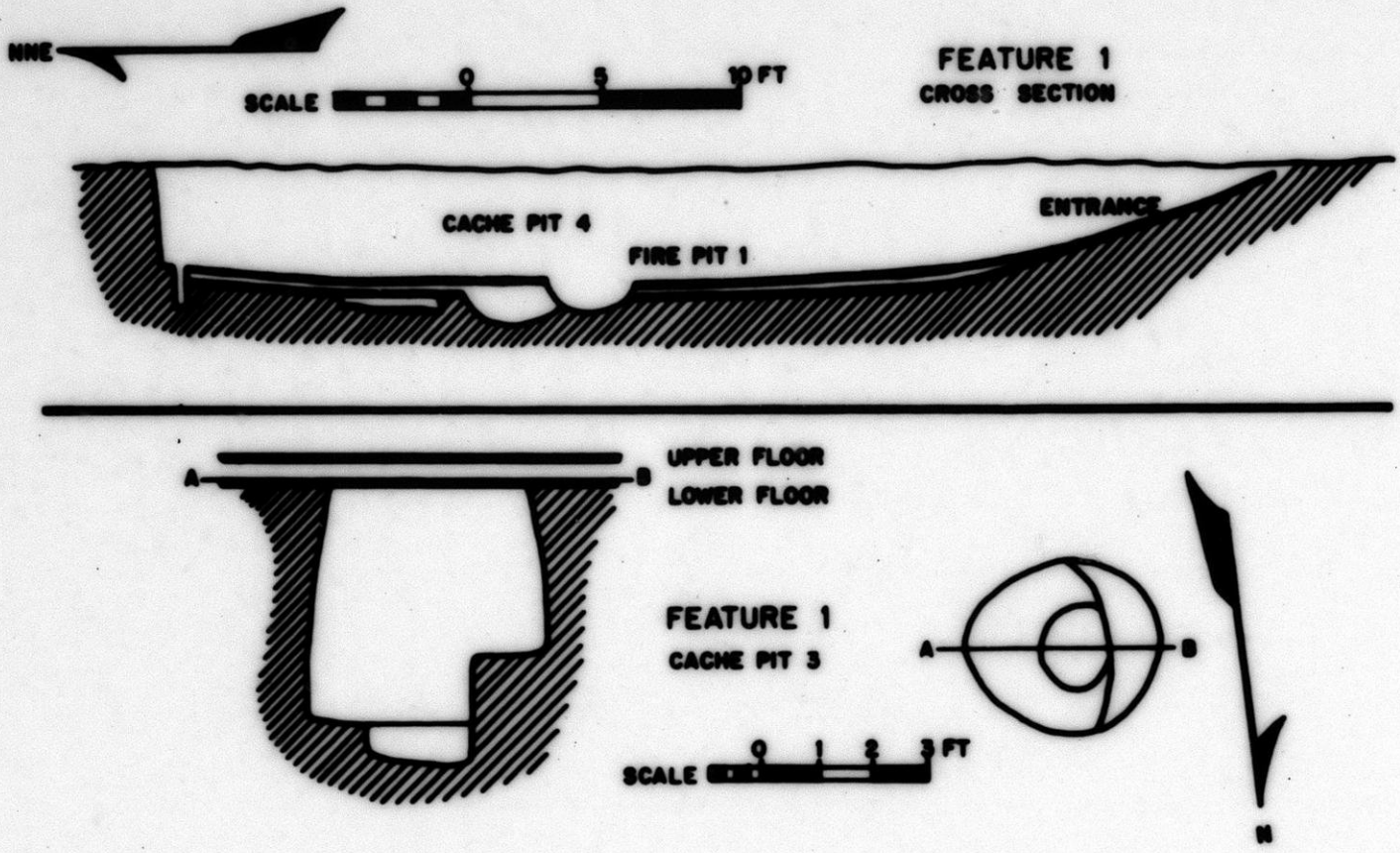



Figure 32. Cross Section of Feature 1 and Diagram of Cache 3, Feature 1.

large stones, each approximately 1 foot in diameter, were found on the upper floor close to the entrance; both were embedded in the floor to a depth of 1 inch. Neither showed signs of use. In the west central portion of the upper floor, a stone grinding basin was found. It was small and roughly tabular, 12 by 8 by 6 inches in size, with the upper surface slightly concave and heavily pitted. A patch of red ocher was discovered just above the upper floor 2 inches south of cache pit 3 near the outer ring of posts. A 6 inch level below the lower floor was removed with the intention of locating any features which may have been covered by construction of this floor.

Entrance: The entrance was approximately 13 feet in length and extended upward at a steep angle (approximately 8 degrees) from the south side of the house. The entrance also revealed two floors, however the upper floor tapered into the lower and was not as steep as the lower. Post holes defining this area were not as deeply imbedded and were generally more difficult to locate nearer the surface. All material found was associated with the lower entrance floor.

Fire Pits: The fire pit, located in the approximate center of the house, was circular in outline and 3 feet 9 inches in diameter and 8 inches deep, and filled with a light-grey ash. The edges of the basin were mottled reddish-brown to grey. When the upper floor was cut away to expose the lower, this fire pit was found to overlap the southern edge of a second pit, 3 feet 4 inches in diameter and slightly shallower than the first. This latter fire pit is presumably that associated with the first (lower) floor.

Cache Pit 1: This was the only cache pit associated with the upper floor. It was a circular pit approximately 2½ feet in diameter which tapered to a rounded bottom 2 feet 11 inches in depth. The limits of the cache pit were clearly defined by the dark brown color and soft texture of the fill.

Cache Pit 2: This pit was a basin-shaped depression at the north edge of the house and contained the greater portion of a large post mold. The pit did not come to light until excavation removed the overlying floors. It seemed evident, then, that the cache pit predated the construction of the house.

Cache Pit 3: This pit, located near the west edge of the house, was 39 inches in depth. At this depth, in the western portion, sterile subsoil was reached, but the eastern portion continued down for another 14 inches at the bottom of which was a smaller circular area, 25 inches in diameter, which extended 9 inches further into a clay bed. It was impossible to determine whether or not this pit was dug specifically for exploitation of the clay at the bottom but this seemed to be a reasonable explanation. A post partially intruded into the fill indicated that the pit probably was older than the house. Another possibility is that this pit may have been associated with the lower floor, the post being added during work on the upper floor. See Figure 32 for an illustration.

Cache Pit 4: Cache pit 4 seems to have been an older pit which was subsequently cut away by construction of the earlier house, leaving a basin 6 inches in depth. Both floors covered the remaining basin which was not discovered until excavation removed them.

Cache Pit 5: The outer ring of post molds which cut across the fill clearly determined the cache pit to predate the house. The post holes were deeper in this area, probably to provide more solid support in the softer soil.

Cache Pit 6: This pit was similar to cache pit 4 in that it represented an earlier pit which was cut away by the construction of the house. All that remained was an egg-shaped depression 68 by 74 inches across and 9 inches in depth. It contained a few artifacts in the ashy fill. It was not found until the upper and lower floors were stripped away. A greater relative age was further indicated by the intersection of the pit's perimeter with the outer ring of post molds on the north side of the house. These molds were intrusive in the pit and indicated that the pit preceded the house.

Cache Pit 7: Cache pit 7 was an oval, basin-shaped pit 37 by 63 inches across and 6½ inches in depth. This pit displayed a similar chronological position to that indicated by cache pits 4 and 6.

Cache Pit 8: This pit also indicated partial removal as a consequence of house construction. The southwestern edge of the pit was intersected by the outer ring of post molds.

Cache Pit 9: This pit, inexplicably, was located beneath the upper floor in the entrance, just 2 feet from the doorway. It was 23 inches in diameter and 8 inches in depth.

## Feature 1: Midden Deposit

The brim of the house pit was banked up by a stratified deposit of refuse apparently discarded against the walls of the house when it was intact. During the excavation of feature 1 with the power shovel, general

material was collected from the midden area, but no definite record of level association was kept until feature 1 was finished. Because the deposit extended around the entire circumference of the house, time did not permit complete excavation. Consequently only one area was tested on the southeast side where the deposit seemed most productive. The wall was scraped down to better facilitate the drawing of a profile view. The area was then excavated according to the following stratigraphic levels. See Figure 33 for an illustration.

Level 1: Level 1 represented a 4 inch level of compact soil located at the top of the midden. This level was completely sterile.

Level 2: This level contained a loose brown fill. There was a possibility that this level was a continuation of the first.

Level 3: This was a completely sterile ash layer.

Level 4: Level 4 consisted of a series of alternating layers of ash and loose fill. These layers were treated as one stratigraphic level since they were considered too narrow to be excavated separtely.

Level 5: Level 5 was a compacted brown fill lying just above the hard, grey subsoil.

Summary. To stress the chronological data yielded by an internal analysis of the feature, those locations exhibiting obvious temporal similarites were grouped together. To accomplish this, the upper floor, fill and Cache 1 were grouped into an Upper House Period; the lower floor, entrance and Cache 3 were grouped into a Lower House Period; and, the remaining cache pits comprised a Pre-house Period. Material from the midden levels and the large post holes were not grouped because reliable interrelationships between these areas and the houses were not forthcoming.

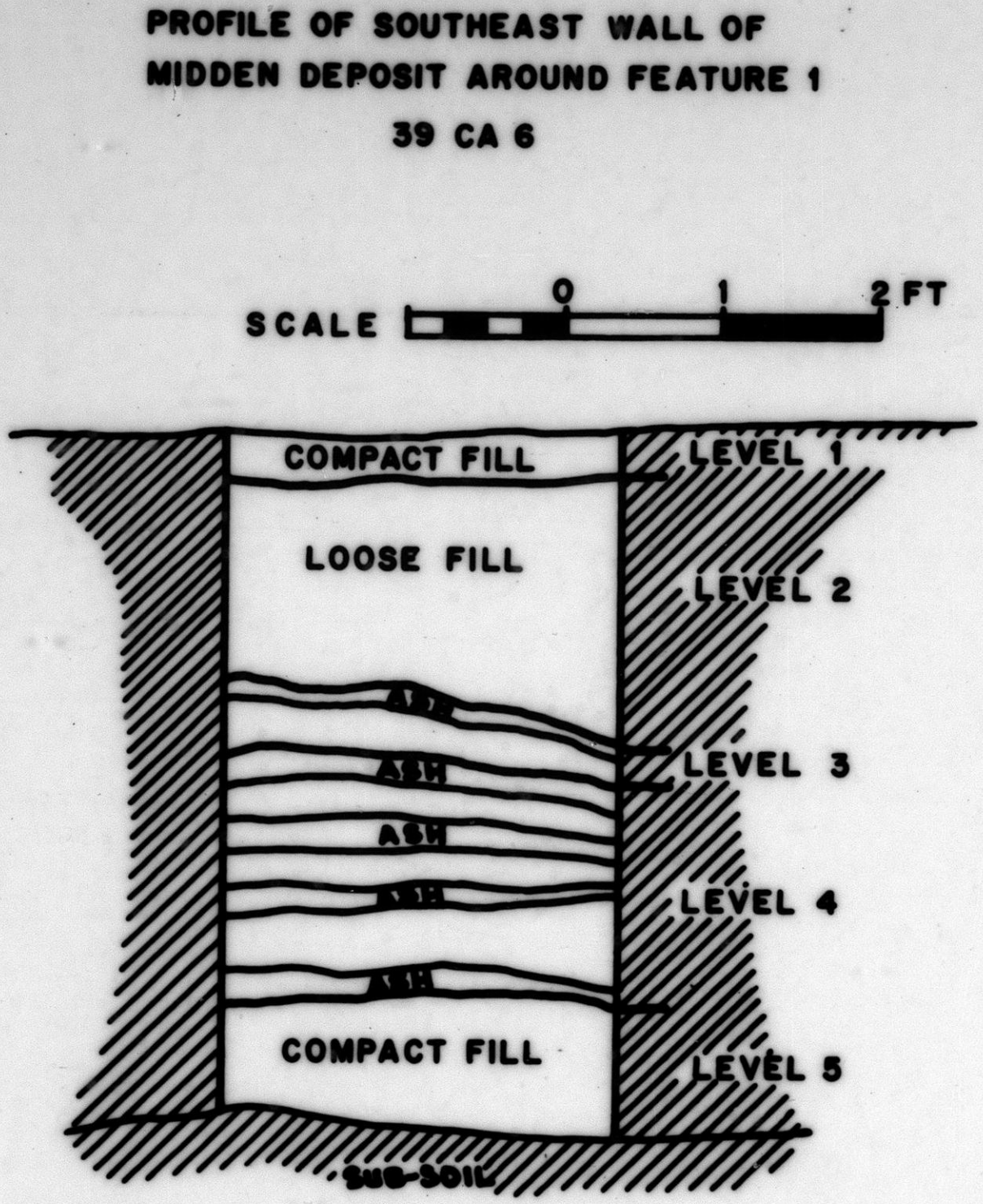



Figure 33. Profile of Southeast Wall of Midden deposit around feature 1 39CA6

Table 26. Bone Implements, Feature 1, 39CA6.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rib-edge awl/flaker | 1 | 2 | 5 | - | - | - | 2 | 1 | 1 | - | - | - | - |
| Split cannon-bone awl | - | - | - | - | - | - | - | 1 | 1 | - | - | - | - |
| Splinter awl | 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Simple bone hoe | 1 | 4 | 2 | - | - | - | - | - | - | - | - | - | - |
| Notched bone hoe | 3 | 3 | - | 2 | - | - | 1 | - | 1 | 1 | - | - | 1 |
| Trimmed bone hoe | 10 | 6 | 2 | - | - | - | - | - | - | - | - | - | 1 |
| Hoe blade fragment | 11 | 8 | 6 | 1 | - | - | 2 | - | - | - | 1 | 1 | 3 |
| Bison skull hoe | 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Robe softener | - | 1 | - | - | 1 | - | - | - | - | - | - | - | - |
| Hide grainer | - | 3 | 1 | - | 2 | - | - | - | 1 | - | - | - | - |
| Rib shaft straightener | 1 | 1 | - | - | - | - | - | - | - | - | - | - | - |
| Knife handle | - | 1 | 1 | - | 1 | - | - | - | - | - | - | - | - |
| Antler flaker | - | - | - | - | - | 1 | 1 | - | - | - | - | - | - |
| Scapula cleaver | - | 1 | - | - | - | - | 1 | - | - | - | - | - | - |
| Scapula digging tool | - | 1 | - | - | - | - | - | - | - | - | - | - | 2 |
| Backed scapula knife | - | 2 | - | - | 1 | - | - | - | - | - | - | - | - |
| Thin scapula knife | 1 | 1 | - | - | - | - | - | - | - | - | - | - | - |
| Utilized rib | 1 | - | 1 | - | - | - | - | 1 | - | - | - | 1 | - |
| Bone tube | - | 1 | - | - | - | - | - | - | - | - | - | - | - |
| Bone scraper handle | 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| "Needle" - non-grooved var. | - | - | 2 | - | - | - | - | - | - | - | - | - | - |
| Bone spatula | 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Barbed antler point | - | - | - | - | - | - | - | - | - | - | - | - | 1 |

1. House fill
2. Upper floor
3. Lower floor and entrance
4. Large post holes
5. Cache 1
6. Cache 2
7. Cache 3
8. Cache 4
9. Cache 6
10. Cache 8
11. Midden level 2
12. Midden level 4
13. General

Table 27. Stone, Shell and Metal Implements, Feature 1, 39CA6

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chipped stone proj. pts.: | | | | | | | | | | | | | |
| Simple triangular . . . | - | - | 4 | - | - | - | 2 | - | - | - | - | - | - |
| Side-notched triangular | - | - | 3 | - | 2 | - | - | - | - | - | - | - | - |
| Heavy triangular . . . | - | 1 | 1 | - | - | - | - | - | - | - | - | - | - |
| Tip fragments . . . . . | 1 | - | 3 | - | - | 1 | - | - | - | - | - | - | - |
| End scrapers: | | | | | | | | | | | | | |
| Variety 1 . . . . . | - | 1 | 6 | - | - | - | 1 | - | - | 1 | - | - | 1 |
| Variety 2 . . . . . | 1 | - | - | - | - | - | 1 | - | - | - | - | - | - |
| Variety 3 . . . . . | - | - | 1 | - | - | - | - | - | 1 | - | - | - | - |
| Variety 4 . . . . . | - | 1 | 1 | - | 1 | - | - | - | 1 | 1 | - | - | - |
| Variety 5 . . . . . | - | 2 | 1 | - | - | - | - | 1 | - | - | - | - | - |
| Side scrapers . . . . . | - | - | - | - | - | 2 | - | - | - | - | - | - | - |
| Retouched flakes . . . . | - | - | 3 | - | - | - | 3 | - | 1 | - | - | 1 | - |
| Same, parallel-sided . . | - | - | 2 | - | - | - | - | - | - | - | 1 | - | - |
| Chipped stone knives: | | | | | | | | | | | | | |
| Badlands knife . . . . | 1 | 2 | 2 | - | - | - | 1 | - | - | - | - | - | - |
| Dodd knife . . . . . | - | 1 | 2 | - | - | - | 1 | - | - | 1 | - | - | - |
| Broad, bifacial blade . | - | - | 1 | - | - | - | 1 | - | - | - | - | - | - |
| Hammerstone . . . . . | 6 | 7 | 10 | 1 | - | 1 | 2 | - | - | - | - | - | - |
| Pitted hammerstone . . . | - | 1 | 2 | 1 | - | - | 1 | - | - | - | - | - | - |
| Abrader, clinker . . . . | - | 4 | 2 | 1 | - | - | 1 | - | - | - | - | 1 | - |
| Abrader, sandstone . . . | 1 | 5 | 4 | 2 | - | - | - | - | - | - | - | 1 | - |
| Grooved abrader, clinker | - | 2 | - | - | - | - | 1 | - | - | - | - | - | - |
| Polishing stone . . . . . | 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ground stone maul . . . . | - | - | 2 | - | - | - | - | - | - | - | - | - | - |
| Chopper, fragment . . . . | - | 1 | 2 | - | - | - | - | - | - | - | - | - | - |
| Ground stone axe . . . . | - | - | 1 | - | - | - | - | - | - | - | - | - | - |
| Planoconvex side scraper | 1 | - | - | - | - | - | - | - | 1 | - | - | - | - |
| Strike-a-light . . . . . | - | 1 | 1 | - | - | - | - | - | - | - | - | - | - |
| Shell scraper . . . . . | - | 1 | - | - | - | - | - | - | - | - | - | - | - |
| Iron fragment . . . . . | - | 1 | 1 | - | - | - | - | - | - | - | - | - | - |
| Brass sheet fragments . . | - | 4 | - | - | - | - | - | - | - | - | - | 1 | - |

1. House fill
2. Upper floor
3. Lower floor and entrance
4. Large post holes
5. Cache 1
6. Cache 2
7. Cache 3
8. Cache 5
9. Cache 6
10. Cache 8
11. Midden level 2
12. Midden level 4
14. General

Cache 7: 1 - End scraper, Variety 5.
Cache 9: 1 - Broad, bifacial knife.

Table 28. Pottery, Feature 1, 39CA6.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Talking Crow Brushed . . . . | 36 | 14 | 3 | 2 | 1 | 1 | - | 1 | 2 | - | 1 | 5 |
| Talking Crow Cord Impressed | 13 | 9 | 8 | - | - | 2 | - | - | - | - | - | 1 |
| Talking Crow Indented . . . | 8 | 7 | 6 | - | - | 2 | 3 | 3 | 2 | - | - | 1 |
| Talk. Crow Straight Rim . . | 1 | 2 | 2 | - | - | 1 | 1 | - | - | - | - | - |
| Intermediate Plain . . . . . | 11 | 5 | - | - | - | - | - | - | - | 1 | - | - |
| Intermediate Cord Impressed | 13 | 5 | 2 | 1 | - | - | - | 1 | - | - | - | 1 |
| Intermediate Tool Impressed | 4 | - | - | - | - | - | 1 | - | - | - | - | 3 |
| Stanley Plain . . . . . | 14 | 15 | 3 | - | - | - | - | - | - | - | 4 | 3 |
| Stanley Cord Impressed . . . | 6 | 7 | 2 | 2 | - | - | - | - | 3 | 3 | 1 | 1 |
| Stanley Tool Impressed . . . | 5 | 2 | 2 | - | - | - | - | - | - | - | 1 | - |
| Stanley Wavy Rim . . . . . | 4 | 3 | 3 | 2 | - | - | - | - | - | - | 3 | - |
| S-Rim . . . . . | 9 | 13 | 12 | - | 3 | 4 | 1 | 9 | 4 | 2 | - | - |
| Le Beau Punctate . . . . . | - | 1 | 1 | - | - | - | - | - | - | - | - | - |
| Akaska Stab & Jab . . . . . | - | - | - | - | - | - | - | 1 | - | - | 1 | - |
| Steamboat Cord-Wrapped Rod . | - | - | 1 | - | - | - | - | - | - | - | - | - |
| Norvold Horizontal Incised . | - | - | - | - | 1 | - | - | - | - | - | - | - |
| TOTAL . . . | 124 | 83 | 45 | 7 | 5 | 10 | 6 | 15 | 11 | 6 | 11 | 15 |

1. House fill
2. Upper floor
3. Lower floor and entrance
4. Cache 1
5. Cache 2
6. Cache 3
7. Cache 4
8. Cache 6
9. Cache 8
10. Midden level 2
11. Midden level 4
12. General

Cache 9: 1 - Talking Crow, Cord Impressed; 1 - Talking Crow, Indented.
Midden level 5: 3 S-Rim.

Table 29. Summary Table, Feature 1.

| | Upper House Period | Lower House Period | Pre-House Period |
|---|---|---|---|
| Rib-edge awl/flaker | 3 | 7 | 2 |
| Split cannon-bone awl | - | - | 2 |
| Splinter awl | 1 | - | - |
| Simple bone hoe | 5 | 2 | - |
| Notched bone hoe | 6 | 1 | 2 |
| Trimmed bone hoe | 16 | 2 | - |
| Hoe blade fragments | 21 | 8 | - |
| Bison skull hoe | 1 | - | - |
| Thong stropper | 2 | - | - |
| Hide grainer | 5 | 1 | 1 |
| Rib shaft straightener | 2 | - | - |
| Knife handle | 2 | 1 | - |
| Antler flaker | - | 1 | 1 |
| Scapula cleaver | 1 | 1 | - |
| Scapula digging tool | 1 | - | - |
| Backed scapula knife | 3 | - | - |
| Thin scapula knife | 2 | - | - |
| Utilized rib | 1 | 1 | 1 |
| Bone tube | 1 | - | - |
| Bone scraper handle | 1 | - | - |
| "Needle" - non-grooved var. | - | 2 | - |
| Bone spatula | 1 | - | - |
| Total bone implements | 75 | 27 | 9 |
| Simple triangular points | - | 6 | - |
| Side-notched triangular points | 2 | 3 | - |
| Heavy triangular points | 1 | 1 | - |
| Tip fragments, projectile points | 1 | 3 | 1 |
| End scraper, Variety 1 | 1 | 7 | 1 |
| End scraper, Variety 2 | 1 | 1 | - |
| End scraper, Variety 3 | - | 1 | 1 |
| End scraper, Variety 4 | 2 | 1 | 2 |
| End scraper, Variety 5 | 2 | 1 | 2 |
| Side scrapers | - | - | 2 |
| Retouched flake | - | 1 | - |
| Retouched parallel-sided flake | - | 2 | - |
| Badlands knife | 3 | 3 | - |
| Dodd knife | 1 | 3 | 1 |
| Broad, bifacial knife | - | 2 | 1 |
| Hammerstone | 13 | 12 | 1 |
| Pitted hammerstone | 1 | 3 | - |
| Abrader, clinker | 4 | 3 | - |
| Abrader, sandstone | 6 | 4 | - |
| Grooved abrader linker | 2 | 1 | - |

## Feature 2: House

Feature 2 was a house located outside the fortification ditch on the southeast side of the site. The pit of this house, as appeared typical of all those outside the ditch, was very shallow, the overlying fill never exceeding 2 feet in depth. The slight amount of midden material collected around the perimeter of the house contrasted greatly with feature 1 inside the ditch. The description of feature 2 will, necessarily, also consider those elements of feature 8, a second house floor discovered in the course of the excavation of this unit, which demonstrate relative chronology between the houses.

House Fill: The fill was composed of a light-grey, sandy soil. No artifacts were found.

Posts: The outer ring of post molds in feature 2 described a circular, semi-subterranean house, approximately 36 feet in diameter. The inner ring of molds, if there ever were any, could not be defined. The center posts were large, generally 10 to 14 inches in diameter and extended 18 to 20 inches below the floor level. Broken scapula hoes and other bone implements were found as wedges around the large molds. Several molds indicated that posts had been split. In general, the molds were extremely difficult to locate because practically no wood fragments were preserved and the molds were filled with soil of similar color and texture to the surrounding floor area. Nearly all the molds were located by probing for the distinctly softer areas. A clear line of molds representing the outer ring of feature 8 could not be located. Few of the molds exceeded 8 inches in depth and, since the pit for feature 2 was dug 13 inches below the floor of feature 8, it seemed likely that most of the outer ring was obliterated.

Floor: The floor was hard-packed, mottled brown, red and grey in color and contained small bits of bone and pottery. It was apparent from the arrangement of overlap and molds that feature 8 was the older house. Some time after the destruction of the first house (feature 8), the pit for feature 2 was dug, overlapping the eastern portion of feature 8 and removing an elliptical segment. The pit was dug 13 inches below that of the first house, the floor gradually slanting from this point upwards toward the entrance to within 8 inches from the surface. A portion of the old house floor was preserved inside feature 2 in the form of an earthen bench approximately 13 inches high, 5 feet wide, and extending across the entire western side of the house (see Figure 36). Near the center of the house and resting on top of the floor, a stone grinding basin was found. Shaped somewhat like an isoceles triangle, it was approximately 14 inches in length along the two longest sides, 12 inches along the base and 5 inches in thickness. The face was slightly concave and heavily pitted.

Fire Pits: The fire pit of feature 2 was located slightly off center to the west. It was about 8 inches in depth and contained no material other than a soft ash fill. The walls were baked hard and colored a reddish-brown. Another fire pit was found in the southeast quarter of the house but did not become evident until the floor was removed. This latter pit was smaller in diameter but was 14 inches in depth and filled with a loose grey ash.

Ash Pit: An ash pit was found in the southwest quarter of the house and contained only a fine, white ash.

Figure 34. 39CA6, Feature 2. Grinding basin found on house floor.

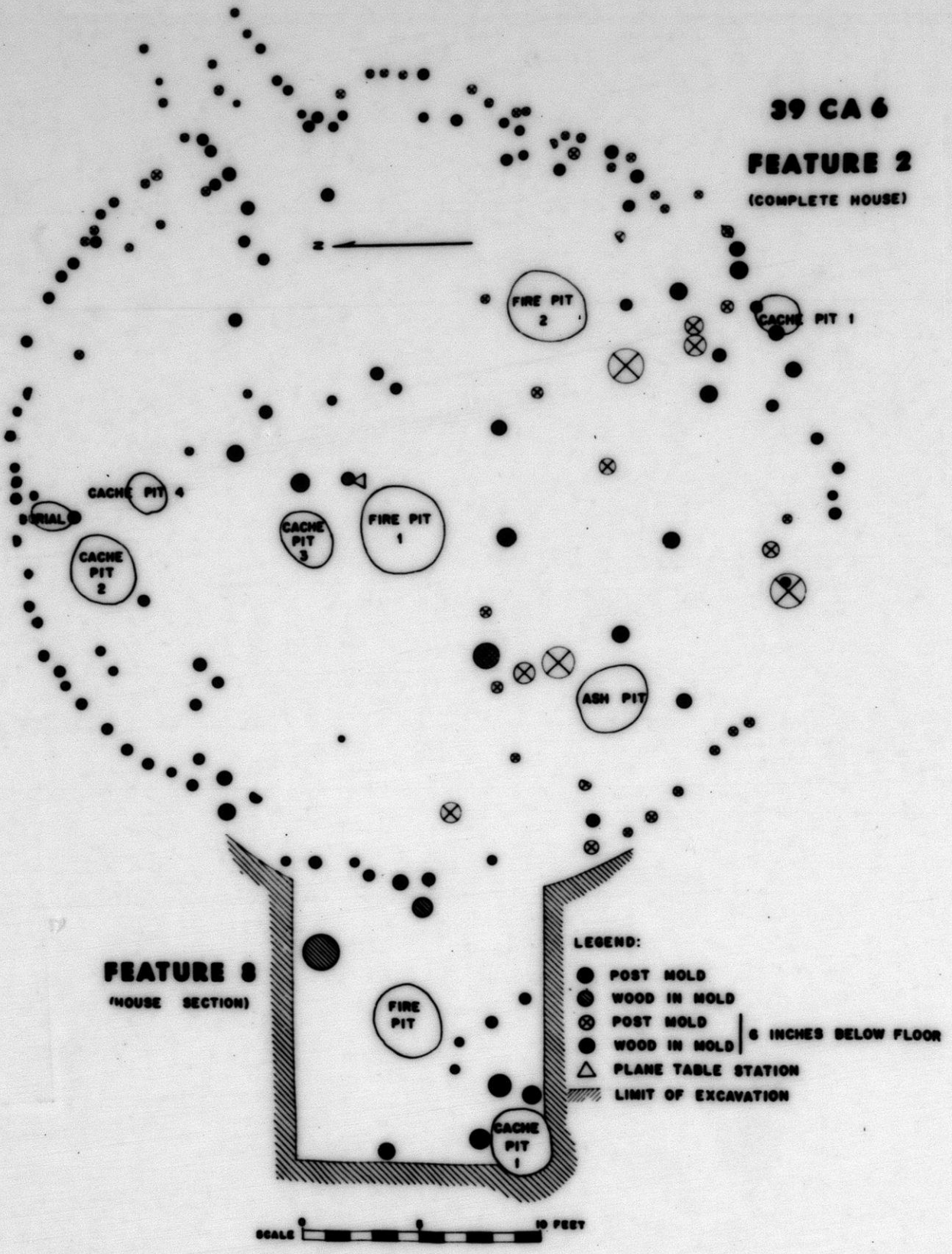



Figure 35. 39CA6, Map of Feature 2.

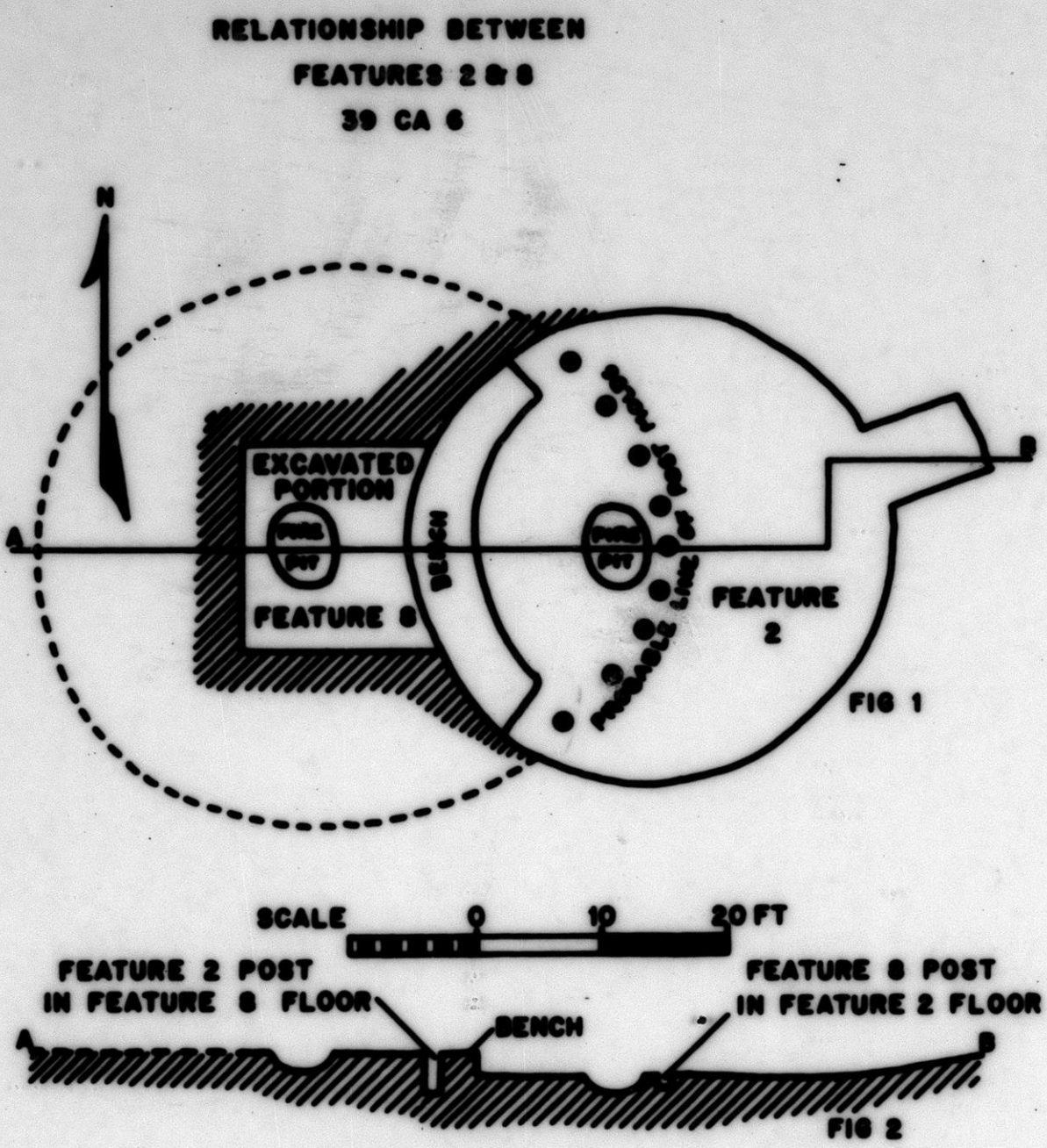



Figure 36. 39CA6, Diagram of Relationship between Features 2 and 8.

Entrance: The entrance faced the northeast and was flanked on each side by a single row of post molds. The floor was sloped very slightly upwards and was extremely hard.

Cache Pit 1: Cache pit 1 was discovered 6 inches below the floor. The outer ring of post molds were intrusive in the pit fill, indicating the pit preceded the house.

Cache Pit 2: This pit was 36 inches in diameter and nearly hemispherical in shape. The pit was associated with the house floor. It was greatly disturbed by rodent action. (See Human Remains).

Cache Pit 3: Some doubt is manifested in the consideration of this cache pit. The edges of the pit were so ill-defined that any statement as to its exact size was impossible. The area was primarily defined on the basis of the concentration of material.

Cache Pit 4: Cache pit 4 was found on the north side of the house near cache pit 2. It was 24 inches in diameter and 11 inches in depth. Considerable rodent action was noted here which may accound for the dearth of artifact material. This pit was also associated with the house floor.

Human Remains: This house was unusual in that it contained human remains interred under the floor. The first area, cache pit 2, on the north side of the house, contained the cranial fragments of an infant. No other material was found with it. By far, the most unusual find consisted of a solitary human mandible which rested on the floor, northeast of cache pit 1, along the southeast edge of the house. The mandible, unmodified in any way, was covered with earth which was then tamped to form a new floor and unnoticeably blended into the old floor.

Table 30. Bone and Stone Implements, Feature 2, 39CA6.

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Rib-edge awl/flakers | - | - | - | 1 | - | - |
| Quartered metapodial awl | 1 | 1 | - | - | - | - |
| Ulna awl | - | 1 | - | - | - | - |
| Simple bone hoe | - | 1 | - | - | - | - |
| Notched bone hoe | 2 | 1 | 2 | 1 | - | 2 |
| Trimmed bone hoe | 4 | - | - | - | - | - |
| Hoe blade fragments | 1 | 2 | - | 2 | - | 1 |
| Rib shaft straightener | - | - | - | - | 2 | - |
| Knife handle | 1 | 1 | - | 1 | - | - |
| Antler flaker | - | - | 1 | - | - | - |
| Splinter flaker | - | 1 | - | - | - | - |
| Rough quill flattener | 1 | - | - | - | - | - |
| Scapula digging tool | 2 | 1 | - | - | - | - |
| Median ridge scapula knife | - | - | - | - | 1 | - |
| Backed scapula knife | 1 | - | - | - | 1 | - |
| Thin scapula knife | 1 | - | - | - | - | - |
| Utilized rib | 1 | - | - | 1 | - | 1 |
| Flesher | - | 1 | - | - | - | - |
| Unfinished fishhook? | - | 1 | - | - | - | - |
| Total bone implements | 15 | 11 | 3 | 6 | 4 | 4 |
| Chipped stone projectile points: | | | | | | |
| Simple triangular | 1 | - | - | - | - | - |
| Side-notched triangular | - | - | - | 1 | - | - |
| End scraper, Variety 1 | 1 | - | - | - | - | - |
| End scraper, Variety 2 | 1 | 1 | - | 1 | - | - |
| End scraper, Variety 3 | - | - | - | 2 | - | - |
| End scraper, Variety 4 | - | 1 | - | - | - | - |
| End scraper, Variety 5 | 1 | 1 | - | - | 1 | 2 |
| Side scraper | - | - | - | - | 2 | - |
| Retouched flake | 1 | 5 | - | 1 | - | 1 |
| Badlands knife | 1 | 1 | - | - | - | - |
| Dodd knife | - | - | - | 1 | - | - |
| Broad, bifacial blade | - | 1 | - | - | - | 1 |
| Abrader, clinker | - | 2 | - | 2 | - | - |
| Abrader, sandstone | 1 | - | - | - | - | - |
| Grooved abrader, clinker | 1 | 1 | - | 2 | - | 1 |
| Shaft smoother | - | - | - | - | - | 1 |
| Hammerstone | - | 2 | - | - | 2 | - |
| Pitted hammerstone | - | - | 1 | - | - | - |
| Strike-a-light | - | - | - | 1 | - | - |
| 1. House floor — Ground stone maul | 1 | - | - | - | - | - |
| 2. 6 inches below floor — Catlinite pipe fragment | - | - | - | 1 | - | - |
| 3. Cache 1 — Planoconvex/scraper | - | 1 | - | - | - | - |
| 4. Cache 2 — side | | | | | | |
| 5. Cache 3 | | | | | | |
| 6. Cache 4 | | | | | | |

Table 31. Pottery, Feature 2, 39CA6.

| | 1 | 2 | 3 | 4 | 5 | 6 | Total |
|---|---|---|---|---|---|---|---|
| Talking Crow Brushed | 3 | 4 | 1 | 3 | - | - | 11 |
| Talking Crow Cord Impressed | 6 | 2 | - | 2 | 3 | - | 13 |
| Talking Crow Indented | 3 | 11 | 3 | 3 | 1 | - | 21 |
| Talking Crow Straight Rim | 3 | 2 | 1 | - | - | 1 | 7 |
| Intermediate Plain | 1 | - | - | - | - | - | 1 |
| Intermediate Cord Impressed | 1 | - | - | - | - | - | 1 |
| Intermediate Tool Impressed | 1 | - | - | - | - | - | 1 |
| Stanley Plain | 3 | - | - | - | - | - | 3 |
| Stanley Cord Impressed | 2 | - | - | - | - | - | 2 |
| Stanley Wavy Rim | 1 | - | - | - | - | - | 1 |
| S-Rim | 4 | 12 | 1 | 1 | 6 | - | 24 |
| Akaska Stab and Jab | - | - | - | 1 | - | - | 1 |
| Nordvold Horizontal incised | - | 2 | - | - | - | - | 2 |
| Rim Totals | 28 | 33 | 6 | 10 | 10 | 1 | 88 |
| Body Sherds: | | | | | | | |
| Brushed | 20 | - | 3 | 6 | 5 | - | 34 |
| Plain | 37 | - | 7 | 7 | 38 | 9 | 98 |
| Simple Stamped | 94 | - | 15 | 49 | 12 | 16 | 186 |
| Polished | 27 | - | 5 | 6 | 13 | 6 | 57 |

1. House floor
2. 6 inches below floor
3. Cache 1
4. Cache 2
5. Cache 3
6. Cache 4

## Feature 3: House

Feature 3, also a house located outside the fortification ditch, was situated on the northeast side of the site. The situation exposed by excavation in feature 2 was duplicated in feature 3. Excavation was complicated by its close proximity to the surface and consequent surface and sub-surface obliteration of features due to weathering and rodent action. Further complications arose because of the superposition of feature 3 over a second house floor, feature 12, discovered on the east side.

Fill: The house floor was extremely close to the surface, 18 inches in depth along the western and deepest end and only 8 inches in depth at the eastern end near the entrance. Little fill was removed with the power shovel to preserve a 6 inch layer above the floor to be more carefully excavated by hand.

Posts: As in feature 2, the post molds were extremely difficult to locate. Only a very few of the molds contained any traces of decayed wood, the positions of the molds being, in the main, determined by testing the differential hardness of the soil. The exposed pattern of the molds clearly revealed the floor plan of a semisubterranean house approximately 40 feet in diameter. It should be noted that the molds in the outer ring of this house were aligned, generally, in straight lines. This characteristic, seen to some extent in all the houses, has not yet been determined to be either a result of limitation by form or a stylistic preference. No post molds for central supports of the size found in the other houses were located, but an inner row of molds was well defined. An arc of post molds delimiting the western edge of feature 12 became visible after the floor of feature 3 was removed to a depth of 2 inches.

Floor: The floor was a hard, compacted soil 1 inch in thickness, mottled orange and brown in color and contained numerous flakes and small sherds, obviously trampled into the floor. There was a marked downward slant from east to west. A stone grinding basin was found on the floor near the western edge of the fire pit. It was more irregularly shaped and not so heavily pitted as the one found in feature 2. Removal of the floor exposed 5 cache pits and an arc of post molds cutting across the eastern quarter of the house (see Figure 37). In the elliptical area formed by the intersection of the two rings of molds, 2 inches below the floor of feature 3, another floor was found. This floor was associated with the newly discovered arc of post molds and continued eastward beyond the eastern edge of feature 3. To the west of the arc of post molds, the floor was cut away to the customary depth of 6 inches, revealing considerable material.

Fire Pit: The fire pit was found off center to the east, containing a thin ash bed in a shallow basin. The circumference described an oval 2½ by 3 feet in dimensions and 8 inches in depth.

Entrance: The entrance opened to the east. Its close proximity to the surface made the location of the flanking rows of molds most difficult to find. No artifacts were found in this area.

Cache Pit 1: This very productive pit was exposed while scraping down the floor. It was typically bell-shaped, approximately 2 feet by 3 feet in diameter at the top, widening to 6½ feet in diameter toward the bottom. A ledge, 1 foot in width, was found along the western edge of the pit, 1 foot and 8 inches below the surface. Two post molds included within the fill indicated the cache pit was antecedent to the house. There were

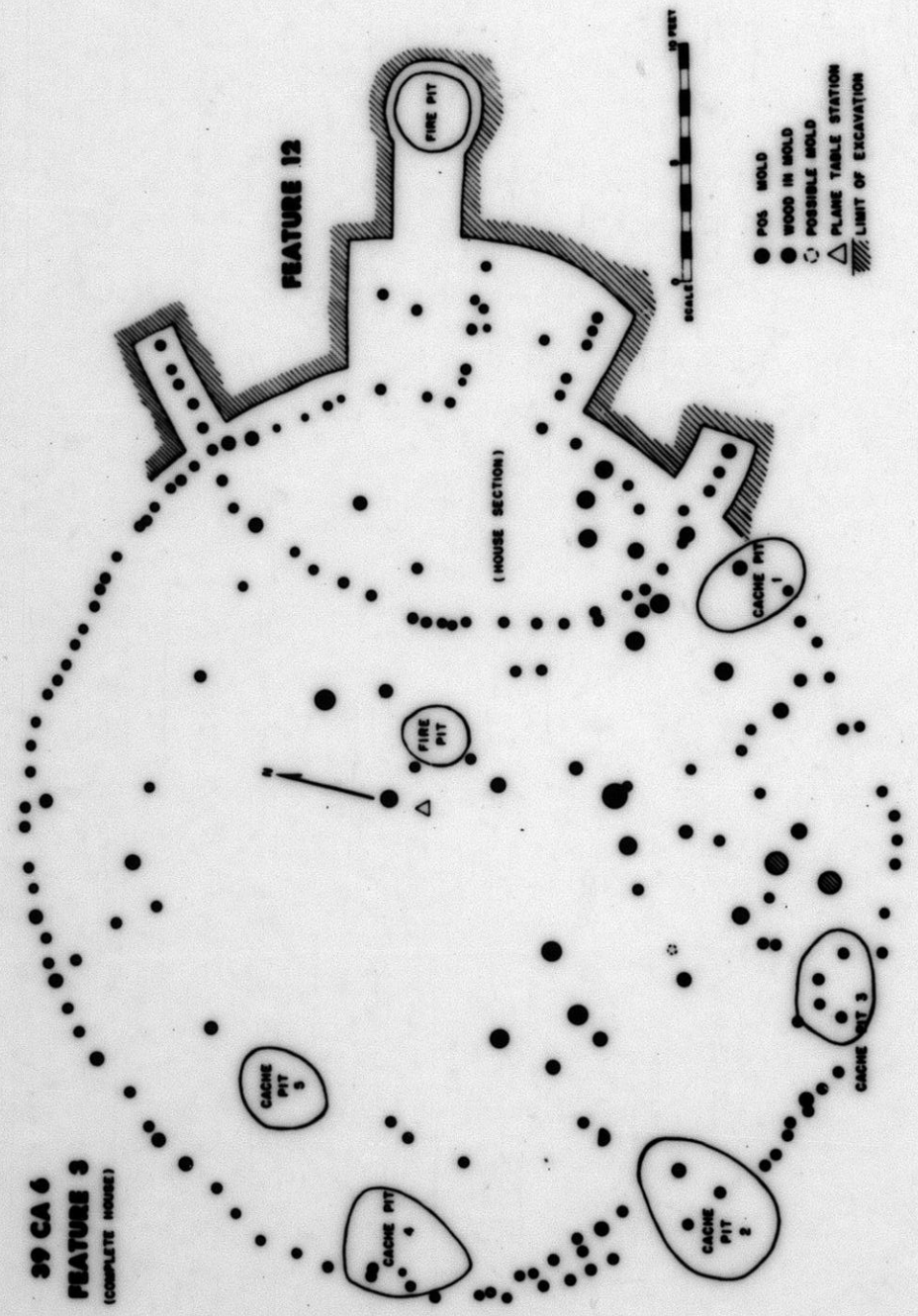



Figure 37. 39CA6, Map of Features 3 and 12.

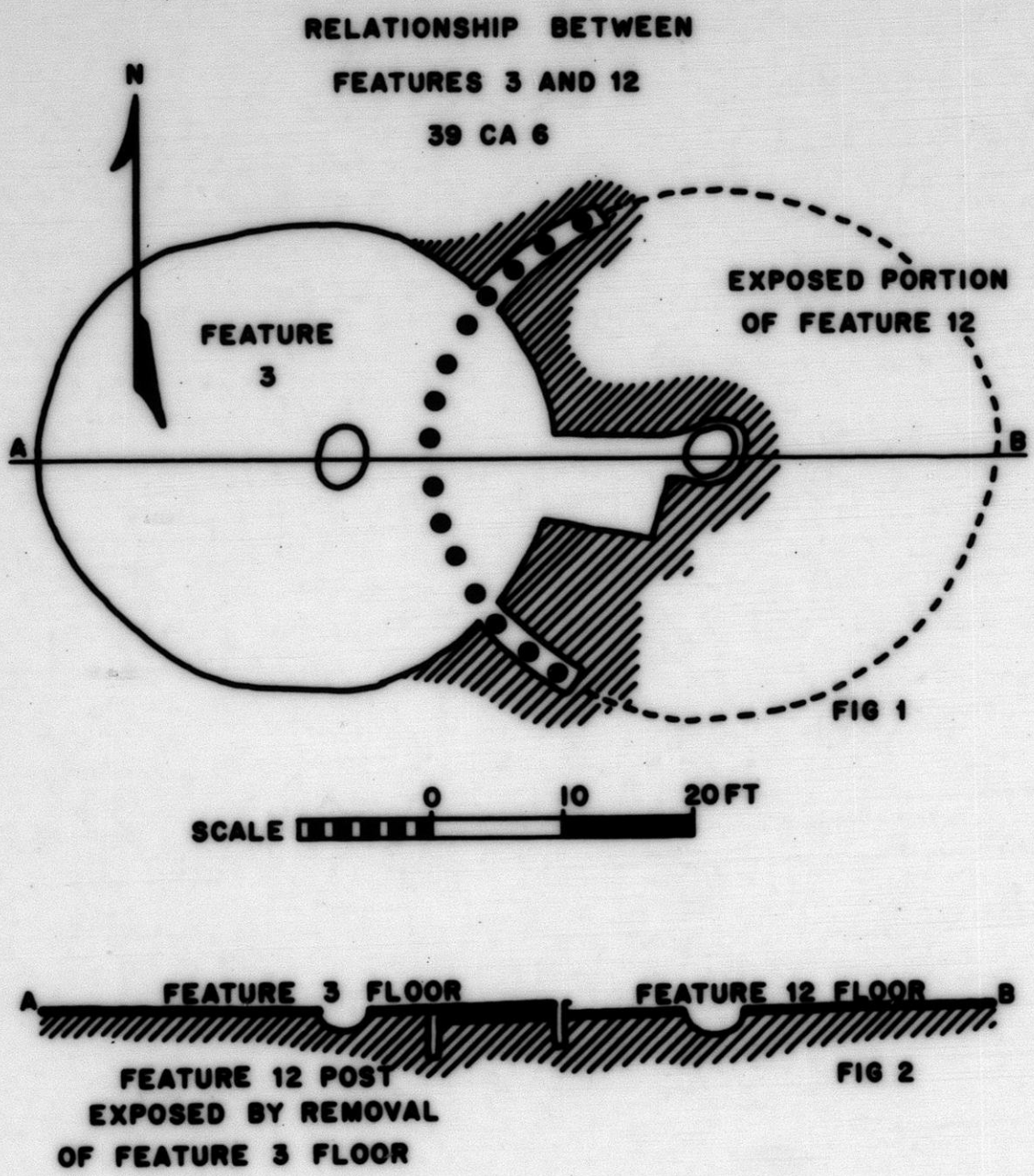



Figure 38. Diagram of the Relationship between Features 3 and 12.

two thick layers of ash, one near the floor and another about midway down. Traces of red ocher appeared in several areas, staining many of the artifacts found around it. The bottom of this pit was reached at a depth of 4½ feet.

Cache Pit 2: This cache pit, 5 by 7 feet in dimensions, extended into the bank of the house pit 3 feet beyond the outer ring of post molds. Three post molds were located in the pit in alignment with others forming the wall pattern, indicating that cache pit 2 predated construction of feature 3. Though the pit was not very deep, being but 2 feet in depth, a great quantity of material was found. One of these items was a trimmed bone hoe bearing a mark where a bullet partially penetrated the dorsal side.

Cache Pit 3: Cache pit 3 also extended into the bank beyond the outer ring of post molds. Four of these molds were located within the pit fill and suggested a later temporal relationship for the house. Some of the molds apparently extended to the bottom of the pit but one mold was imbedded only part way. Sherds discovered under this latter mold appeared crushed from the pressure exerted from above. The bulk of the artifacts were found in the upper 6 inch sector. In addition to the artifacts, there were several horizontal fragments of wood lying 8 inches below the floor along the western edge of the pit. The basin-shaped bottom of this 4 by 5 foot pit was reached at a depth of 2 feet. The most significant item found in this pit was a fragmentary bone knife handle with a small piece of an iron blade still in place in the slot.

Cache Pit 4: This cache pit, roughly triangular in shape, was situated on the west side of the house intersecting the outer ring of post molds and including four of the molds within the fill. Lack of time forced us to

abandon the cache, before completing the excavation, at a depth of 2½ feet, however, very little material was found below 2 feet. Inclusion of the post molds indicated the house postdated the cache. Small fragments of decayed wood and charcoal were mixed throughout the fill.

Cache Pit 5: This cache pit was the only one to be found entirely within the house walls. Unfortunately, this portion of the floor was disturbed by digging too deeply with the power shovel and became, therefore, too disrupted for an accurate determination of temporal placement. However, the large diameter near the floor level and the shallow depth of 18 inches suggested that this pit was cut off near its bottom when the house pit was dug and, consequently, predated the house.

Table 32. Bone and Brass Implements, Feature 3, 39CA6.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Rib-edge awl/flaker | 1 | - | 1 | - | 1 | - | - |
| Cannon-bone awl | - | - | - | - | 1 | - | - |
| Split cannon-bone awl | - | - | 2 | 3 | - | - | - |
| Quartered metapodial awl | - | - | - | 1 | - | - | - |
| Splinter awl | - | - | - | - | 2 | - | - |
| Awl fragments | - | 3 | - | - | - | - | - |
| Simple bone hoe | 1 | - | 1 | - | - | - | - |
| Notched bone hoe | 1 | 1 | 3 | 1 | 1 | - | - |
| Trimmed bone hoe | - | - | 3 | 2 | - | 1 | - |
| Hoe blade fragments | 1 | 1 | 3 | 4 | 3 | - | 3 |
| Robe softener | - | 1 | - | - | - | - | - |
| Hide grainer | - | 1 | - | - | 1 | - | - |
| Rib shaft straightener | - | - | 1 | - | 1 | - | - |
| Knife handle | - | - | 2 | - | 4 | - | 1 |
| Antler flaker | - | - | 1 | 1 | 1 | - | - |
| Splinter flaker | - | 1 | - | 1 | - | - | - |
| Rough quill flattener | - | - | - | 1 | - | - | - |
| Smoothed quill flattener | - | 1 | - | - | - | - | - |
| Scapula cleaver | - | - | - | 1 | - | - | - |
| Scapula digging tool | 1 | 1 | 1 | - | - | 2 | - |
| Backed scapula knife | 1 | - | - | - | - | - | 1 |
| Thin scapula knife | 1 | - | 1 | - | - | - | - |
| Utilized rib | - | 1 | 1 | 2 | 1 | - | - |
| Bone tube | - | - | 1 | - | - | - | - |
| "Needle" - non-grooved variety | - | - | 2 | - | - | - | - |
| Utilized scapula spine | - | - | - | 1 | - | - | - |
| Total bone implements | 6 | 11 | 23 | 18 | 16 | 3 | 5 |
| Brass tube | - | 4 | 5 | - | - | - | - |

1. House fill
2. House floor
3. Cache 1
4. Cache 2
5. Cache 3
6. Cache 4
7. Cache 5

Table 33. Stone Implements, Feature 3, 39CA6.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Chipped stone projectile points: | | | | | | | |
| Heavy triangular points | - | - | 1 | 1 | - | - | - |
| Tip fragment | - | 1 | - | - | - | - | - |
| End scraper, Variety 1 | - | 2 | 2 | - | - | - | - |
| End scraper, Variety 2 | - | 1 | - | - | - | 1 | - |
| End scraper, Variety 3 | - | - | - | 1 | - | - | - |
| End scraper, Variety 4 | - | - | 1 | - | - | - | 1 |
| End scraper, Variety 5 | - | 1 | 1 | - | - | - | - |
| Retouched flake, parallel-sided | - | - | - | - | 1 | - | - |
| Badlands knife | - | 1 | 1 | 1 | 2 | 1 | - |
| Dodd knife | - | 1 | 2 | - | - | - | - |
| Broad, bifacial blade | - | 1 | 1 | 1 | - | - | - |
| Hammerstone | - | 6 | 8 | - | 2 | 1 | 3 |
| Pitted hammerstone | - | 3 | - | - | - | - | - |
| Abrader, clinker | - | 3 | 2 | - | 1 | 1 | - |
| Grooved abrader, clinker | - | - | 2 | - | - | - | 5 |
| Grooved abrader, sandstone | - | 1 | - | - | - | - | 1 |
| Retouched flake | - | - | - | - | - | - | 1 |
| Planoconvex side scraper | - | 1 | - | - | - | - | - |
| Chopper | - | - | 1 | - | - | - | - |
| Ground stone maul | - | 1 | - | - | - | - | - |

1. House fill
2. House floor
3. Cache 1
4. Cache 2
5. Cache 3
6. Cache 4
7. Cache 5

Table 34. Pottery, Feature 3, 39CA6.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Total |
|---|---|---|---|---|---|---|---|---|
| **Rim Sherds** | | | | | | | | |
| Talking Crow Brushed | 2 | 5 | 26 | 1 | 4 | 7 | 3 | 48 |
| Talking Crow Cord Impressed | 2 | 4 | 8 | - | 7 | 2 | 2 | 25 |
| Talking Crow Indented | 1 | 17 | 15 | 4 | 5 | - | 1 | 43 |
| Talking Crow Straight Rim | - | - | 2 | 1 | 1 | - | - | 4 |
| Intermediate Plain | - | 3 | 3 | - | - | 1 | - | 7 |
| Intermediate Cord Impressed | 1 | 2 | 8 | 1 | 8 | - | 1 | 21 |
| Intermediate Tool Impressed | - | - | 4 | - | 11 | 1 | - | 16 |
| Stanley Plain | - | - | - | 1 | - | - | - | 1 |
| Stanley Cord Impressed | - | - | - | - | 1 | - | - | 1 |
| Stanley Tool Impressed | - | - | 2 | - | - | - | - | 2 |
| Stanley Wavy Rim | - | 2 | - | - | - | - | - | 2 |
| S-Rim | 2 | 6 | 3 | 11 | 3 | 1 | 1 | 27 |
| Akaska Stab and Jab | - | 1 | - | 1 | - | - | - | 2 |
| Le Beau Punctate | - | - | 2 | - | 2 | - | - | 4 |
| Nordvold Horizontal Incised | - | 2 | - | - | - | - | - | 2 |
| TOTAL | 8 | 42 | 73 | 20 | 42 | 12 | 8 | 205 |
| **Body Sherds** | | | | | | | | |
| Brushed | - | 11 | 28 | 4 | 9 | 3 | 6 | 61 |
| Plain | 9 | 29 | 113 | 12 | 33 | 7 | 26 | 229 |
| Stamped | 23 | 66 | 180 | 45 | 97 | 28 | 40 | 479 |
| Polished | 6 | 21 | 71 | 17 | 47 | 8 | - | 170 |

## Feature 4: Fortification Ditch

One of the prominent features at the Bamble site was the fortification ditch which surrounded the greater portion of the site. The broad, shallow ditch, in its present form, would have provided little defensive protection and must have been considerably modified from its original contours. Excavation within the ditch was accorded a high priority in the belief that clues to the chronological reconstruction of the site plus the original form of the ditch would be revealed.

Preliminary testing by hand shoveling indicated that a substantial fill (4 to 5 feet in depth) had accumulated in the ditch. Taking advantage of the availability of the power shovel, two transverse trenches were dug across the eastern and northern sectors of the ditch and labeled features 4 and 5 respectively.

The trench in feature 4 was cut across the fortification ditch in the easternmost arc of the ditch and was oriented in a general northeastsouthwest direction. The excavation of the trench was carried to a depth of nearly 7 feet in order to clearly reach below the limits of disturbed earth. The length of the trench covered the complete width of the ditch from crest to crest, a distance of 40 feet. Following the excavation by the power shovel, the trench was troweled smooth so that a sectional profile might be recorded.

The outermost section of feature 4 (see Figure 39), comprising the eastern end of the trench, revealed a stratification consisting of a dark earth filled with refuse superimposed upon a horizontal zone of sterile, dark soil (perhaps water deposited) uniformly 24 inches in thickness

which in turn rested upon a yellow clay, the sterile subsoil. The topmost stratum of refuse-filled earth varied from 44 inches in thickness at the edge of the fortification ditch to 30 inches toward the center. This decrease in thickness toward the center of the ditch, a slope of 14 inches in 10 feet, reflects the fact that the present contours of the ditch, at least at this point, have been markedly changed by the subsequent accumulation of refuse. The deepest portion of the present ditch now rests upon what was the outer margin of the original trench. Subsequent accumulation of refuse, primarily on the interior of the ditch from occupation within the fortified area and to a lesser extent from refuse deposited outside the fortified area, has progressively filled in the ditch.

The major feature noted in the outer portion of the trench was the basal portion of a cache pit (cache pit 1) which was detected in the north wall of the eastern end of the trench. This basin-like cache with rounded walls having a maximum diameter of 50 inches had its southern extremity removed by the initial trench operation. The base of the cache was gently rounded and the side walls contracted slightly above the point of maximum diameter. The outline of the walls could be detected clearly only in the zone of sterile dark soil but could not be traced in the refuse-filled earth above this point. It could not, therefore, be determined at what point in the accumulation of this latter zone the cache had been dug. In view of the limited excavation time available, the cache was excavated by undercutting the bank at this point. Refuse was abundant in the pit fill, but the most notable find consisted of portions of a birch bark (paper birch) container. When laid flat, these pieces resembled a mokok, a general container characteristic of the northeastern Woodland Indians

(Lyford, 1943: 56). It was a first thought that this container clearly represented an imported item from the Woodland tribes to the east. However, a conversation with Dr. Jeanette Cryn of the Wisconsin Forest Products Laboratory revealed a wide distribution of white birch trees along the water courses of South Dakota. This still left the question of the pattern of the container. Either the box itself or, at least, the idea had to be introduced to the Bamble site from the east. Such containers were widely used to hold maple sugar, an item provided the traders by the Indians. It is perhaps not impossible that the container could have been introduced through their white trade contacts rather than by direct contacts between Indian groups.

It should be noted that despite the weather during the major portion of the excavation period being notably dry, beads of moisture could be seen on materials in the fill of the cache. Local drainage conditions may have favored keeping the deposit in the vicinity of the ditch moist with a consequent effect of preserving perishable materials.

The central portion of the trench (see Figure 39) bisected the original ditch. A steep buttress about 3 feet in height marked the outer wall. A flat step within this, nearly 2 feet in width, bordered on a rounded depression clearly representing the deepest portion of the ditch which penetrated an additional foot into the subsoil. The inner margins of the ditch could not be as easily detected. A possible interpretation of this situation is that the ditch was in part dug through a sector where refuse has already accumulated so that soil differences resulting from later fill in the ditch could not be readily seen. If this interpretation is correct, the village was occupied for some time before the fortification was constructed.

In view of the presence of some 6 feet of fill in the ditch proper, it was thought that this was an appropriate point for a stratigraphic test. A 10 foot square was laid out southeast of the trench immediately above the ditch area and the deposit was excavated in one foot levels which followed the contours of the surface, sloping only slightly at this point. When the excavation reached the fourth level, a burial was encountered in the eastern margin of the 10 foot square, 37 inches below the surface. The base of the burial pit was reached at a depth of 45 inches. Desirable as the recovery of skeletal material and information on burial customs was, the presence of the burial did raise the question as to whether this did not disturb the stratigraphy of the test square. The burial was on the flank of the square and to excavate it entirely it was necessary to undercut the bank in the region; only a small portion of the burial was actually protruding into the square. The area in which it was placed was a sector relatively sterile of cultural material. It will be seen from the profile drawing that this area was probably the outer bank of the ditch wall. Further, the burial comprised at least two individuals. One was a primary flexed burial, but beneath this individual were the leg bones and section of the pelvis of a second person. When the last individual was buried, an earlier burial was disturbed though some of the first burial was left in situ. As the excavation continued, scattered human bones, probably belonging to this first individual, were recovered. The implication of this was clearly that the ditch was open at the time of the insertion of the second burial to allow the opportunity for the bones to be so scattered. Materials found with the burial, including items that may have been left behind from the first burial, must antedate the filling of the ditch and the materials incorporated in the upper ditch fill.

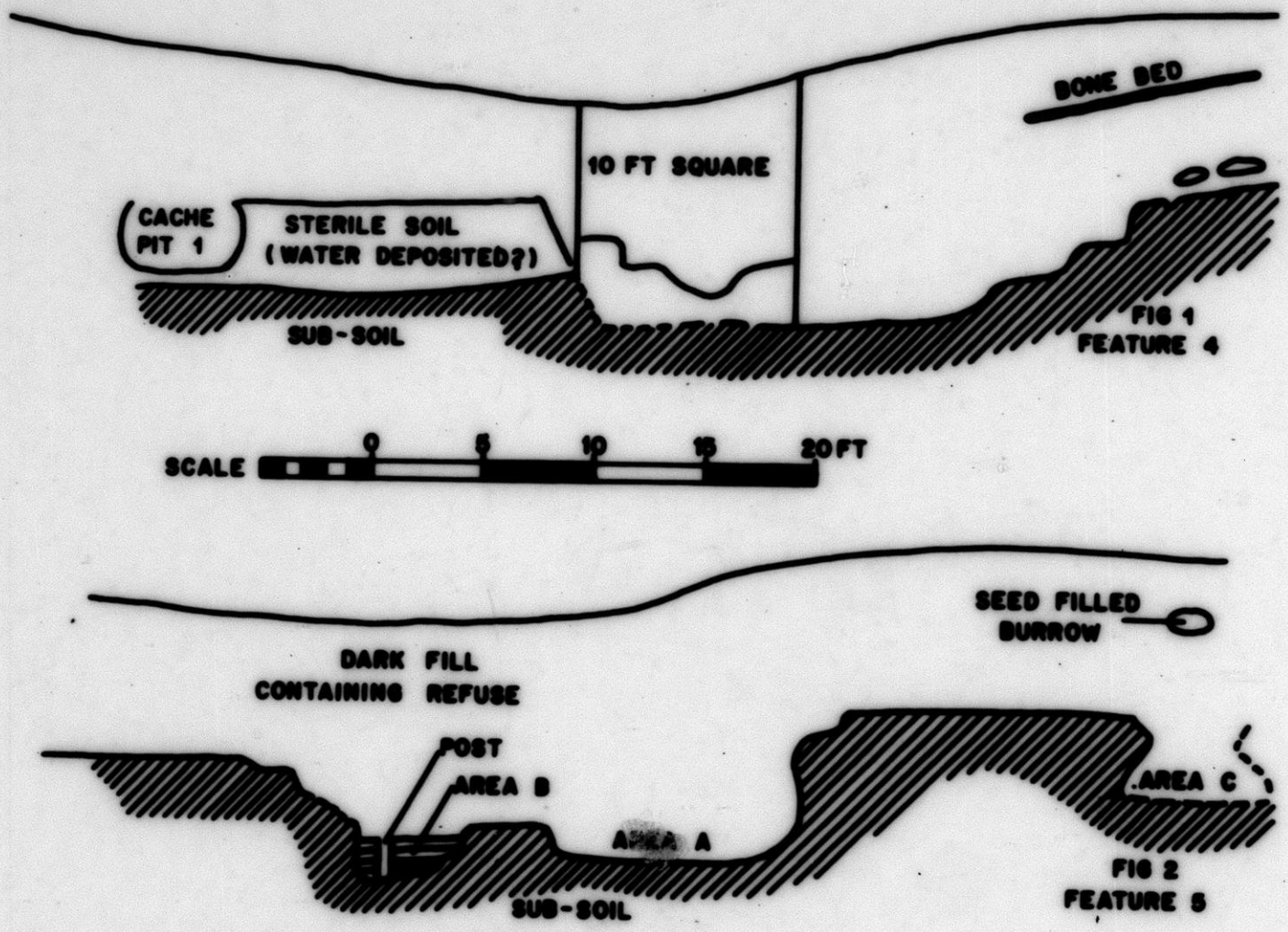



Figure 39. Trenches Across Fortification Ditch, Features 4 and 5, 39CA6.

## Feature 4: Burial

Traces of decayed wood were found above the burial, a middle-aged ($45^{\pm}$) male, indicating that a log covering had originally existed over the body. The skull and mandible were not in their proper anatomical position, the latter being displaced slightly to the west while the skull had rolled on its side at the east side of the burial. It was thought that perhaps the skull had originally rested against an inverted pottery vessel placed near the region of the head and when tissues had decomposed, the weight of the skull and earth overburden caused the skull to shift. The body was aligned in a northwest-southeast direction with the head toward the northwest. The body rested on its back with the arms extended along the sides, the hands resting upon the upper legs and pelvis. The legs were extended to the knees with the tibia and fibula tightly flexed back to the hip.

In addition to a cluster of gypsum crystals, a lens of red ocher and two areas saturated with yellow ocher, the following artifacts were associated with the burial:

Pottery Vessel: found adjacent to the skull, placed mouth downward. Type, Talking Crow Cord Impressed with flaring rim 23 mm. in height and 9 mm. thick. Height of vessel 17 cm; diameter of orifice 13 cm. One of two original handles (one broken off) 19 mm. in width. Neck smoothed and body stamped. Cord decorations applied to rim, lip and handle in series of horizontal lines.

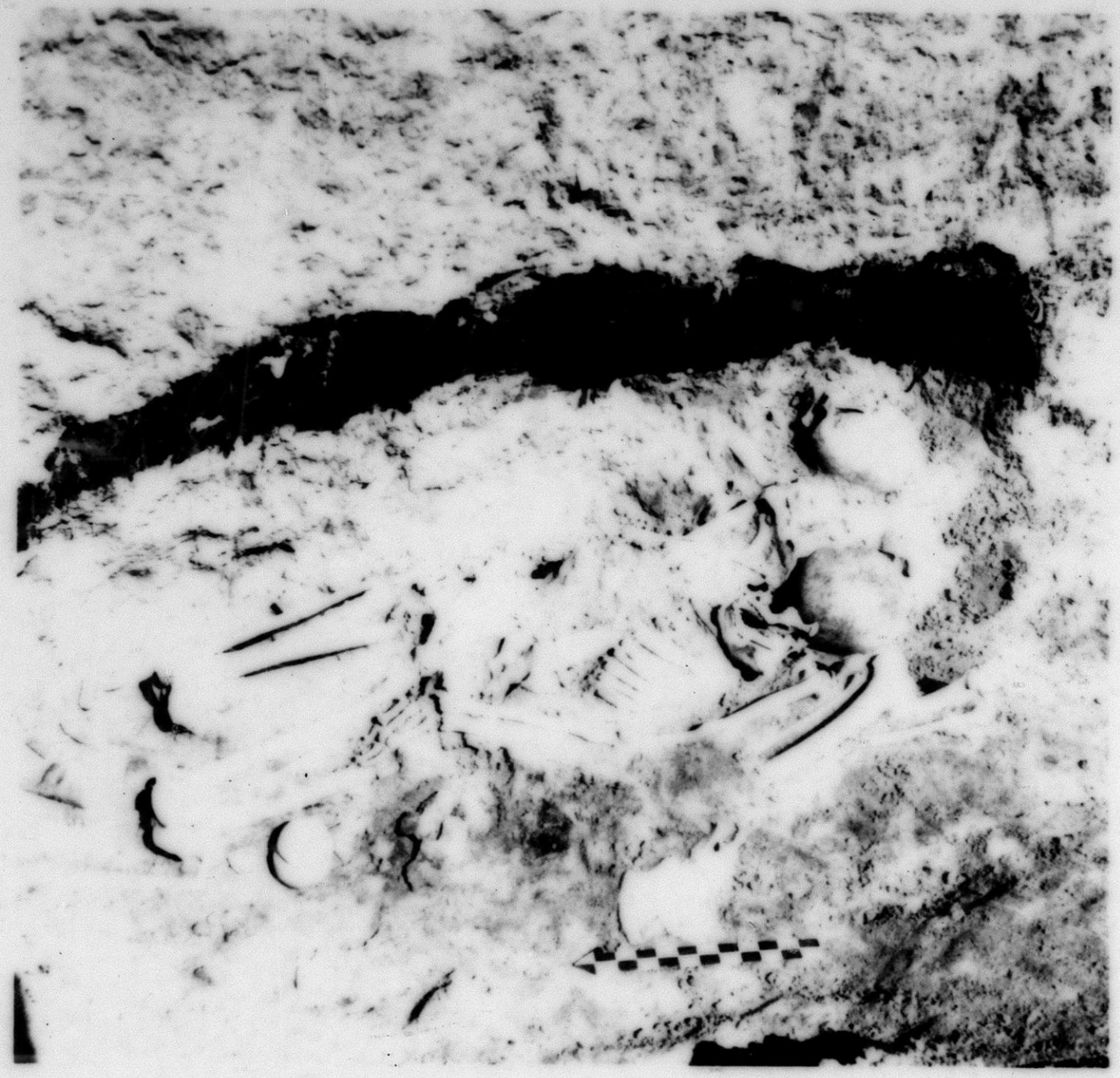


Figure 40. Burial in Feature 4 at the Bamble Site, 39CA6.

Figure 41. Region of Head of Burial in Feature 4, 39CA6.

Figure 42. Foot Region of Burial in Feature 4, 39CA6.

Grooved War Club Head: found near left leg. Club head made of white quartzite. Fully grooved with a hollow depression at point where handle would join. Surface well polished and symmetrically shaped. Groove divides club head into two, almost equal, halves. Length 85 mm.; width 73 mm; thickness 66mm.

Catlinite Pipe: short round bowl set perpendicularly to a long, squared base which projects beyond bowl in the form of a wedge. Maximum diameter of bowl 22 mm. Wall of bowl 2 mm thick. Small perforated lug projects from upper side of stem. Hole for stem tapers from 12 mm. in diameter to about 5 mm where it enters the bowl. Overall length 104 mm.

Stone Implement: long ovate, smoothly ground and polished body with a chipped projection on one end. Body is oval in cross section. Projection is elliptical in cross section. Chipped end has parallel sides and may have been longer at one time. Chipped end looks like reamer but high polish may indicate use as ornament. Length of projection 9 mm, 6 mm wide. Body width 21 mm by 9 mm thick. Overall length 71 mm.

Rough Quill Flatteners: Pair of long, narrow rib sections. Both split longitudinally and ends rounded. Cancellous tissue ground smooth. Long edges undulate but are ground smooth. One 349 mm in length. Other 317 mm in length.

In removing the left leg of the first individual, additional pot-sherds, a triangular projectile point, a mass of seeds, white pigment and a wooden implement were found. The wooden implement was considerably eroded by percolating ground water making identification of the original form of the object almost impossible. It was rectangular, 125 mm by 45 mm by 15 mm

in dimensions and looked much like a fragment of bark (cottonwood?). One side was covered with many crudely incised lines forming a diamond pattern.

The remains of the second individual were largely confined to a portion of the pelvis, 1 femur, 2 tibiae and 2 fibulae as well as a few bones of the ankle. Beneath these bones were also some of the crushed potsherds previously noted so that some of this material must represent grave goods from the first burial. In addition, a scapula digging tool and a backed scapula knife had been placed beneath the leg bones.

In excavating the balance of the burial, it was necessary to undercut the bank extensively. Crushed fragments of pottery were found on what appeared to be the grave floor nearly 18 inches east of the burial. This same area, and immediately adjacent to the burial, contained small bones, partly articulating, of a mammal. In removing this material, a bone whistle and a hide grainer were also found. A bone hoe and a quill flattener were found in the upper part of the grave fill at the eastern edge.

Continuing with the discussion of the original trench comprising feature 4, there is remaining that area of the trench west of the 10 foot test square (see Figure 39). As noted previously, this area rather than having a sharp buttress marking the edge of the fortification ditch appeared to slope more gradually to the base of the ditch. Thickness of the refuse deposit ranged from 72 to 50 inches. Stratigraphy could be seen only near the western limits where the upper 20 inches contained a very marked concentration of animal bones which rested upon a thin ash lens. Below this point refuse was present but not abundant. Ash and charcoal resting directly upon sterile clay at the eastern end of the trench, 50 inches below the surface, was thought to mark the edge of a house depression which was dipping downwards at the end of the trench.

Table 35. Bone Implements, Feature 4, 39CA6.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Rib-edge awl/flaker | - | 1 | 1 | 1 | - | - | 2 | - | - | - |
| Splinter awl | - | 1 | - | - | 1 | 1 | - | - | - | - |
| Awl fragments | - | - | - | 1 | - | - | - | - | - | - |
| Notched bone hoe | - | - | 2 | 2 | - | - | - | 2 | - | - |
| Trimmed bone hoe | 2 | 1 | 1 | - | 2 | - | 2 | 1 | - | - |
| Hoe blade fragments | - | 4 | - | 2 | 1 | 2 | - | - | - | - |
| Hide grainer | - | 1 | - | - | 1 | - | 1 | - | - | - |
| Rib shaft straightener | - | - | - | - | 1 | - | - | 1 | 1 | - |
| Knife handle | - | - | 1 | - | 1 | - | - | - | - | - |
| Antler flaker | - | - | - | 2 | - | - | 2 | - | - | - |
| Polished quill flattener | - | 1 | - | - | - | - | - | - | - | - |
| Rough quill flattener | - | - | 1 | - | - | - | 2 | - | - | - |
| Scapula cleaver | - | - | - | - | - | 1 | - | - | - | - |
| Scapula digging tool | - | - | - | - | - | - | 1 | - | - | - |
| Backed scapula knife | - | - | - | - | - | - | 1 | - | - | - |
| Utilized rib | - | - | 2 | - | - | - | 1 | - | - | - |
| Bone whistle | - | - | - | - | - | - | 1 | - | - | - |
| Bone tube | - | - | - | - | - | - | - | - | - | 1 |
| Flesher | - | 1 | - | - | - | - | - | - | - | - |
| Antler pick | - | - | - | - | - | 1 | - | - | - | - |
| Utilized scapula spine | - | - | - | - | - | - | - | 1 | - | - |
| TOTAL | 2 | 10 | 8 | 8 | 7 | 5 | 13 | 5 | 1 | 1 |

1. Level 1 - 10 foot square
2. Level 2 - 10 foot square
3. Level 3 - 10 foot square
4. Level 4 - 10 foot square
5. Level 5 - 10 foot square
6. Level 6 - 10 foot square
7. Burial
8. Trench 0 - 28 inches deep
9. Cache pit 1
10. Trench 48 - 52 inches deep

Table 36. Stone, Pottery and Brass Implements, Feature 4, 39CA6.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chipped stone projectile points: | | | | | | | | | | | |
| Simple triangular points | 1 | 3 | 3 | - | 2 | 1 | 1 | - | - | - | - |
| Side-notched triangular points | 1 | 3 | 3 | - | - | 1 | - | - | - | - | - |
| Heavy triangular points | - | 1 | 1 | - | - | - | - | - | - | - | - |
| Tip fragment | - | 1 | 1 | - | - | - | - | - | - | - | - |
| End scraper, Variety 1 | - | 6 | 1 | 1 | 2 | 1 | 1 | - | - | 1 | - |
| End scraper, Variety 2 | - | - | - | - | 3 | - | 1 | - | - | - | - |
| End scraper, Variety 3 | - | 2 | - | - | - | - | - | - | - | - | 1 |
| End scraper, Variety 4 | - | 3 | 1 | 2 | 2 | 1 | - | - | - | - | - |
| End scraper, Variety 5 | 1 | 3 | - | - | - | 1 | - | - | - | - | - |
| Side scraper | - | - | 1 | - | - | - | - | - | - | - | - |
| Retouched flake | - | 6 | 4 | 1 | - | - | - | - | 1 | 1 | - |
| Retouched flake, parallel-sided | - | - | - | - | 1 | - | - | - | - | - | - |
| Badlands knife | - | - | - | 3 | - | - | 2 | - | - | - | - |
| Dodd knife | 1 | 1 | - | - | 1 | 1 | - | - | - | - | - |
| Broad, bifacial blade | - | 2 | - | 1 | - | 2 | - | - | 2 | - | - |
| Hammerstone | 2 | 2 | 3 | - | - | 2 | 1 | - | 2 | 1 | - |
| Pitted hammerstone | - | - | - | 1 | - | - | - | - | - | - | - |
| Abrader, clinker | - | 1 | 2 | 1 | 1 | 2 | - | - | 1 | 1 | - |
| Abrader, sandstone | - | 2 | 4 | - | - | - | 1 | - | - | - | - |
| Grooved abrader, clinker | 5 | 2 | 2 | 3 | - | - | - | - | - | - | - |
| Grooved abrader, sandstone | - | 1 | 1 | - | - | - | - | - | - | - | - |
| Shaft smoother | - | 1 | - | - | - | 1 | - | - | - | - | - |
| Catlinite pipe and pipe fragments | - | - | 1 | - | - | - | 1 | - | - | - | - |
| Ground stone war club | - | - | - | - | - | - | 1 | - | - | - | - |
| Grooved maul | - | - | - | 1 | - | - | - | - | - | - | - |
| Ground stone axe | - | - | - | 1 | - | - | - | - | - | - | - |
| Brass tinkler | - | - | 1 | - | 1 | - | - | - | - | - | - |
| Brass tube | - | - | 1 | - | - | - | - | - | 2 | - | - |
| Brass sheet fragments | - | 2 | - | - | 2 | - | - | - | - | - | - |
| Iron fragment | 1 | 1 | - | - | - | - | - | - | - | - | - |
| Polishing stone | - | - | - | 1 | - | - | - | - | - | - | - |
| Chopped | - | 1 | - | - | - | - | - | - | - | - | - |
| Strike-a-light | 2 | 1 | - | - | 2 | - | - | - | - | - | - |
| Pottery disc | - | - | - | 1 | - | - | - | - | - | - | - |

1. Level 1 - 10 foot square
2. Level 2 - 10 foot square
3. Level 3 - 10 foot square
4. Level 4 - 10 foot square
5. Level 5 - 10 foot square
6. Level 6 - 10 foot square
7. Burial
8. Trench 0 - 28 inches deep
9. Cache pit 1
10. Trench 48 - 52 inches deep
11. No specific provenience

Table 37. Pottery, Feature 4, 39CA6.

| Rim Sherds | Ten Foot Square: Foot Levels | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Talking Crow Brushed | 8 | 26 | 10 | 18 | 8 | 8 |
| Talking Crow Cord Impressed | 4 | 7 | 5 | 7 | 4 | 5 |
| Talking Crow Indented | 5 | 13 | 9 | 14 | 5 | 7 |
| Talking Crow Straight Rim | - | 2 | 3 | 4 | 1 | 3 |
| Intermediate Plain | - | 6 | 2 | - | 1 | 1 |
| Intermediate Cord Impressed | - | 1 | 2 | 2 | - | 1 |
| Intermediate Tool Impressed | 1 | - | - | - | - | 1 |
| Stanley Plain | - | 4 | - | 2 | - | 1 |
| Stanley Cord Impressed | - | - | - | - | 1 | - |
| Stanley Tool Impressed | - | 1 | - | 1 | - | 1 |
| Stanley Wavy Rim | 2 | 1 | - | - | - | - |
| S-Rim | 4 | 14 | 11 | 6 | 8 | - |
| Akaska Stab and Jab | - | - | - | - | 1 | - |
| Le Beau Punctate | - | - | 3 | - | - | - |
| TOTAL | 24 | 76 | 45 | 55 | 29 | 28 |
| Steamboat Cord-Wrapped Rod | - | 1 | - | 1 | - | - |
| Nordvold Horizontal Incised | - | 1 | - | - | - | - |

| | Other Locations | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | Total |
| Talking Crow Brushed | 6 | 3 | - | 1 | 5 | 93 |
| Talking Crow Cord Impressed | 1 | 7 | - | 1 | 1 | 42 |
| Talking Crow Indented | 4 | 3 | - | 3 | 1 | 64 |
| Talking Crow Straight Rim | - | - | - | - | - | 13 |
| Intermediate Plain | - | 3 | - | - | - | 13 |
| Intermediate Cord Impressed | - | 1 | 1 | - | 1 | 9 |
| Intermediate Tool Impressed | 1 | 1 | - | - | - | 4 |
| Stanley Plain | 2 | - | - | - | - | 9 |
| Stanley Cord Impressed | 1 | - | - | - | - | 2 |
| Stanley Tool Impressed | 1 | - | - | - | - | 4 |
| Stanley Wavy Rim | 1 | 1 | - | - | - | 5 |
| S-Rim | 1 | 3 | 1 | 1 | 1 | 50 |
| Akaska Stab and Jab | - | - | - | - | - | 1 |
| Le Beau Punctate | - | - | - | - | - | 3 |
| Nordvold Horizontal Incised | - | - | 1 | - | - | 2 |
| Steamboat Cord-Wrapped Rod | - | - | - | - | - | 2 |
| TOTAL | 18 | 22 | 3 | 6 | 9 | 316 |

Other Locations:
1 - Burial
2 - Back fill
3 - 0 - 28 inches in Trench
4 - 48 - 52 inches in Trench
5 - Cache pit 1

Table 38. Pottery (Body Sherds), Feature 4, 39CA6.

| Body Sherds: Frequency | Ten Foot Square: Foot Levels 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Brushed | 11 | 63 | 35 | 32 | 27 | 28 |
| Plain | 15 | 129 | 48 | 58 | 56 | 35 |
| Stamped | 72 | 267 | 150 | 153 | 103 | 102 |
| Polished | 7 | 9 | 9 | 13 | 7 | 5 |
| TOTALS | 105 | 468 | 242 | 256 | 193 | 170 |

| Body Sherds: Percentages | | | | | | |
|---|---|---|---|---|---|---|
| Brushed | 10.5 | 13.5 | 14.5 | 12.5 | 14.0 | 16.5 |
| Plain | 14.3 | 27.6 | 19.8 | 22.6 | 29.0 | 20.3 |
| Stamped | 68.5 | 57.0 | 62.0 | 59.8 | 53.4 | 60.0 |
| Polished | 6.7 | 1.9 | 3.7 | 5.0 | 3.6 | 2.9 |

## Feature 5: Fortification Ditch

Eight hundred feet to the northwest, a second trench was cut by the power shovel across the northern-most arc of the fortification ditch, extending in a north-south direction. The stratigraphy was particularly difficult to interpret since little change could be detected in the main portion of the deposit which was dark in color and contained scattered refuse. Here again, we may call attention to the interpretation for feature 4 suggesting the possibility that the ditch was actually dug through a refuse deposit. What was actually observed was largely the changing conformation of the sterile soil beneath the refuse deposit (see Figure 39).

A single post, 7 inches in diameter, was noted in a shallow trench 3 feet in width that appeared to mark the outer edge of the fortification ditch. Undercutting the trench on either side failed to reveal any additional posts although it was evident that the shallow trench continued. This sector was designated Area B. To the south of this trench was a buttress of undisturbed yellow clay, 2 feet in width and 10 inches in height. Adjacent to this (Area A) was an area that had been excavated into the subsoil. Area A was nearly 7 feet in width and contained abundant refuse. The possibility was considered in the field that this might consist of a very large storage pit and the trench was undercut on both sides in an attempt to see if the limits of such a pit could be reached. The undercutting was carried to a point where it appeared to be unduly hazardous without resolving the question.

The southern edge of the trench cut through refuse 47 to 52 inches in thickness resting upon a sloping, compact brown soil line that suggested

it might be a house floor. The upper section of a bell-shaped cache pit (Area C) that originated at this house floor line was partially excavated.

Table 39. Artifacts recovered in Feature 5, 39CA6.

| | AREA | | | MISC. |
|---|---|---|---|---|
| | A | B | C | |
| Bone implements: | | | | |
| Rib-edge awl/flaker | 1 | - | - | - |
| Simple bone hoe | 1 | - | - | - |
| Notched bone hoe | - | - | - | 1 |
| Trimmed bone hoe | - | - | 1 | - |
| Hide grainer | - | - | 1 | - |
| Rib shaft straightener | 2 | - | - | - |
| Splinter flaker | - | - | 1 | - |
| Scapula digging tool | 1 | - | - | - |
| Bone whistle | - | - | - | 1 |
| Stone implements: | | | | |
| End scraper, Variety 1 | - | - | 1 | - |
| Side scraper | - | - | 1 | - |
| Retouched flaker | - | - | 1 | - |
| Abrader, clinker | - | - | 1 | - |
| Abrader, sandstone | - | - | 1 | - |
| Grooved abrader, clinker | 1 | - | 1 | - |
| Metal: | | | | |
| Brass knife blade | - | - | 1 | - |
| Brass sheet fragments | - | - | 2 | 1 |

Table 40. Pottery from Feature 5, 39CA6.

| | AREA | | | MISC. | TOTAL |
|---|---|---|---|---|---|
| Rim Sherds | A | B | C | | |
| Talking Crow Brushed | 28 | - | 1 | 3 | 32 |
| Talking Crow Cord Impressed | 19 | 1 | 1 | - | 21 |
| Talking Crow Indented | 8 | - | 1 | 2 | 11 |
| Talking Crow Straight Rim | 2 | - | 1 | - | 3 |
| Intermediate Plain | 3 | - | - | - | 3 |
| Intermediate Cord Impressed | 5 | - | 1 | - | 6 |
| Intermediate Tool Impressed | - | - | 2 | - | 2 |
| Stanley Plain | 1 | - | 4 | - | 5 |
| Stanley Cord Impressed | 4 | - | - | - | 4 |
| Stanley Tool Impressed | 3 | - | - | 1 | 4 |
| S-Rim | 10 | 2 | 3 | 1 | 16 |
| TOTALS | 84 | 3 | 14 | 7 | 108 |
| Nordvold Horizontal Incised | 1 | - | - | - | 1 |
| Body Sherds | | | | | |
| Brushed | 10 | 1 | 2 | 7 | 20 |
| Plain | 9 | - | 8 | 3 | 20 |
| Simple Stamped | 55 | 3 | 35 | 28 | 121 |
| Polished | 6 | - | 4 | 6 | 16 |
| TOTALS | 80 | 4 | 49 | 44 | 177 |
| Percentages: Rim Sherds | | | | | |
| Talking Crow Brushed | 33.7 | | | | 29.9 |
| Talking Crow Cord Impressed | 22.9 | | | | 19.6 |
| Talking Crow Indented | 9.6 | | | | 10.3 |
| Talking Crow Straight Rim | 2.2 | | | | 2.8 |
| Intermediate Plain | 3.5 | | | | 2.8 |
| Intermediate Cord Impressed | 6.0 | | | | 5.6 |
| Intermediate Tool Impressed | - | | | | 1.9 |
| Stanley Plain | 1.1 | | | | 4.7 |
| Stanley Cord Impressed | 4.8 | | | | 3.7 |
| Stanley Tool Impressed | 3.5 | | | | 3.7 |
| S-Rim | 12.0 | | | | 15.0 |
| Nordvold Horizontal Incised | 1.1 | | | | .9 |
| Percentages: Body Sherds | | | | | |
| Brushed | 12.5 | | | | 11.3 |
| Plain | 11.2 | | | | 11.3 |
| Simple Stamped | 68.9 | | | | 68.4 |
| Polished | 7.5 | | | | 9.0 |

## Feature 6: Midden Deposit

A test trench was dug through a midden on the northeast side of the site to get a stratified sample of material. The trench was dug 4 feet wide, 14 feet long and 6 feet in depth, deep enough to penetrate the sterile subsoil beneath the midden. Two well defined ash layers appeared in the profile despite the extensive rodent action in the area. Approximately 8 inches of fill and top soil lay over the first ash layer which was 1 foot in thickness. Between this ash layer and the subsoil below, there was a layer of dark fill, 2 feet in depth, containing small fragments of bone, pottery and stone chips. Within this layer was a second bed of ash, much smaller than the first, that was confluent with a large cache pit on the northeast end of the trench. The cache pit was of the typical bell-shaped variety found among the sedentary Plains tribes, with a funnel-shaped mouth and, in profile, looked much like an hourglass. (For further description of this cache pit, see feature 10).

The profile of the wall on the southeast side of the trench presented an unusual arrangement in stratigraphy for a midden. Consequently, to explore this area more fully, a 10 foot square was excavated adjacent to the trench. Excavation was conducted according to the natural stratigraphic levels.

Level 1: This level generally corresponds to the layer of top soil and fill that covered the ash bed on the opposite side of the trench.

Level 2: Level 2 was composed of a loose grey fill, 12 inches in depth.

Level 3: The significance of this level lies primarily in its association with the next level, a house floor excavated within the bounds of the 10 foot square. The material contents should probably be attributed to the house as was similarly done with the other houses.

Level 4: This level, a house floor, will be treated in detail in the description for feature 14. All material found in levels 3 and 4, not directly associated with feature 14, were tabulated in the table for feature 6. Material imbedded in the floor of feature 14 and found in the cache pit are recapitualted under that heading.

Level 5: Level 5 was a 4 inch layer of loose fill separating the two house floors. It was completely sterile.

Level 6: This level, also a house floor, is fully described in the discussion of feature 15. The floor rested immediately on top of the subsoil.

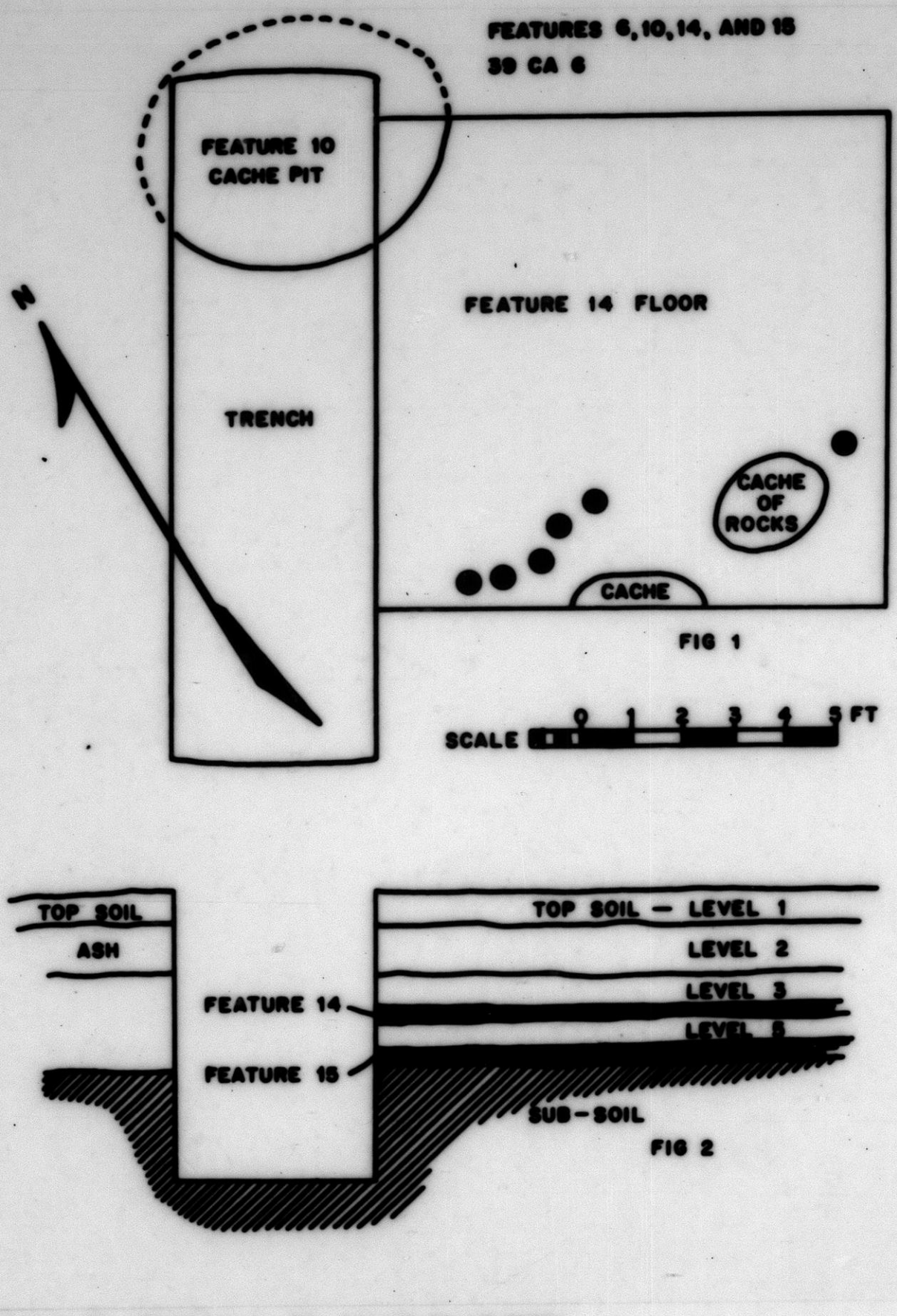



Figure 43. Features 6, 10, 14 and 15 of 39CA6.

## Feature 14: House

Excavation of the 10 foot square, feature 6, uncovered a house floor 26 inches under the surface. This house floor, feature 14, corresponded to level 4 of the 10 foot square. Several post molds were found, the average being 6 inches in diameter. The most unusual feature of this floor was a small basin full of rocks, each approximately 3-4 inches in diameter, none bearing any evidence of painting or pecking. Two small ash pits were also noted in the floor. The associated cache pit found along the southern edge of the 10 foot square contained the only artifacts recovered from this feature.

The chronological placement of this feature, along with feature 15, has been considered in the summary for feature 6. Materials from Feature 14 are tabulated with level 4 of Feature 6.

## Feature 15: House

Approximately 6 inches below the floor of feature 14, a second house floor was uncovered. This floor rested directly on the sterile, light-grey subsoil. Both an ash lens and a cache pit were discovered along the southern and northern edges, respectively, of the 10 foot square. The cache pit yielded considerable quantities of red and yellow ocher, particularly in the lower portion.

The chronological placement of features 14 and 15, as put forth in the summary of feature 6, should only be considered as possibilities in view of the inadequate amount of comparative material. Materials from Feature 15 are tabulated as Level 6 in the table for feature 6.

Table 41. Implements found in Feature 6, 39CA6.

| | LEVEL | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 6 | Misc. |
| **Bone implements:** | | | | | | |
| Rib-edge awl/flaker | - | - | - | 2 | 1 | - |
| Awl fragment | - | - | - | 1 | - | - |
| Notched bone hoe | - | - | - | 1 | - | - |
| Hoe blade fragments | - | - | - | 6 | - | 1 |
| Splinter flaker | - | - | - | 1 | - | 1 |
| Scapula digging tool | - | - | - | 1 | 2 | - |
| Thin scapula knife | - | 2 | - | - | - | - |
| "Needle" - non-grooved variety | - | - | - | 2 | - | - |
| Utilized rib | - | - | - | 1 | - | - |
| Backed bone knife | - | - | - | 1 | - | - |
| Robe softener | - | - | - | 1 | - | - |
| Splinter awl | - | - | - | - | 1 | - |
| **Stone implements:** | | | | | | |
| Simple triangular projectile point | - | - | - | 3 | - | - |
| Tip fragments unclassified | - | 2 | - | - | 1 | - |
| End scraper, Variety 1 | - | 1 | - | 1 | - | - |
| End scraper, Variety 2 | - | - | 1 | - | - | - |
| End scraper, Variety 3 | - | - | - | 1 | - | - |
| End scraper, Variety 5 | - | - | - | 1 | - | - |
| Side scraper | 1 | - | - | 1 | - | - |
| Retouched flake, parallel-sided | - | - | - | 1 | - | - |
| Badlands knife | - | - | - | 1 | - | - |
| Broad, bifacial blade | - | - | - | 1 | 1 | - |
| Abrader, clinker | - | - | - | 1 | - | - |
| Abrader, sandstone | - | - | - | 1 | - | - |
| Grooved abrader, clinker | - | 1 | 1 | 1 | - | - |
| Hammerstone | - | - | 5 | 1 | 1 | - |
| Heavy triangular projectile point | - | - | - | 1 | - | - |
| Dodd knife | - | - | - | 1 | - | - |
| Pitted hammerstone | - | - | - | 1 | - | - |
| Retouched flake | 2 | - | 1 | 2 | - | - |
| Planoconvex side scraper | - | - | - | 2 | - | - |
| Catlinite pipe fragment | 1 | - | - | - | - | - |
| **Shell scraper** | - | - | - | 1 | 1 | - |

Table 42. Pottery found in Feature 6, 39CA6.

| RIM SHERDS: FREQUENCY | LEVEL 1 | 2 | 3 | 4 | MISC. | TOTAL |
|---|---|---|---|---|---|---|
| Talking Crow Brushed | 3 | 1 | 3 | 1 | - | 8 |
| Talking Crow Cord Impressed | 2 | 2 | 2 | 2 | 1 | 9 |
| Talking Crow Indented | 3 | 1 | 1 | 1 | - | 6 |
| Talking Crow Straight Rim | - | - | 1 | - | - | 1 |
| S-Rim | 2 | - | 1 | 5 | - | 8 |
| Le Beau Punctate | - | - | - | - | 2 | 2 |
| TOTALS | 10 | 4 | 8 | 9 | 3 | 34 |
| **BODY SHERDS: FREQUENCY** | | | | | | |
| Brushed | 4 | 1 | 6 | 5 | 1 | 17 |
| Plain | 3 | 10 | 13 | 8 | - | 34 |
| Stamped | 10 | 17 | 20 | 48 | 2 | 97 |
| Polished | 7 | 3 | 5 | 9 | 2 | 26 |
| TOTALS | 24 | 31 | 44 | 70 | 5 | 174 |

## Feature 7: Midden Deposit

Feature 7, like feature 6, began as a trench through a midden deposit with the aim of securing stratified material for comparative purposes. The power shovel was used to dig the initial trench, thereby permitting inspection of the midden profile with minimum effort. The walls of the trench were troweled but no clear stratigraphic levels were seen. Just above the bottom of the trench a reddish-brown layer suggesting a house floor was exposed. An ash bed and a probable cache pit were brought to light in the profiles, as well as several profiles of post molds containing wood fragments. The presence of the post molds, probable floor, and other elements considered together suggested another house which was tentatively labeled feature 11. But the presence of the post molds could also be construed to be part of the palisade which presumably surrounded the village along the inside of the fortification ditch. However, further digging in the area, such as time would permit, failed to verify either contention. Other than numerous unidentifiable fragments, the only whole implement recorded for the trench area was a flat, leaf-shaped bone point, 80 mm. in length.

The lack of both stratigraphy and material in the test trench prompted us to excavate, adjoining the southeast end of the trench, a 10 foot square using 6 inch levels for the first 3 levels, and 1 foot intervals for levels 4 through 6.

Levels 1 through 3: Levels 1-6 did not reflect a stratigraphic change but rather represented an attempt to record a possible change in a seemingly homogeneous deposit. Immediately beneath the sod, a cache pit was found in the eastern corner of the 10 foot square. This pit was labeled feature 13. Excluding material found in the cache pit, these first three levels produced

ceramic material consistent with a relative temporal association with level 3, feature 6 and the floors of features 2 and 3.

Levels 4-6: Removal of fill by 1 foot intervals commenced with level 4. The cache pit broadened considerably. Below the third level, the concentration of material fell off sharply; this observation was emphasized by the fact that, compared to the 6 inch levels, less material was found even though the thickness of the levels was increased. A post mold was located in the northern quarter of the 10 foot square and extended through these 3 levels to within 4 inches of the floor of feature 9. This post is represented by a dashed, circular line in Figure 44. Removal of level 6 exposed a house floor, the particulars of which are discussed under feature 9.

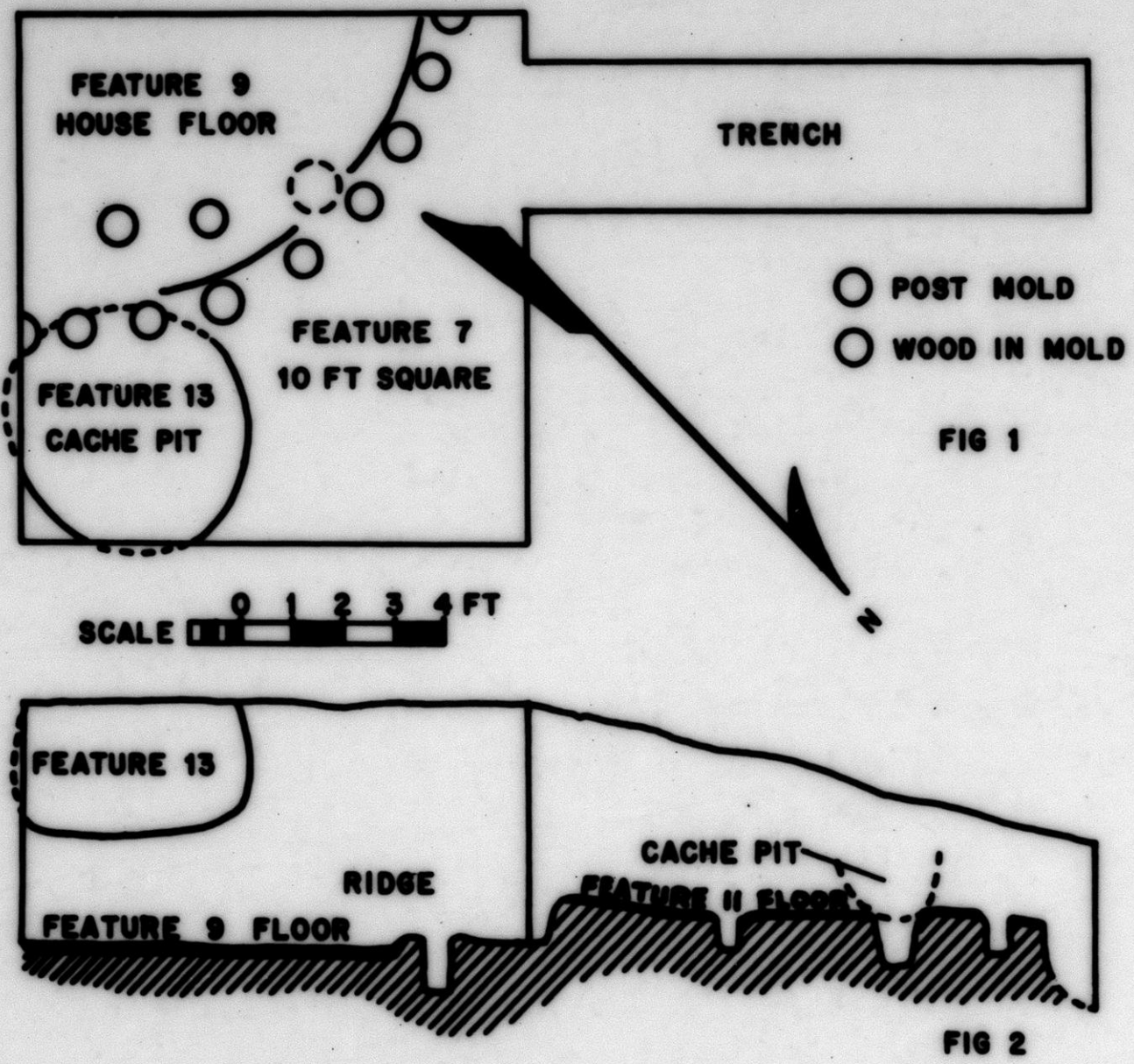



Figure 44. Features 7, 9, 11 and 13, 39CA6.

Table 43. Implements found in Feature 7, 39CA6.

| | LEVEL | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| **Bone implements:** | | | | | | |
| Rib-edge awl/flaker | - | 1 | - | - | - | - |
| Split cannon-bone awl | - | - | - | - | 1 | 1 |
| Quartered metapodial awl | 1 | - | - | - | - | - |
| Trimmed scapula hoe | - | 2 | 1 | - | - | - |
| Hoe blade fragments | 2 | 1 | 3 | - | 3 | - |
| Rib shaft straightener | - | 1 | - | - | - | - |
| Knife handle | 1 | 1 | 2 | - | - | - |
| Splinter flaker | - | 1 | - | - | - | - |
| Smoothed quill flattener | - | 1 | - | - | - | - |
| Rough quill flattener | 1 | 1 | - | - | - | - |
| Utilized rib | - | - | - | 1 | - | - |
| Scraper handle | - | - | 1 | - | - | - |
| "Needle" - non-grooved variety | - | - | 1 | - | 1 | - |
| Four-sided antler point | - | 1 | - | - | - | - |
| **Stone implements:** | | | | | | |
| Simple triangular projectile point | - | - | 1 | - | - | 1 |
| Large side-notched point | - | - | 1 | - | - | - |
| End scraper, Variety 1 | - | 1 | - | - | - | 1 |
| End scraper, Variety 2 | - | - | - | - | 1 | - |
| End scraper, Variety 4 | 2 | 2 | - | - | - | - |
| End scraper, Variety 5 | - | - | - | - | 1 | - |
| Side scraper | - | 1 | - | - | - | - |
| Badlands knife | 1 | 1 | - | - | - | - |
| Dodd knife | 1 | 1 | - | - | - | - |
| Broad, bifacial blade | - | - | - | - | 1 | - |
| Hammerstone | 1 | 1 | - | - | 1 | - |
| Abrader, clinker | 2 | 2 | - | - | - | - |
| Abrader, sandstone | - | 1 | - | - | - | - |
| Gun flint | 1 | - | - | - | - | - |
| Ground stone maul | - | - | - | - | - | 1 |
| **Brass:** | | | | | | |
| Tube | - | 2 | - | - | - | - |
| Tinklers | - | 2 | - | - | - | - |
| Sheet fragments | 2 | 2 | - | - | - | - |

Table 44. Pottery found in Feature 7, 39CA6.

| Rim Sherds: Frequency | LEVEL 1 | 2 | 3 | 4 | 5 | 6 | Total |
|---|---|---|---|---|---|---|---|
| Talking Crow Brushed | 5 | 11 | 8 | 1 | - | - | 25 |
| Talking Crow Cord Impressed | 6 | 3 | 2 | - | - | 2 | 13 |
| Talking Crow Indented | 2 | 3 | - | - | 1 | 1 | 7 |
| Talking Crow Straight Rim | - | 2 | 1 | - | - | 1 | 4 |
| Intermediate Plain | 1 | - | 1 | - | - | - | 2 |
| Intermediate Cord Impressed | 2 | 2 | 1 | - | - | - | 5 |
| Intermediate Tool Impressed | - | 1 | 1 | - | - | - | 2 |
| Stanley Plain | 5 | 6 | 1 | 1 | - | - | 13 |
| Stanley Cord Impressed | 2 | 2 | - | - | - | - | 4 |
| Stanley Tool Impressed | 3 | 5 | 1 | - | - | - | 9 |
| Stanley Wavy Rim | - | 1 | 2 | - | - | - | 3 |
| S-Rim | 2 | 5 | 4 | - | - | - | 11 |
| TOTALS | 28 | 41 | 22 | 2 | 1 | 4 | 98 |
| **Body Sherds: Frequency** | | | | | | | |
| Brushed | 23 | 11 | 5 | 4 | 1 | 1 | 45 |
| Plain | 30 | 34 | 8 | - | 2 | 3 | 77 |
| Stamped | 68 | 103 | 48 | 8 | 3 | 2 | 232 |
| Polished | 7 | 14 | 13 | 3 | 3 | 1 | 41 |
| TOTALS | 128 | 162 | 74 | 15 | 9 | 7 | 395 |

## Feature 8: House

Feature 8 was a house floor discovered during the excavation of feature 2. The eastern portion of this floor was obviously removed as a result of the construction of feature 2. Fortunately, this situation was recognized early when we still had the services of the power shovel which was used to strip away an area west of feature 2. A fire pit was located 5 feet west of the outer ring of posts of feature 2. A small cache pit was discovered in the southwest corner of this test area.

Several post molds were scattered in the southwest quarter between the fire pit and the cache pit but no pattern could be seen. A few of the deeper post molds discovered under the floor of feature 2, along with the fire pit assumed to be the approximate center, gave a rough estimate of 50 feet for the diameter of feature 8. No material was found in association with feature 8. The profile of the cache pit was traced up through the fill over feature 8 and indicated that the pit postdated the house. The cache pit contained only 1 chipped stone chopper, 3 sherds of Talking Crow Cord Impressed pottery and 1 S-Rim form. Although the quantity of material is extremely scant, a summary discussion of the feature has been included in that for feature 2.

## Feature 9: House (?)

Feature 9 was discovered during the removal of level 6, feature 7. Little was learned about this structure because the excavation was confined to the 10 foot square. The excavation exposed a sharp arc of post molds, many of which still contained generous fragments of wood. Rough measurements taken from this short arc of molds indicated that this structure was between 12 and 16 feet in diameter. The small diameter placed some doubt on this structure

being a house. However all but one of the implements found in association with the floor reflected domestic activities.

The construction of feature 9 was unusual in that the arc of posts was supported in an elevated ridge 1 foot wide and 6 inches in height. The structure certainly postdated the cache pit, feature 13, also found in feature 7, since a portion of the cache was apparently removed during construction of the house. This house was previously discussed in the summary for feature 7.

Table 45. Materials from House Floor, Feature 9, 39CA6.

| | |
|---|---|
| Hoe blade fragments | 1 |
| Backed scapula knife | 1 |
| End scraper, Variety 3 | 1 |
| Retouched flake | 2 |
| Hammerstone | 1 |
| Rim sherds: | |
| Talking Crow Cord Impressed | 1 |
| Talking Crow Indented | 1 |
| Talking Crow Straight Rim | 2 |
| S-Rim | 3 |
| Le Beau Punctate | 1 |
| Body sherds: | |
| Plain | 1 |
| Stamped | 4 |
| Polished | 3 |

## Feature 10: Cache Pit

This feature was a bell-shaped cache pit located in the northeast end of feature 6. When the trench was dug with the power shovel, most of the pit was removed and not recognized until the sides of the trench were troweled to observe the profile. The original dimensions approximated 6 feet in diameter; the pit was not fully excavated to locate the bottom. A large portion of the pit was considerably disturbed by rodent action. The banks of the trench were undercut to recover all the remaining artifacts in the cache pit. The temporal placement of this feature has been treated in the summary for feature 6.

## Feature 11: House (?)

The exact nature of this feature was not determined but it probably was a portion of a house floor (see description of feature 7 for provenience and Figure 44 for illustration). The floor was quite irregular and contained several pockets of ash. Lenses of ash occuring about 1 foot above the possible floor seemed to support the interpretation of this feature being a house since these were commonly associated with houses that had burned. Since the floor was observed only in the trench profile, very few artifacts were recovered. However, some material was probed from the profile at the level of the house floor. A few additional artifacts were recovered from a cache pit exposed in the profile on the northeast side of the trench.

Table 46. Artifacts recovered from Feature 11, 39CA6.

| | Floor | Cache Pit |
|---|---|---|
| Bone Implements: | | |
| Notched scapula hoe | 1 | - |
| Trimmed scapula hoe | 1 | - |
| Hoe blade fragments | 3 | 1 |
| Rib shaft straightener | 1 | - |
| Bone knife handle | 1 | 1 |
| Smoothed quill flattener | 1 | - |
| Flesher | 1 | - |
| Stone Implements: | | |
| End scraper, Variety 1 | 2 | 1 |
| End scraper, Variety 5 | 1 | - |
| Badlands knife | - | 1 |
| Hammerstone | 1 | - |
| Abrader, clinker | 2 | - |
| Abrader, sandstone | 2 | 1 |
| Grooved abrader, clinker | 1 | - |
| Brass sheet fragments | 1 | 1 |
| Rim sherds: | | |
| Talking Crow Brushed | 20 | |
| Talking Crow Cord Impressed | 7 | |
| Talking Crow Indented | 9 | |
| Talking Crow Straight Rim | 10 | |
| Intermediate Plain | 4 | |
| Intermediate Cord Impressed | 3 | |
| Intermediate Tool Impressed | 1 | |
| Stanley Plain | 7 | |
| Stanley Cord Impressed | 2 | |
| Stanley Tool Impressed | 1 | |
| Stanley Wavy Rim | 8 | |
| S-Rim | 5 | |
| Body sherds: | | |
| Brushed | 20 | |
| Plain | 52 | |
| Stamped | 194 | |
| Polished | 42 | |

## Feature 12: House

While removing the eastern quarter of the floor in Feature 3, a second floor was revealed which, when followed, led beyond the row of post molds on the eastern side. A second arc of post molds was found that obviously had no association with feature 3. This arc of molds was followed for a distance to better determine the shape and extent of this second house, feature 12. The approximate center was estimated and a 4 foot wide trench was dug from feature 3 to intersect it. At the estimated center, the fire pit for feature 12 was located. Measurements from the fire pit to the post molds indicated that the house floor was somewhat egg-shaped, 40 by 43 feet in diameter. The floor was scraped but no material was found. Economy of effort required, since little more could be learned from this area, that the excavation of feature 12 be terminated at this point.

## Feature 13: Cache Pit

Feature 13 was a cache pit discovered just beneath the surface of the 10 foot square in feature 7. When the pit was discovered, it was completely removed before continuing the excavation of the square by levels. The western side of the pit had been cut away when the house, feature 9, was constructed.

Table 47. Artifacts recovered from Feature 13, 39CA6.

| | |
|---|---|
| Bone Implements: | |
| Trimmed scapula hoe | 1 |
| Hoe blade fragment | 1 |
| Scapula digging tool | 3 |
| Utilized rib | 1 |
| Stone Implements: | |
| Abrader, clinker | 1 |
| Rim sherds: | |
| Talking Crow Brushed | 1 |
| Talking Crow Cord Impressed | 1 |
| Talking Crow Indented | 2 |
| Talking Crow Straight Rim | 1 |
| Stanley Plain | 4 |
| Stanley Wavy Rim | 1 |
| S-Rim | 1 |
| Body sherds: | |
| Brushed | 3 |
| Plain | 12 |
| Stamped | 36 |
| Polished | 17 |

## VI. SUMMARY AND CONCLUSIONS

In the preceding sections we have described the individual excavation units excavated in three sites on the Missouri River and tabulated the artifacts recovered in each of these units according to type categories described in the appendix at the close of this report. It is, of course, of fundamental importance in any archaeological investigation to place great stress on the time dimension. Not only is it the very essence of historical investigation to be concerned with the time at which events occurred and to consider events in their proper sequence, but the study of processes of culture change also require an adequate definition of the time units involved. The initial portion of our summary is therefore concerned with the problem of establishing a sequence within and between the units excavated.

The very scope of the sites described, so far as the area they covered and the thickness of their deposits is concerned, suggests the possibility of time depth of some magnitude being involved in the occupation units sampled. In the course of the field work, every effort was made to locate thick midden deposits and to excavate these in such a manner as to reveal culture change. Further, in the excavation of houses and associated storage pits, again an attempt was made to establish a sequence of events on the basis of intrusion of features or superposition. Since many of the storage pits were filled with refuse after their original function was abandoned, artifacts may be associated with the sequent stages that can be recognized so that this sequence is comparable to a stratified midden. Time sequence in a series of sites such as ours is not solely dependent upon internal evidence. The better defined the archaeology of a region is, the larger the

number of horizon markers that can aid in establishing the time placement of a particular culture unit. Despite the extensive work in the Missouri Valley, however, such horizon markers are not yet plentiful. But for the late time horizon with which we are concerned there is one good horizon marker which has both a finite base in terms of its initial appearance and also has the advantage of being readily recognized. This horizon marker consists of the trade goods derived from European sources.

On the basis of the distinctive ceramic assemblage and the absence of trade goods, it is clear that the earliest component excavated by our party is 39WW10. Like the Payne Site (39WW302; Wilmeth, 1958), located a short distance to the South, 39WW10 may be classified as a component of the Akaska Focus. Nordvold Horizontal Incised is the characteristic ceramic type although similar designs executed in identical technique on S-Rim vessels (Le Beau S-Rim, Incised variant) are actually more abundant. While there are some minor differences in the ceramic assemblage when the two major excavation units at 39WW10 (Feature 1 and Feature 2) are compared, such as the type Le Beau Cord Impressed being confined to the surface and Feature 1, the differences appear minor. Le Beau Cord Impressed is a minor type (3.5% of the total sample) and such a difference may represent differences between households rather than a time difference. A differential distribution of other artifact types may also be seen but since these were recovered in very low frequencies this could be simply a matter of chance. We are therefore inclined to regard the material recovered from 39WW10 as comprising a single component and probably a very short time span. This unit, then, comprises a base from which changes in the other excavation units may be measured.

Although the analysis of the ceramic material, which we might expect to reveal most sensitively the patterns of change, indicates some continuity from 39WW10 in the other excavation units the ceramics also indicate a break in the continuity of occupation. While the differences are somewhat aggravated by the ceramic classification used (see discussion of ceramics in the appendix), these differences are nevertheless real. This break in continuity forced a greater reliance upon internal seriation within the individual sites, 39WW3 and 39CA6. Each of these will therefore be discussed separately before considering some general trends for the tradition as a whole.

So far as 39WW3 is concerned, inspection of the tables associated with individual excavation units will show a lack of pronounced ceramic trends. It is possible that some of this lack of trends in changing ceramic patterns may be a result of mechanical mixture. Aboriginal pit digging was extensive and at times difficult to detect. Further, rodent burrows and the scattered condition of the human burials clearly indicate that man alone was not responsible for all of the disturbance at the site. The extensive rodent activity at the site made our attempt to tabulate differences according to depth in the shallow midden deposits fruitless, and such tabulations have not been included in our report. An attempt was therefore made to seriate the larger excavation units and percentages of the pottery types were computed for the total sample for each of these units. These percentages are presented in Table 48 and are computed on the basis of the total number of classified rim sherds. This number drops below a sample size of 100 only in connection with Feature 16 (75) and Feature 4 (79). For the remainder the sample size ranges between 147 (Feature 9) and 817 (Feature 17) rim sherds. The features are grouped into three categories, Early, Middle and Late though it will be

seen that such a grouping involves somewhat erratic ceramic trends. It is true that Feature 18 of the Early group is clearly closest to 39WW10 in the relatively high frequency of Nordvold Horizontal Incised and this type is present in three of the other features of this horizon. The grouping into Early, Middle and Late was ultimately estabilished on the basis of trends of change in other artifact types than the ceramics. It would seem that for this horizon, other artifact types might be more useful than the ceramics for seriation contrary to the normal situation and this fact in itself requires some discussion.

At 39WW3, evidence for trade goods was quite extensive in the deposits. Although we can not logically exclude their presence as being due to rodent scattering from intrusive burials, iron, brass, and glass beads were found in Feature 18, the excavation unit closest in ceramic type to 39WW10. Although trade goods increase in frequency in later horizons at the site, it is possible that the bulk of the occupation of 39WW3 falls within the span of the contact period. Whether trade goods span nearly the entire occupation of 39WW3 or only in later phases, it is clear that these trade goods could have had a considerable impact on the local culture. The acquisition of metal tools in particular could have brought about marked changes in the pattern of bone tool manufacture and also could well have effected the frequency of those stone tools whose function they supplanted or complemented. Since the trade goods would have been obtained in exchange for furs, we might expect that this could effect the quantity and character of the tools used for skin dressing. The various changes mentioned above need have no particular effect on the kind or character of the pottery vessels. The trade goods present do not suggest that for the time period under consideration metal containers were being introduced to supplant the native containers. Such a combination of factors, then,

might have resulted in more rapid change in the non-ceramic materials.

The character of the changes discussed in general terms above can perhaps be clarified through a discussion on a more specific level. It will be recalled that the tempral position of 39WW10 has been established as early on the basis of the absence of trade goods and the specific comparison of its ceramic assemblage with other securely placed sites in the region. The scapula hoes at 39WW10 are found in two types. One form which we have designated a Simple Scapula Hoe retains the head of the scapula bearing the glenoid cavity without modification of this sector. The Notched Scapula Hoe is also present at 39WW10 and actually is the dominant form. It is characterized by the presence of a worn facet or notch in the costal margin of the glenoid fossa. Neither of these two forms require extensive modification in this sector of the hoe where the handle is attached and both could easily have been made without the use of metal tools--a fact amply documented by their relative abundance in prehistoric sites. A third type of hoe, present in substantial numbers at both 39WW3 and 39CA6, is a type we have designated a Trimmed Scapula Hoe. This form has been trimmed or chopped at the neck immediately below the glenoid cavity to round and thin this area. This modification is such that it could most conveniently be achieved with the use of metal tools and it would seem to be a type which developed as a result of the adoption of metal tools. The differential distribution of this type in various features, particularly in view of the fact that it is a common implement, suggested that it could be used to chronologically order the deposits. Another bone implement, the bone knife handle, is equally useful. Although the bone knife handle seems to occur in the broader region as a form devised for use with a stone knife blade, no such specimens were found at 39WW10.

Table 48. Percentages of Pottery Types at 39WW3.

| Feature | T.C. Brushed | T.C. Cord Impressed | T.C. Indented | T.C. Straight Rim | Intermediate Plain | Intermediate Cord Impressed | Intermediate Tool Impressed | Intermediate Wavy Rim | Stanley Plain | Stanley Cord Impressed | Stanley Tool Impressed | Stanley Wavy Rim | S-Rim | Le Beau Punctate | Nordvold Horizontal Incised | Bowl |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Late:** | | | | | | | | | | | | | | | | |
| F 17 | 247. | 126. | 223. | 049. | 064. | 039. | 027. | 002. | 073. | 033. | 047. | 000. | 066. | 002. | 000. | 001 |
| F 8,10,14. | 236. | 128. | 238. | 037. | 043. | 040. | 040. | 001. | 063. | 022. | 048. | 005. | 092. | 002. | 002. | 002 |
| F 15 | 252. | 135. | 305. | 046. | 041. | 031. | 023. | 004. | 024. | 018. | 018. | 000. | 097. | 001. | 000. | 005 |
| **Middle:** | | | | | | | | | | | | | | | | |
| F 9 | 109. | 272. | 320. | 041. | 007. | 034. | 020. | 000. | 007. | 014. | 000. | 000. | 177. | 000. | 000. | 000 |
| F 11 | 294. | 127. | 329. | 068. | 022. | 031. | 000. | 000. | 004. | 004. | 013. | 000. | 105. | 004. | 000. | 000 |
| F 16 | 227. | 187. | 347. | 093. | 013. | 013. | 026. | 000. | 000. | 000. | 013. | 000. | 080. | 000. | 000. | 000 |
| F 6,7, 12,13 | 215. | 266. | 294. | 056. | 011. | 040. | 028. | 000. | 000. | 006. | 000. | 000. | 085. | 000. | 000. | 000 |
| **Early:** | | | | | | | | | | | | | | | | |
| F 3 | 130. | 283. | 315. | 076. | 000. | 016. | 000. | 000. | 000. | 005. | 000. | 000. | 152. | 011. | 000. | 011 |
| F 2 | 240. | 165. | 358. | 072. | 011. | 022. | 025. | 000. | 011. | 014. | 004. | 000. | 065. | 004. | 004. | 007 |
| F 4 | 253. | 190. | 367. | 038. | 000. | 013. | 000. | 000. | 000. | 000. | 013. | 000. | 089. | 000. | 025. | 013 |
| F 1 | 124. | 171. | 352. | 057. | 010. | 014. | 000. | 000. | 005. | 005. | 010. | 000. | 210. | 019. | 024. | 000 |
| F 18 | 099. | 104. | 431. | 035. | 005. | 005. | 020. | 000. | 000. | 015. | 005. | 000. | 203. | 010. | 069. | 000 |

All of the bone knife handles bear a narrow slot for the reception of the knife blade--so narrow that only a thin metal blade could be accommodated. The presence of rust and corrosion on some of the handles supports this interpretation. The bone knife handle would appear to have become popular in conjunction with the spread of metal as a knife blade and represent an Indian adjustment to the new materials available to them.

The essence of our seriational method as applied to 39WW3, then has been to take our early complex of 39WW10 as a point of departure. Those implements which appear to have been an adaptation to the contact situation which were lacking at 39WW10 served to isolate a late component at 39WW3. The early components at 39WW3 lacked these new innovations and were close to 39WW10 in their assemblage of material traits. The middle period consisted of those areas of the site where the new innovations were of a low frequency in contrast to their abundance in the late areas. On this basis Features 1, 2, 3, 4 and 18 were placed as Early components; Features 6, 7, 9, 11, 12, 13, and 16 as Middle components; and, Features 8, 10, 14, 15, and 17 as Late Components.

A tabulation of the frequency of traits when grouped according to these periods as shown in Table 49 which follows indicates a consistent series of trends in a large number of traits which would appear to validate the procedure. Grouping the ceramic assemblage according to the same three periods also shows a more consistent developmental trend than could be seen in the earlier grouping (Table 48). The main ceramic trends which can be noted are: (1) a marked decline in the popularity of the S-Rim forms; (2) an increase in popularity in Stanley Ware (only very minor elements being present in the Early and Middle periods; and, (3) Nordvold Horizontal Incised present only in the

Early period in even moderate numbers. Significant trends occur in a substantial number of other implement types and these will be discussed at a later point.

At 39CA6, the Bamble site, we have previously discussed the sequence which may be obtained within individual features. However, the amount of change between upper and lower portions of the deposits is relatively slight. It would appear that the areas tested at the Bamble site that are of comparable age to the early levels at 39WW3 are relatively limited in scope. Of course it should also be kept in mind that the size of the sample at 39CA6 is considerably smaller than that from 39WW3. A possible alignment of the component features of 39CA6 according to stratigraphic data is shown in Figure 45. But in this sequence only a few of the units could be regarded as comparable to Early 39WW3 using the evidence provided by bone implements types (particularly hoe forms and bone knife handles) and in a comparison of the frequency in pottery types. We may segregate as an early component, Caches 2 and 4 through 9 of Feature 1 (all of which seem to antedate the construction of the house); Cache 1 of Feature 2; Feature 15; and levels 5 and 6 of Feature 7. The remaining areas tabulated on the chart can be regarded as a Late component. The analysis excludes some features containing limited materials that do not permit time placement on the basis of the limited series of tool types alone and which had inadequate stratigraphic data. Such a grouping yields the trait list which follows as Table 51. It will be seen that the frequency of types associated with the Early component is small so that we are left with only a Late component for comparative analysis.

Table 49. Frequency of Traits at 39WW3 according to Grouped Periods.

| | 39WW10 | 39WW3 | | |
|---|---|---|---|---|
| | | Early | Middle | Late |
| Rim Sherds | | | | |
| Talking Crow Brushed | | 157 | 138 | 582 |
| Talking Crow Cord Impressed | | 170 | 130 | 308 |
| Talking Crow Indented | | 349 | 200 | 603 |
| Talking Crow Straight Rim | | 56 | 38 | 104 |
| Intermediate Plain | | 6 | 9 | 117 |
| Intermediate Cord Impressed | | 14 | 20 | 88 |
| Intermediate Tool Impressed | | 11 | 10 | 69 |
| Intermediate Wavy Rim | | - | - | 6 |
| Stanley Plain | | 4 | 2 | 130 |
| Stanley Cord Impressed | | 9 | 4 | 58 |
| Stanley Tool Impressed | | 5 | 4 | 90 |
| Stanley Wavy Rim | | - | - | 4 |
| S-Rim | 308 | 138 | 70 | 201 |
| Nordvold Horizontal Incised | 130 | 22 | - | 2 |
| Le Beau Punctate | 19 | 9 | 1 | 5 |
| Bowl | - | 5 | - | 8 |
| Le Beau Cord Impressed | 22 | | | |
| Le Beau Tool Impressed | 97 | | | |
| Steamboat Cord-Wrapped Rod | 2 | | | |
| Wheeler Ridged Rim | 2 | | | |
| Akaska Stab and Drag | 24 | | | |
| Akaska Plain | 19 | | | |
| TOTAL CLASSIFIED RIMS | 570 | 955 | 627 | 2375 |
| | | | | |
| Pottery disc | - | - | 1 | 1 |
| Worked sherd | - | - | 1 | 1 |

| Table 49 continued | 39WW10 | 39WW3 Early | 39WW3 Middle | 39WW3 Late |
|---|---|---|---|---|
| Bone awls: | | | | |
| Rib-edge awl/flaker | 9 | 18 | 14 | 33 |
| Cannon-bone awl | - | - | - | 2 |
| Split cannon-bone awl | 2 | 5 | 2 | 2 |
| Quartered metapodial awl | 7 | 3 | 1 | 3 |
| Splinter awl | 4 | - | 1 | 6 |
| Ulna awl | - | - | 1 | - |
| Flat split-rib awl | - | - | - | 2 |
| Awl fragments | 1 | 1 | 3 | 1 |
| Simple scapula hoe | 1 | 2 | 2 | 4 |
| Notched scapula hoe | 15 | 12 | 18 | 73 |
| Trimmed scapula hoe | - | - | 3 | 45 |
| Hoe blade fragments | 32 | 27 | 29 | 174 |
| Unfinished hoe | - | - | - | 1 |
| Small scapula hoe (?) | - | - | - | 1 |
| Bison skull hoe | - | - | - | 6 |
| Tubular beads | 2 | 3 | - | 1 |
| Fishhook | 2 | 1 | 1 | 1 |
| Pin | 1 | 1 | - | - |
| Hide grainer | 1 | 6 | 8 | 27 |
| Paint applicator | - | 1 | - | 1 |
| Knife handle | - | - | 6 | 22 |
| Antler flaker | 1 | - | 7 | 29 |
| Splinter flaker | 1 | 2 | - | 2 |
| Shaped flaker | 1 | - | 1 | 1 |
| Rough quill flattener | - | 2 | 1 | 1 |
| Smoothed quill flattener | - | 2 | - | 2 |
| Polished quill flattener | - | 2 | - | 3 |
| Notched bone knife or point | - | 1 | - | 1 |
| Scapula cleaver | 2 | 2 | 1 | 7 |
| Scapula digging tool | 5 | 4 | 6 | 36 |
| Backed scapula knife | 4 | 2 | 5 | 14 |
| Median ridge scapula knife | 1 | - | 2 | 4 |
| Thin scapula knife | 2 | - | 6 | 15 |
| Scapula knife fragments | - | 1 | 1 | - |
| Antler drift | - | - | 1 | - |
| Utilized rib | 1 | 4 | 9 | 29 |
| Flesher, metatarsus | - | 2 | - | 7 |
| Worked deer mandible | - | - | 1 | - |
| Needle, non-grooved | 9 | 6 | 3 | 4 |
| Needle, grooved | - | - | - | 6 |
| Three-sided, pointed antler tip | - | 1 | - | - |
| Conical antler point | - | - | - | 2 |
| Multi-barbed antler point | - | - | - | 1 |
| Rib shaft straightener | 2 | 2 | 11 | 27 |
| Split-rib shaft straightener | - | - | - | 1 |
| Scapula shaft straightener | - | - | - | 1 |

| Table 49 continued | 39WW10 | 39WW3 Early | 39WW3 Middle | 39WW3 Late |
|---|---|---|---|---|
| Serrated scapula blade | - | - | 1 | - |
| Notched ulna or rib | - | 1 | - | 1 |
| Ulna pick | - | - | 1 | - |
| Serrated rib | - | - | - | 1 |
| Edge-sharpened rib | - | - | - | 2 |
| Bone rings | - | - | 11 | - |
| Bone whistle | - | - | 1 | 1 |
| Worked elk antler sections | - | - | - | 2 |
| Utilized scapula spine | 1 | - | - | 1 |
| Antler phallus | - | - | - | 1 |
| Shell scraper | 9 | - | - | - |
| Massive shell bead | - | 1 | - | - |
| Section of worked shell | - | - | - | 1 |
| Iron, sheet and knife fragments | - | 1 | - | 3 |
| Brass, knife blade | - | 1 | 1 | 5 |
| Brass, tube | - | 1 | - | 8 |
| Brass, disc | - | 1 | - | - |
| Brass, triangles | - | - | - | 2 |
| Brass, "celt" | - | - | - | 1 |
| Brass, fishhook | - | - | - | 1 |
| Brass, tinkler | - | - | - | 4 |
| Brass, clip | - | - | - | 5 |
| Brass, awl (?) | - | - | - | 1 |
| Brass, sheet fragments | - | - | - | 105 |
| Brass, projectile point | - | - | - | 1 |
| Brass, wire, coiled | - | - | - | 1 |
| Glass beads: | | | | |
| White opaque (1650-1779) | - | 1 | 1 | - |
| White wire-wound (1718-1779) | - | - | 12 | - |
| Faceted, molded (1681-1779) | - | - | 8 | - |
| Flat, yellow (1675-1700) | - | - | 1 | - |
| Striped (1680-1740) | - | - | 2 | - |

| Table 49 continued | 39WW10 | 39WW3 Early | 39WW3 Middle | 39WW3 Late |
|---|---|---|---|---|
| Chipped stone projectile points: | | | | |
| Simple triangular | 9 | 37 | 24 | 58 |
| Side-notched triangular | 3 | 9 | 9 | 23 |
| Heavy triangular | 1 | 3 | 1 | 6 |
| Unclassified and fragments | 9 | 10 | 6 | 18 |
| End scrapers: | | | | |
| Variety 1 | 18 | 35 | 6 | 39 |
| Variety 2 | 1 | 9 | 5 | 17 |
| Variety 3 | - | 28 | 5 | 44 |
| Variety 4 | 22 | 18 | 7 | 29 |
| Variety 5 | 13 | 11 | 7 | 23 |
| Unclassified and fragments | 4 | 8 | 3 | 12 |
| Side scrapers | 14 | 2 | - | 2 |
| Planoconvex side scrapers | - | - | 1 | - |
| Retouched flakes | 39 | 16 | 1 | 6 |
| Retouched, parallel-sided flakes | 6 | 4 | - | 1 |
| Chipped stone knives: | | | | |
| Badlands knife | 6 | 11 | 5 | 31 |
| Dodd knife | 8 | 19 | 5 | 11 |
| Broad, bifacial blade | 18 | 5 | 2 | 1 |
| Small, bifacial blade | 1 | 5 | 5 | 9 |
| Beveled knife | 2 | 1 | - | 3 |
| Chipped stone drill | 1 | 3 | - | - |
| Strike-a-light | 9 | 12 | 6 | 12 |
| Graver | 3 | 1 | - | - |
| Chopper | 9 | 3 | 1 | - |
| Abrader, clinker | 10 | 9 | 5 | 46 |
| Abrader, sandstone | 3 | - | 6 | 19 |
| Grooved abrader, clinker | 7 | 5 | 6 | 22 |
| Grooved abrader, sandstone | 1 | 5 | 2 | 4 |
| Shaft smoother | 1 | - | 3 | 3 |
| Hammerstone | 12 | 14 | 13 | 102 |
| Grinding stone | 2 | - | - | 14 |
| Polishing stone | 2 | - | - | 1 |
| Grooved axe | 1 | - | - | 1 |
| Grooved maul | 1 | 1 | - | 10 |
| Grooved Chopper (?) | - | 1 | - | - |
| Catlinite pipes and pipe fragments | - | 1 | 1 | 7 |
| Catlinite counter | - | - | - | 2 |
| Catlinite scrap | - | - | - | 4 |

Table 50. Percentages of Pottery Types at 39WW3 according to Early, Middle, and Late Periods.

| | Early | Middle | Late |
|---|---|---|---|
| Talking Crow Brushed | 16.4 | 22.0 | 24.5 |
| Talking Crow Cord Impressed | 17.8 | 20.7 | 13.0 |
| Talking Crow Indented | 36.5 | 31.9 | 25.4 |
| Talking Crow Straight Rim | 5.9 | 6.1 | 4.4 |
| Intermediate Plain | .6 | 1.4 | 4.9 |
| Intermediate Cord Impressed | 1.5 | 3.2 | 3.7 |
| Intermediate Tool Impressed | 1.2 | 1.6 | 2.9 |
| Intermediate Wavy Rim | - | - | .3 |
| Stanley Plain | .4 | .3 | 5.5 |
| Stanley Cord Impressed | .9 | .6 | 2.4 |
| Stanley Tool Impressed | .5 | .6 | 3.8 |
| Stanley Wavy Rim | - | - | .2 |
| S-Rim | 14.5 | 11.2 | 8.5 |
| Le Beau Punctate | .9 | 2.3 | .2 |
| Nordvold Horizontal Incised | 2.3 | - | .1 |
| Bowl | .5 | - | .3 |

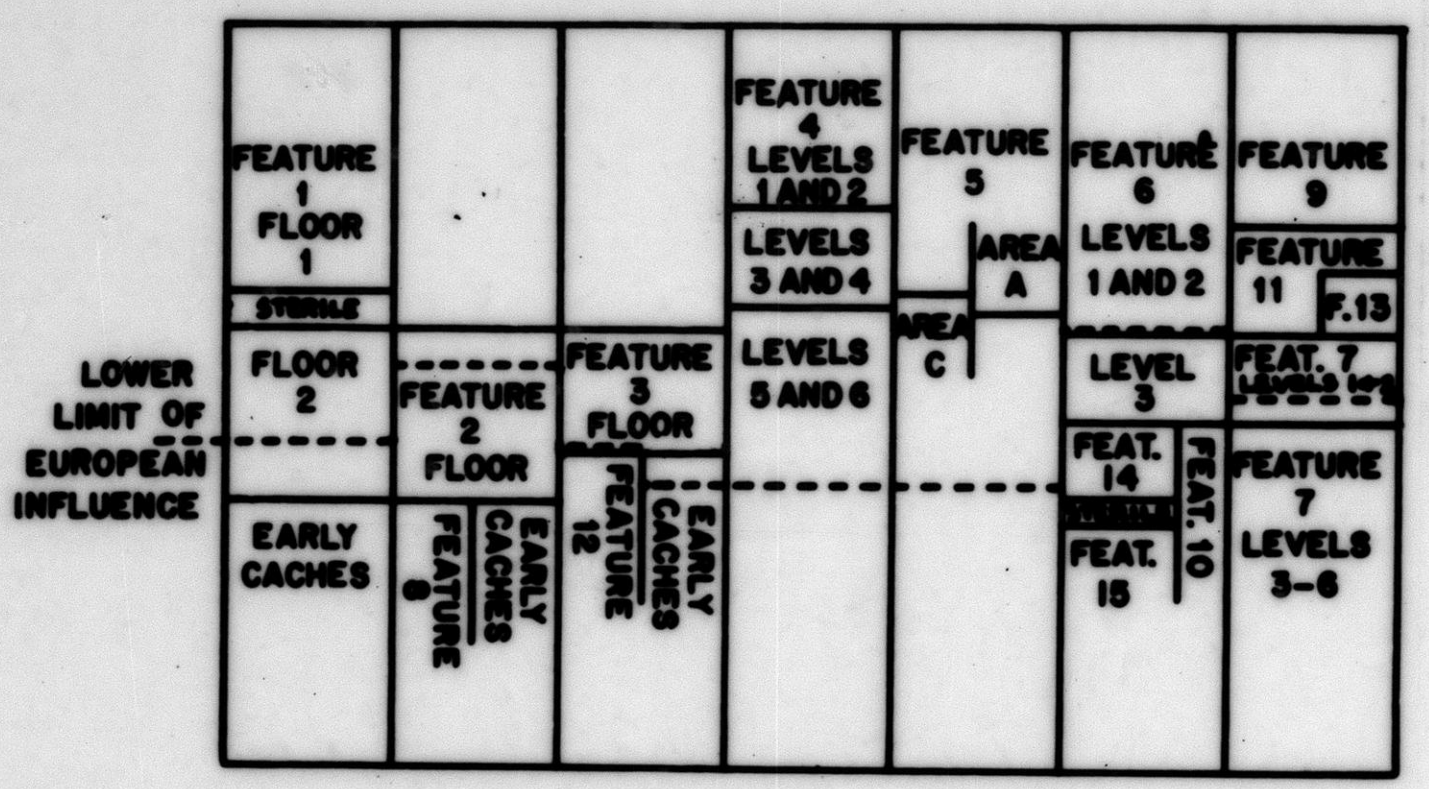

FEATURE 1 FLOOR 1
STERILE
FLOOR 2
EARLY CACHES
FEATURE 2 FLOOR
FEATURE 8
EARLY CACHES
FEATURE 3 FLOOR
FEATURE 12
EARLY CACHES
FEATURE 4 LEVELS 1 AND 2
LEVELS 3 AND 4
LEVELS 5 AND 6
FEATURE 5
AREA A
AREA C
FEATURE 6 LEVELS 1 AND 2
LEVEL 3
FEAT. 14
FEAT. 15
FEAT. 10
FEATURE 9
FEATURE 11
F. 13
FEAT. 7
FEATURE 7 LEVELS 3-6
LOWER LIMIT OF EUROPEAN INFLUENCE

Table 51. Trait Frequency at 39CA6 according to Grouped Periods.

| | Early | Late |
|---|---|---|
| Rim Sherds | | |
| Talking Crow Brushed | 5 | 293 |
| Talking Crow Cord Impressed | 3 | 159 |
| Talking Crow Indented | 14 | 181 |
| Talking Crow Straight Rim | 3 | 49 |
| Intermediate Plain | - | 45 |
| Intermediate Cord Impressed | 1 | 66 |
| Intermediate Tool Impressed | 1 | 30 |
| Intermediate Wavy Rim | - | - |
| Stanley Plain | - | 74 |
| Stanley Cord Impressed | 3 | 32 |
| Stanley Tool Impressed | - | 29 |
| Stanley Wavy Rim | - | 32 |
| S-Rim | 19 | 176 |
| Nordvold Horizontal Incised | 1 | 7 |
| Le Beau Punctate | - | 12 |
| Steamboat Cord-Wrapped Rod | - | 3 |
| Akaska Stab and Jab | 1 | 4 |
| TOTAL RIMS | 51 | 1192 |
| Pottery disc | - | 1 |
| Bone awls: | | |
| Rib-edge awl/flaker | 3 | 23 |
| Cannon-bone awl | - | 1 |
| Split cannon-bone awl | 4 | 5 |
| Quartered metapodial awl | - | 4 |
| Splinter awl | 1 | 6 |
| Ulna awl | - | 1 |
| Awl fragments | - | 5 |
| Simple scapula hoe | - | 11 |
| Notched scapula hoe | 4 | 29 |
| Trimmed scapula hoe | - | 43 |
| Hoe blade fragments | 3 | 77 |
| Bison skull hoe | - | 1 |
| Robe softener | - | 4 |
| Tubular beads | - | 3 |
| Fishhook | - | 1 |
| Hide grainer | 1 | 12 |
| Knife handle | - | 18 |
| Antler flaker | 2 | 8 |
| Splinter flaker | - | 5 |
| Bone scraper handle | - | 2 |
| Bone spatula | - | 1 |
| Rough quill flattener | - | 7 |
| Smoothed quill flattener | - | 3 |
| Polished quill flattener | - | 1 |
| Scapula clavar | | 1 |

(Table 51, Continued)

| | Early | Late |
|---|---|---|
| Scapula digging tool | 2 | 15 |
| Backed scapula knife | - | 9 |
| Thin scapula knife | - | 7 |
| Utilized rib | 1 | 16 |
| Flesher, metatarsus | - | 3 |
| Needle, non-grooved | 1 | 7 |
| Four-sided, pointed antler tip | - | 1 |
| Rib shaft straightener | - | 11 |
| Antler pick | - | 1 |
| Bone whistle | - | 2 |
| Utilized scapula spine | - | 2 |
| Shell scraper | 1 | 2 |
| Iron, sheet and knife fragments | - | 4 |
| Brass, knife blade | - | 1 |
| Brass, tube | - | 14 |
| Brass, tinkler | - | 4 |
| Brass, sheet fragments | - | 17 |
| Chipped stone projectile points: | | |
| Simple triangular | 1 | 22 |
| Side-notched triangular | - | 15 |
| Heavy triangular | - | 7 |
| Unclassified and fragments | 2 | 9 |
| End scrapers: | | |
| Variety 1 | 2 | 31 |
| Variety 2 | 1 | 12 |
| Variety 3 | 1 | 9 |
| Variety 4 | 2 | 19 |
| Variety 5 | 3 | 16 |
| Side scrapers | 2 | 5 |
| Planoconvex side scrapers | 1 | 5 |
| Retouched flakes | - | 31 |
| Retouched parallel-sided flakes | - | 5 |
| Chipped stone knives: | | |
| Badlands knife | - | 23 |
| Dodd knife | 1 | 15 |
| Broad, bifacial knife | 2 | 16 |
| Strike-a-light | - | 8 |
| Gun flint | - | 1 |
| Chopper | - | 5 |
| Abrader, clinker | - | 36 |
| Abrader, sandstone | - | 23 |
| Grooved abrader, clinker | - | 32 |
| Grooved abrader, sandstone | - | 4 |
| Shaft smoother | - | 3 |
| Hammerstone | 4 | 82 |

(Table 51, Continued)

| | Early | Late |
|---|---|---|
| Grooved axe | - | 2 |
| Grooved maul | 1 | 5 |
| Catlinite pipes and pipe fragments | - | 4 |
| Ground stone war club | - | 1 |

# VI SUMMARY

A major value in the preceding tables of traits grouped according to periods or time units is that they allow an analysis based upon changing proportions of traits. Thus, for example, a study of the impact of the fur trade becomes a possibility. To briefly explore the potentialities of such an analysis, we may consider the data from 39WW10 and 39WW3. Numbers given on the trait lists for 39WW10 and for the Early, Middle and Late period differ, but obviously in part because the size of the sample differs in each of these units. This difference in sample size may be measured in part by the ceramic sample. At 39WW10 570 rim sherds were recovered and, by contrast, at 39WW3 we had 955 in the Early period, 627 in the Middle period and 2,375 in the Late Period. Since these are at best a rough measure of the sample size, we may express the difference between them in terms of rounded proportions. For the popularity of an implement to be about the same, we would expect that the Early period at 39WW3 would produce about twice the number of specimens of a given type or category than found in 39WW10, for the Middle period about the same number, and for the Late period about five times as many.

As mentioned earlier, we might expect to find an increase in the quantity of skin dressing tools over time as a result of the impact of the fur trade. Appropriate categories to be considered are:

| | | 39WW3 | | |
|---|---|---|---|---|
| | 39WW10 | Early | Middle | Late |
| Hide grainers . . . . . | 1 | 6 | 8 | 27 |
| Flesher, metatarsus . . . . . | - | 2 | - | 7 |
| Edge-sharpener rib . . . . . | - | - | - | 2 |
| Total bone tools . . . . . | 1 | 8 | 8 | 36 |
| Stone end scrapers . . . . . | 58 | 109 | 33 | 154 |
| Side scrapers . . . . . | 14 | 2 | 1 | 2 |
| Projectile points (stone) . . . . | 22 | 59 | 40 | 105 |

The figures tabulated would not appear to support the assumption that an increase in the abundance of skin dressing had taken place. There is, it is true, an increase in the number of bone tools used in the skin dressing process but the end scrapers do not entirely meet the expected increase on the basis of lack of change in all categores. The Late period in 39WW3 similarly shows a failure to the appropriate number of points in an implement category which should be associated with the activity incolved in obtaining skins. One basic weakness is, of course, whether all factors are being considered. Is this the total inventory of tools used in skin dressing? Could the number of chipped stone projectile points be declining because of an increase in the use of metal points?

Some artifact types and categories do show a remarkably increase over time. There are 128 scapula hoes in the Late period at 39WW3 in contrast to 16 at 39WW10. Seemingly this should reflect an intensification in the pattern of agriculture. The proportionate increase for scapula digging tools is 1:9, for rib shaft straighteners 1:13.5, and for bone knives 1:27. The climax so far as abundance of material is concerned, and indeed in diversity of forms as well, seems to have been in the bone implements. Chipped stone implements by contrast show a proportionate decrease. Such a trend may be functionally related to the introduction of metal tools for with these the production of bone tools may have been facilitated.

Finally, we may return again to the taxonomic problem of grouping the cultural remains with other sites. In the introduction of this section it was indicated that the close similarity in ceramics and other attributes suggests the affiliation of 39WW10 with the Akaska Focus (Hurt, 1957; Wilmeth, 1958). The subsequent horizons, represented at both 39WW3 and 39CA6. show a

close similarity to the Le Beau Focus as defined at the Swan Creek site and may be grouped as components of this focus (Hurt, 1957). His analysis of the Akaska and Le Beau foci stresses ". . . the fact that the artifacts and ceramics reveal considerable continuity between the various occupations" at the Swan Creek site (ibid: 29). Despite this strong evidence for continuity, Occupation A assigned to the Akaska Focus differs in its burial complex from the subsequence occupation units assigned to the Le Beau Focus. Hurt characterizes the burial complex of the Akaska Focus as consisting of primary flexed inhumations in log-covered graves. In contrast, the burial complex of the Le Beau Focus (at least in the burial area) consists of secondary burials placed as a mass in large pits. With this seemingly as his major criterion for identification, the Akaska Focus is associated with the Arikara and the Le Beau Focus with the Mandan.

The break in continuity of ethnic occupation suggested for the Swan Creek site seems difficult to reconcile with the overwhelming evidence of cultural continuity. While no specific cemetery area was excavated in connection with 39WW10, 39WW3 or 39CA6, several burials were found intrusive into midden deposits in the two latter sites. All of these conformed to the features of the Akaska burial complex in comprising flexed primary inhumations, characteristically with a log covering. Occasional use of grave goods is also a part of the assemblage. Thus on the basis of 39WW3 and 39CA6 we would see no discontinuity between the burial practices of the Akaska and Le Beau foci. If the Akaska Focus is properly attributed to the Arikara, a logical interpretation considering the geographic position of the sites, we would suggest the Le Beau focus also represents the remains of this same tribal group.

APPENDIX I.

## IMPLEMENT TYPES RECOVERED IN THE MOBRIDGE EXCAVATIONS.

In The Artifacts of Pecos Dr. A. V. Kidder stated that it was to be deplored that archaeology still lacked an ordered, consistent and generally understandable nomenclature. Archaeology, he indicated, was still in a pre-Linnean stage. Dr. Kidder's own publications have served as a model of clarity in description to many a student but despite his example, the appraisal of the field still strikes with equal force today, twenty-five years after the publication of the Pecos report. Substantial progress has been made in some areas but all too frequently each individual archaeological report has tended to use a terminology specifically designed for the group of artifacts under consideration. Such a procedure both impedes comparison and produces artifact categories of little importance for historical analysis.

The problem of nomenclature is not simply the search for a universally acceptable term for tools such as hoes, awls, etc. It is also basically a problem in typology, involving a search for an acceptable terminology for a classification of historically significant tool varieties. Substantial progress has been made in pottery typology and, more recently, we are beginning to see comparable progress in projectile point typology. In other areas of artifact description, however, relatively few advances have been made. It may well be, then, that the broad acceptance of a terminology will follow rapidly upon an adequate typological study that will demonstrate, in conjunction with the descriptions of the material, the significance of the types. This will largely proceed through a presentation of their temporal and spatial distribution.

At present, site reports dealing with the same restricted localities in the Plains differ in nomenclature as well as principles of classification and such variations become even greater when the Plains are compared with the Southwest or the eastern United States. While the varied synonyms may not be confusing to the experienced scholar, they may well be to the younger student and could act as a deterrent to the investigation of broader comparative problems. It would be inadvisable to have one set of terms in use in Plains archaeology with others characteristically used in the Southwest or eastern United States. The interrelations between these areas, such as the impact of Plains culture on the pueblo of Pecos so ably demonstrated by Dr. A. V. Kidder (1932), is one of the objectives of archaeological research which can be facilitated by a uniform nomenclaturé. But so long as additional field research is being carried on, it is perhaps futile to attempt to establish a definitive typology. Type descriptions must be sufficiently flexible to establish both similarities and differences between the artifact complexes recovered by archaeological excavations. Until the total body of prehistoric material is known, modifications in typology will be made to accommodate new material and to suit the needs of new research problems. The type descriptions presented here are those which seem of greatest utility in the light of present knowledge.

The actual working procedure used in setting up the type descriptions and establishing the nomenclature was to set up a card catalog file of artifact descriptions as used in the Plains and surrounding areas. The suggested term as a name for an implement type presented in this report was based upon an evaluation of several criteria: (1) the popularity of a term in modern usage; (2) the priority of use of a term where no clear consensus

of usage exists at present; and, (3) the functional appropriateness of a term where use of an implement can be determined through ethnological investigations. To avoid costly bibliographic citations, a full list of all studies consulted is not provided although lists of synonyms are given. For convenience of reference, artifact types are grouped according to conventional categories based upon the raw material used in their manufacture--bone, stone, shell, etc. While it is recognized that in the reconstruction of the economy and life of a prehistoric people, a functional grouping is necessary and desirable, technical comparisons to determine the degree of similarity between two components may still be readily ascertained by a classification based on the nature of the material used.

In the designation of types and varieties of particular implement forms, it is at times difficult to avoid the practice of giving these numbers or letters. Yet obviously "Type 3" in one report rarely conforms to a similarly numbered type in a second report and there is, further, no handy descriptive word that might aid in remembering the characteristics of that particular variety. Confusions can, of course, be avoided by the use of a binomial system of designation currently in vogue for ceramic and projectile point types. Such an appelation, however, does carry with it an implication of precision and importance that is rarely justified by the present stage of our knowledge of the distribution and historical significance of particular artifact forms. We have preferred, therefore, to use a designation such as Rib-edge awl, etc., wherever appropriate words can be found.

## BONE IMPLEMENTS.

Substantially more space has been devoted to the description and discussion of bone implements than is commonly the case in most archaeological reports dealing with the Plains area. While initially this may create the impression of an undue emphasis on one industry, several factors would seem to justify this stress. In the course of the preparation of the report it soon became evident that similar specimens in Plains sites were frequently designated by a series of alternative terms, or quite commonly by a series of numbered or lettered types though rarely by the same number or letter in reports issued by different institutions. Though the lack of a clear and consistent nomenclature is to be deplored, it is equally unfortunate that the "types" to be found in these reports rarely conform to procedures or standards now accepted as essential to a sound typological approach. The "types" of non-ceramic artifacts, for obviously a distinction must be made between the precise procedures used in pottery analysis and those applied to other areas of material culture, would in reality appear to be largely descriptive classes derived from specific site collections rather than a demonstration of historically significant tool varieties. While it would be presumptuous to imply that the descriptions in the following sections represent definitive types for too much data remain unpublished and an inadequate number of site collections were examined, the orientation has been to attempt to define the categories in terms of tool varieties that have distinctive spatial and temporal distributions. The precise reports of other Plains archaeologists, such as those of Dr. Waldo R. Wedel, have been particularly helpful in tracing the distribution of many of the tool types. The above factors stress the im-

portance of an intensive analysis of bone implements from a largely negative point of view. From a more positive position, the rich, varied bone tradition of the Plains is clearly one of the distinctive aspects of this cultural tradition upon which much of the local inventive genius was lavished. The many varieties of tool types have the potentiality of serving as temporal and regional markers and in demonstrating links with complexes beyond the borders of the Plains. Dr. A. V. Kidder's early report on Pecos Pueblo has already indicated the promise that such comparative studies might yield.

## The Bison Scapula

For the convenience of the reader, we show in Figure 46 the accepted terminology of component parts of the bison scapula. The shoulder blade of this animal provided the raw material for a variety of tool types. To describe these with precision identifying the portions of the bone which were used or removed in the manufacturing process, requires a familiary with the anatomical landmarks of the bone. As a general source of acceptable terms which is at the same time readily available as a reference book, we have made use of The Anatomy of the Domestic Animals by Septimus Sesson and James D. Grossman (1956).

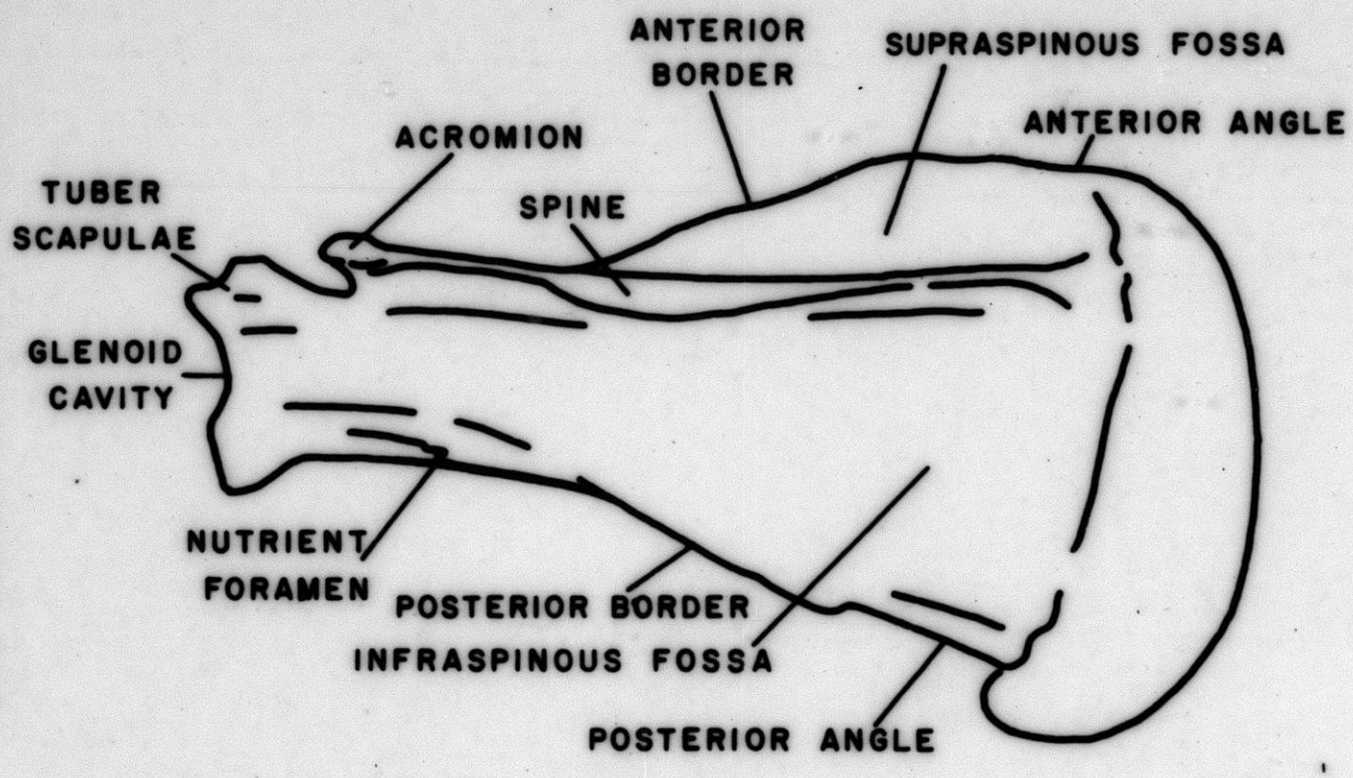



Figure 46. Terminology of Component Parts of the Bison Scapula.

## Scapula Hoes

The scapula hoe appears to be ubiquitous in the Plains though not commonly found beyond its borders. Its distribution would suggest that it comprises one of the distinctive traits of the Plains agricultural complex, not solely limited to the region because of ecological factors through the availability of bison scapulae for bison had a broader distribution than the hoes and some are reported manufactured of elk scapulae. Despite its broad distribution, it may still be a useful tool of aid in the identification of regional complexes and time horizons. This is possible because the techniques and degree of modification of the bone to permit the attachment of a handle is subject to considerable local variation. The actual demonstration of the exact nature of these regional differences is handicapped by the lack of precision frequently encountered in reports.

The technique of manufacture of the scapula hoe, other than the modification to permit the attachment of the handle appears to be quite uniform. First (although this is not necessarily the order in which the operations proceeded), the vertebral margin was trimmed off and sharpened. Continued use of the hoe reduced this area in size and produced a high gloss. In addition the scapular spine was trimmed off and either left rough or ground smooth. In most, but not all, the thickened portion of the anterior edge was also trimmed flat. The most substantial modifications were made at the articular end and it is suggested that the primary types be defined on the basis of these latter variations. Some of the primary forms and names that might be applied to them are given in the following section. The Simple scapula hoe is one in which the articular end is left unmodified. In the Notched scapula hoe a cut and

worn notch or facet is to be found on the costal margin of the glenoid cavity. The Channeled scapula hoe has not only a notch cut in the margin of the glenoid cavity but a strip of bone has been removed down through the neck to provide a socket into which a handle might fit. While this type is not present among the specimens considered in this report, it is to be found in South Dakota (Hurt, 1951: Figure VI, 22) but seems to be more common in the southern Plains (Schmitt and Toldan, Jr., 1953: Plate 13, A and B; Wedel, 1959: 251, 311, 333, 365). Similarly, the Socketed scapula hoe is not present in the sites being described, but the distinctive longitudinal perforation inserted in the glenoid cavity represents a differentiation in hafting concepts (Hurt, 1951: 29--Type 3; Lehmer, 1952: 317; Wedel, 1959: 365). A final variety which we have designated a Trimmed scapula hoe has the entire margin of the glenoid cavity removed and in most instances no trace of the cavity remains. The five types mentioned do not exhaust the possibilities of major types which may be defined in this manner. Strong (1935: 94) describes a variety with ". . . a broad groove made over the top of the glenoid process for the attachment of a handle." If such a groove goes across the glenoid cavity and is not limited in frequency to a single specimen it may well comprise a major variety. Similarly, those hoes in the southern Plains with a portion of the posterior side and neck of the scapula removed would also seem to be a distinct variety (Schmitt and Toldan, Jr., 1953: Plate 13, E). The modifications mentioned may occur in conjunction with other hafting devices such as perforations or notches on the side of the neck. These, However, could be alternative attributes rather than primary sorting criteria.

In the sites here described, three basic types of hoes are present to which the names Simple, Notched and Trimmed have been given. Some basic

techniques of manufacture are shared by all three types. The scapular spine has been trimmed off by a rough hacking technique. In some specimens the base of the spine was then ground smooth by an abrasive--in extreme examples so that it is flush with the adjacent fossa. The frequency of such grinding is tabulated on the trait list which follows the description of the types. A substantial portion of the thickened anterior edge was also trimmed flat and the vertebral margin was also trimmed off and sharpened. Either a straight or a rounded end appears to have been originally produced on the vertebral margin but the extensive use received by the hoes and subsequent wear makes it difficult to produce reliable statistics on this aspect of the original shape of the hoe. A small proportion of the blades bear a deep notch in the bit, the sides of which are worn smooth. Wesley R. Hurt, Jr. and his associates have described such hoes as "thong stretchers" (Hurt, 1952: 3, 5). Where such notches occur, they are listed as an alternative attribute under the basic hoe type. Since such notches are to be found on the thinnest portion of the blade, we have not been able to feel convinced that such wear could not be the result of continued use of the hoe in its normal fashion after splitting and breakage has taken place. All of the specimens appear to be manufactured from bison scapulae.

While fragments of scapula hoes are numerous, especially blade fragments, the tabulation of varieties which follows is based entirely on a count of those where the butt end is present, the butt end being the portion where the handle was attached. By limiting the count to these sections, a systematic procedure is provided for assuring a similar basis for determining the frequency at different sites. Although the frequency of blade fragments is also given in a separate section this count is affected by the number of frag-

ments into which the blade was broken as well as the extent to which the blade fragments were reused as bone knives and scrapers.

Simple Scapula Hoe. The characteristic attribute of the Simple type is the retention of the head of the scapula bearing the glenoid cavity without modification of this sector. It is not a common type at these sites and a number of the specimens placed in the category lack clear indications of usage and may have been broken and discarded in the process of manufacture. On others, however, the presence of a gloss does indicate use. In any event, the use of such a type in South Dakota sites is well documented. The Simple type is comparable to Type 1 (or I) as used by Hurt and his associates (Hurt, 1951: 29; 1952: 35; 1957: 31) and Group 1 as used by Lehmer (1954: 63, 109). In the latter case, however, Lehmer mentions "occasional working down" of the edges of the glenoid fossa which we would regard as excluding the specimen from the type. The form also appears to be characteristic of the Arzberger site (Spaulding, 1956: 49). The type appears to be commoner on early horizons but continues in diminished proportions into later times.

Hoes of the Simple type (at 39CA6) with the bit end intact are 291, 329, 348 and 361 mm in length.

Notched Scapula Hoe. This type is characterized by the presence of a worn facet or notch in the costal margin of the glenoid fossa. The specimens vary considerably so far as the size of the facet is concerned, ranging from a few millimeters to a centimeter in depth and from 13 to 35 mm where a markedly concave notch is present. The shape and size of this facet may largely be determined by the extent of use and wear but it is clear from numerous specimens that show little use that the notch in many and perhaps most instances was initially cut at the costal margin of the glenoid fossa.

A few specimens have an additional facet cut in the opposite margin of the glenoid fossa and the tuber scapulae may also be partially or entirely trimmed off. Specimens bearing these latter modifications are classed as variants of the Notched type at present since clearly the intent was not to produce any major modification in the shape of the glenoid cavity. Where trimming occurs around the entire circumference of the glenoid cavity the specimens were placed in the Trimmed type.

Measurements are recorded here of the length of those implements where the working (sharpened) end is intact or present in part. In this measurement specimens range between 202 and 410 mm. The measurement, of course, simply reflects the length of time a hoe has been in use before it was discarded since the length will diminish with continued use. We would expect in long occupied sites, as 39WW3 and 39CA6 appear to be, that a wide range in length including many small specimens would be found. Conversely, it may well be that in a newly established habitation site occupied for only a short season all the hoes would tend to group in a longer size range. Some hoes fall in the larger sizes, however, because longitudinal splitting led to their being discarded.

| Notched Hoe Length | 39WW3 | 39WW10 | 39CA6 |
|---|---|---|---|
| 201 - 225 mm | 4 | | |
| 226 - 250 mm | 6 | | 1 |
| 251 - 275 mm | 3 | | 2 |
| 276 - 300 mm | 1 | 1 | 5 |
| 301 - 325 mm | 4 | 3 | 3 |
| 326 - 350 mm | 2 | | 2 |
| 351 - 375 mm | 2 | | 1 |
| 376 - 400 mm | 0 | | 1 |
| 401 - 425 mm | 2 | | |
| Average Length | 283.2 | 299.5 | 302.4 |

The Notched hoe (with the notch appearing in the costal margin of the glenoid fossa) does not appear to be commonly differentiated as a distinct type in most archaeological reports for South Dakota. Perhaps the form is frequently grouped with the equivalent of the Simple type. Wedel (1955: 120), however, mentions this attribute in his description of materials from sites in the Mobridge area.

Trimmed Scapula Hoe. Specimens of this type have been trimmed or chopped at the neck immediately below the glenoid cavity to round and thin this area. The type is identical to that described as Group 2 by Lehmer (1954: 63, 109) though we would agree with Metcalf's modification of this description (1956: 308) so far as our specimens are concerned. A common technique of manufacture appears to involve chopping directed toward the glenoid cavity. An alternative technique, however, well illustrated by a specimen from 39CA6 involves the sawing of a transverse groove across the neck. If the glenoid cavity were then removed by a hammering or battering technique it could result in the

irregular, jagged butt end frequently seen in some specimens particularly where the amount of smoothing is kept at a minimum. The type is also to be equated with Type V as reported at the Swan Creek site (39WW7) (Hurt, 1957: 31).

The distribution of this type, as reflected at other sites in South Dakota, suggests it is one of the latest hoe types to develop in the region. The extensive trimming involved in the form may well indicate a shape concept adjusted to the availability of metal tools. Marks suggestive of the use of metal tools are commonly to be seen on the specimens.

Normally in the trimming of the butt end all traces of the glenoid fossa is removed. In some specimens, although the entire circumference of the glenoid fossa is trimmed, a portion of the base of the cavity remains. The frequency of such specimens is tabulated separately. This variant may possibly represent a developmental stage in the derivation of the Trimmed type from a Notched type.

In length, the specimens range between 228 and 367 mm. The distribution is as follows:

| Trimmed Hoe Length | 39WW3 | 39CA6 |
|---|---|---|
| 226 - 250 mm | 3 | 4 |
| 251 - 275 mm | 4 | 11 |
| 276 - 300 mm | 5 | 6 |
| 301 - 325 mm | 5 | 8 |
| 326 - 350 mm | 0 | 4 |
| 351 - 367 mm | 1 | 3 |
| Average Length | 286.9 | 293.0 |

Table 52. Frequency of Hoe Types and alternative attributes

| | 39WW3 | 39WW10 | 39CA6 |
|---|---|---|---|
| Simple scapula hoe | 9 | 1 | 11 |
| Left scapula | 3 | 1 | 7 |
| Right scapula | 6 | 0 | 3 |
| Grooves/notches on side of neck | 0 | 0 | 2 |
| Base of spine smoothed after removal | 3 | 0 | 5 |
| Notched scapula hoe | 103 | 15 | 41 |
| Left scapula | 41 | 6 | 17 |
| Right scapula | 62 | 9 | 24 |
| Grooves/notches on side of neck | 48 | 9 | 23 |
| Base of spine smoothed after removal | 49 | 3 | 24 |
| Opposite margin of glenoid fossa also faceted | 9 | 0 | 5 |
| Tuber scapulae wholly or partially trimmed | 10 | 0 | 7 |
| Deep, smoothed notch in end of blade ("thong stretcher") | 2 | 2 | 0 |
| Trimmed scapula hoe | 49 | 0 | 49 |
| Left scapula | 26 | | 19 |
| Right scapula | 26 | | 30 |
| Grooves/notches on side of neck | 38 | | 25 |
| Base of spine smoothed after removal | 32 | | 39 |
| Deep, smoothed notch in end of blade ("thong stretcher") | 5 | | 5 |
| Trimmed around entire margin but small portion of glenoid fossa remains | 6 | | 11 |
| TOTAL NUMBER OF HOES | 161 | 16 | 100 |
| TOTAL LEFT SCAPULAE | 70 | 7 | 43 |
| TOTAL RIGHT SCAPULAE | 91 | 9 | 57 |

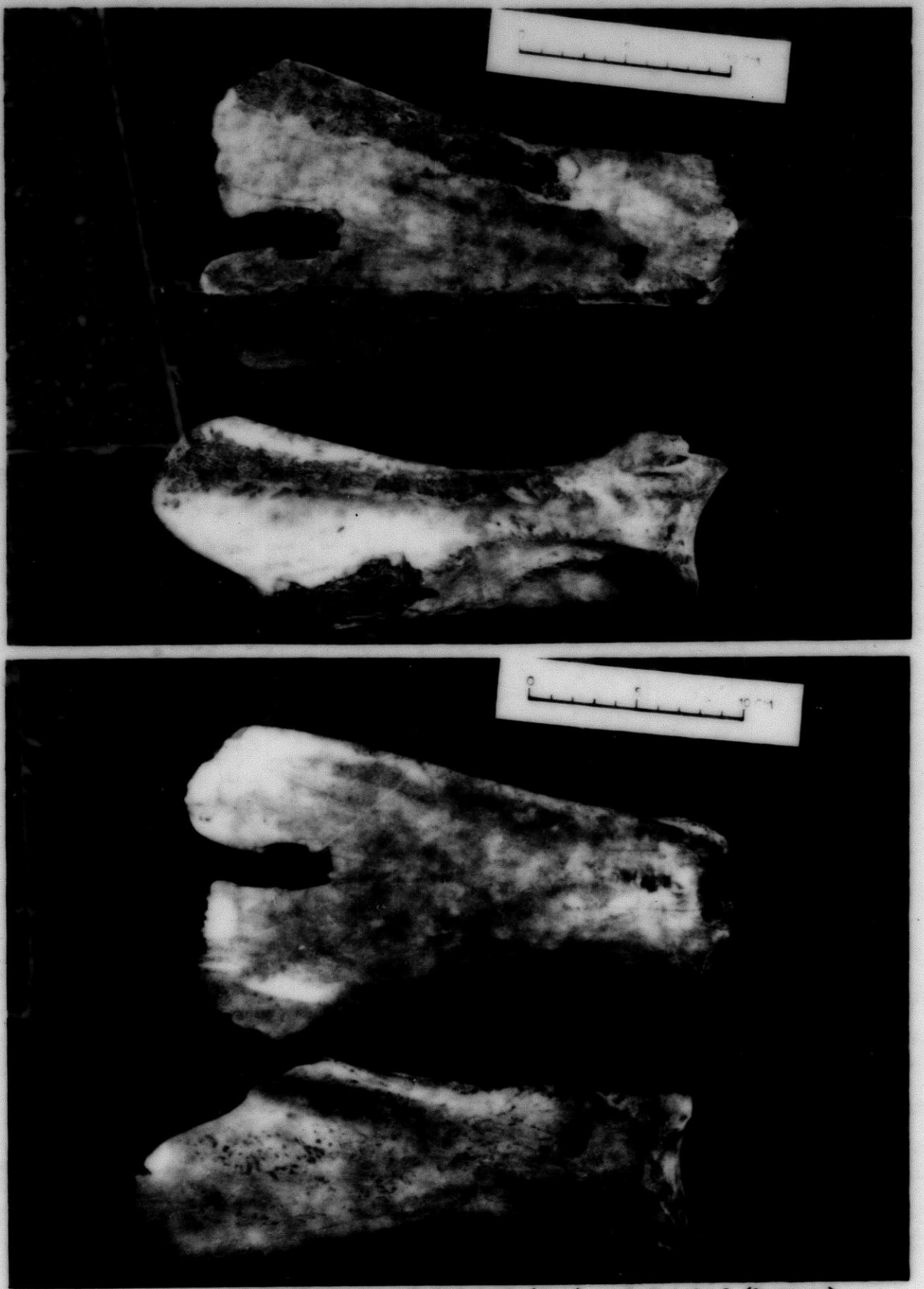


Figure 47. Front and Back views of Trimmed (top) and Notched (bottom) Scapula Hoes from 39CA6.

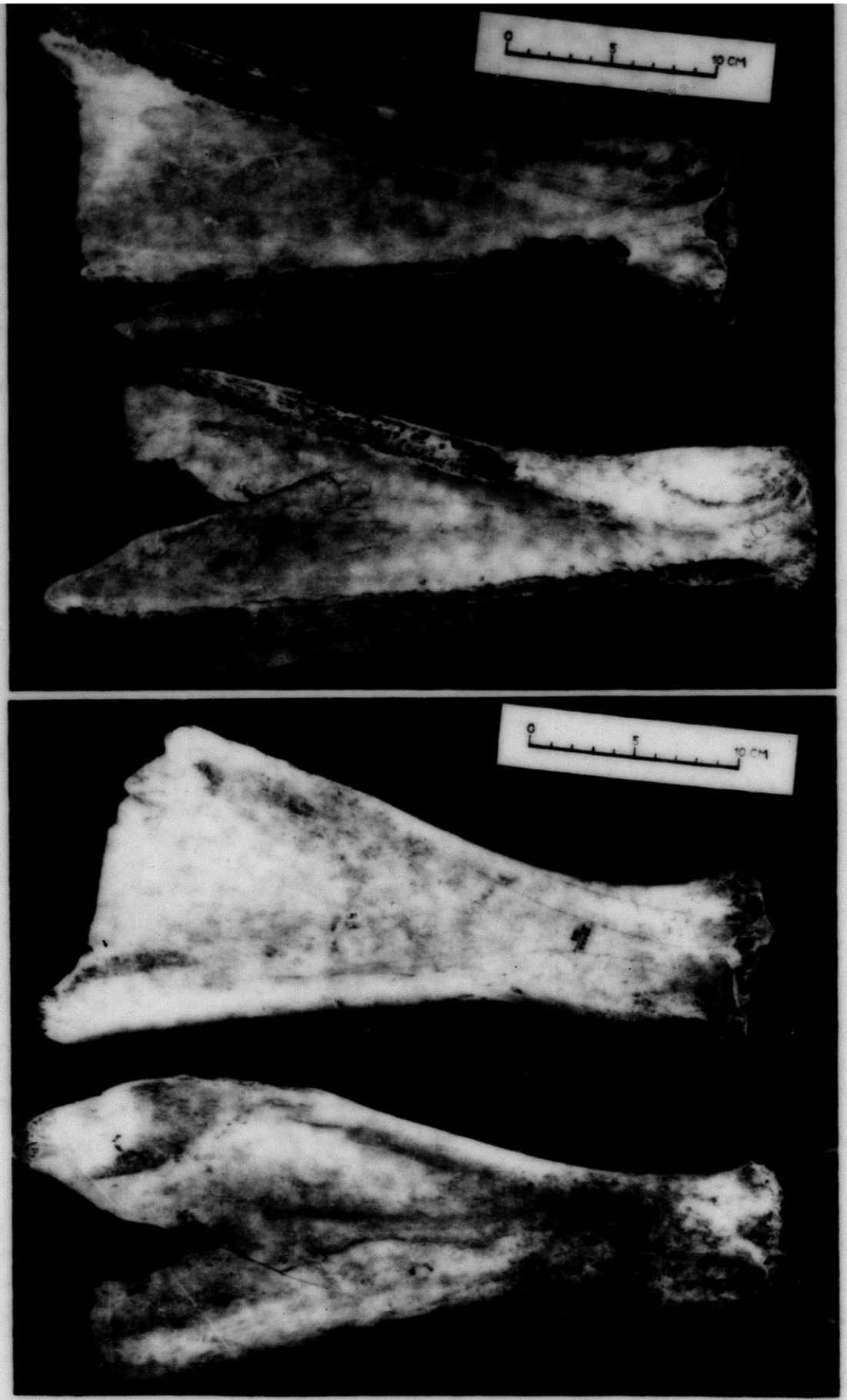



Figure 48. Front and Back views of Notched (top) and Trimmed (bottom) Scapula Hoes from 39CA6.

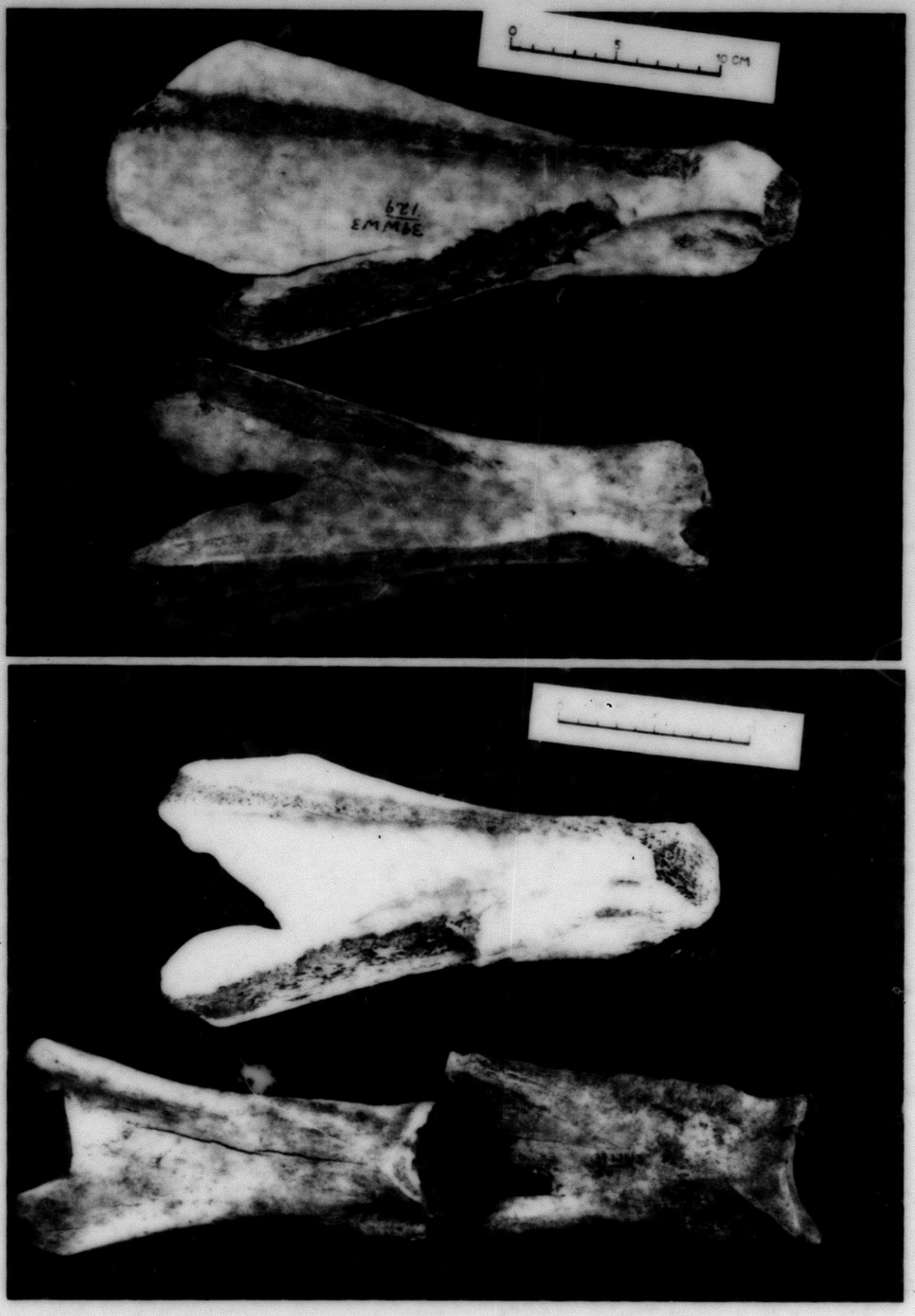



Figure 49. Trimmed and Notched Scapula Hoes from 39WW3.

## Bison Skull Hoes

Digging tools manufactured from a split bison horn core together with a section of the frontal bone appear to be first reported by Will and Spinden in their Mandan investigations (1906: 168). Subsequently they were reported as present in the Nebraska culture (Strong, 1935: 260; Cooper, 1939: Plate XIII) and the St. Helena Focus (Cooper, 1936: 56) and again simply identified as 'digging tools'. In South Dakota, Hurt (1951: 29) has tended to designate the type a 'root digger' while Lehmer (1954: 63, 109) uses the term 'horn scoop'. The implement appears to be more common in the southern Plains where it has been consistently designated a 'bison skull hoe' (Krieger, 1946: 107, 131, 184; Bell and Baerreis, 1951: 76, Schmitt and Toldan, 1953: 144; Oakes, 1953: 19). The term 'bison skull hoe' appears preferable to 'root digger' and in more general use than 'horn scoop'. As in the case of the bison scapula hoes they probably served in a general digging capacity.

In the manufacture of the implement the horn core was split transversely to give a flat handle parallel to the blade which was cut from the frontal bone. The bit is sharpened and markedly convex except in one specimen (# 291) which is both narrower and only slightly convex and also deviates in having a sharply beveled bit. It is of interest to note that in 39WW3 which contained 6 examples in contrast to one at 39CA6, all were from a single house (Feature 8) except for one from a cache pit (Feature 14).

Unlike the scapula hoes, the bison skull hoes bear no evidence of wear that could have been derived from lashings attaching the implement to a handle. It seems probable, therefore, that they were used directly in the hand.

## Bison Skull Hoes (39WW3)

| Specimen # | Location | Length | Width |
|---|---|---|---|
| 53 | Feature 14 (cache pit) | 315 | 145 |
| 171 | Feature 8, house floor (fragment) | -- | -- |
| 171 | Feature 8, house floor (split longitudinally) | 240 | -- |
| 291 | Feature 8, house floor | 228 | 102 |
| 415 | Feature 8, 6 inches below house floor | 250 | 110+ |
| 416 | Feature 8, Cache pit Nr. 4 (39CA6) | 280 | 138+ |
| 43 | Feature 1, house fill | 276 | 138 |

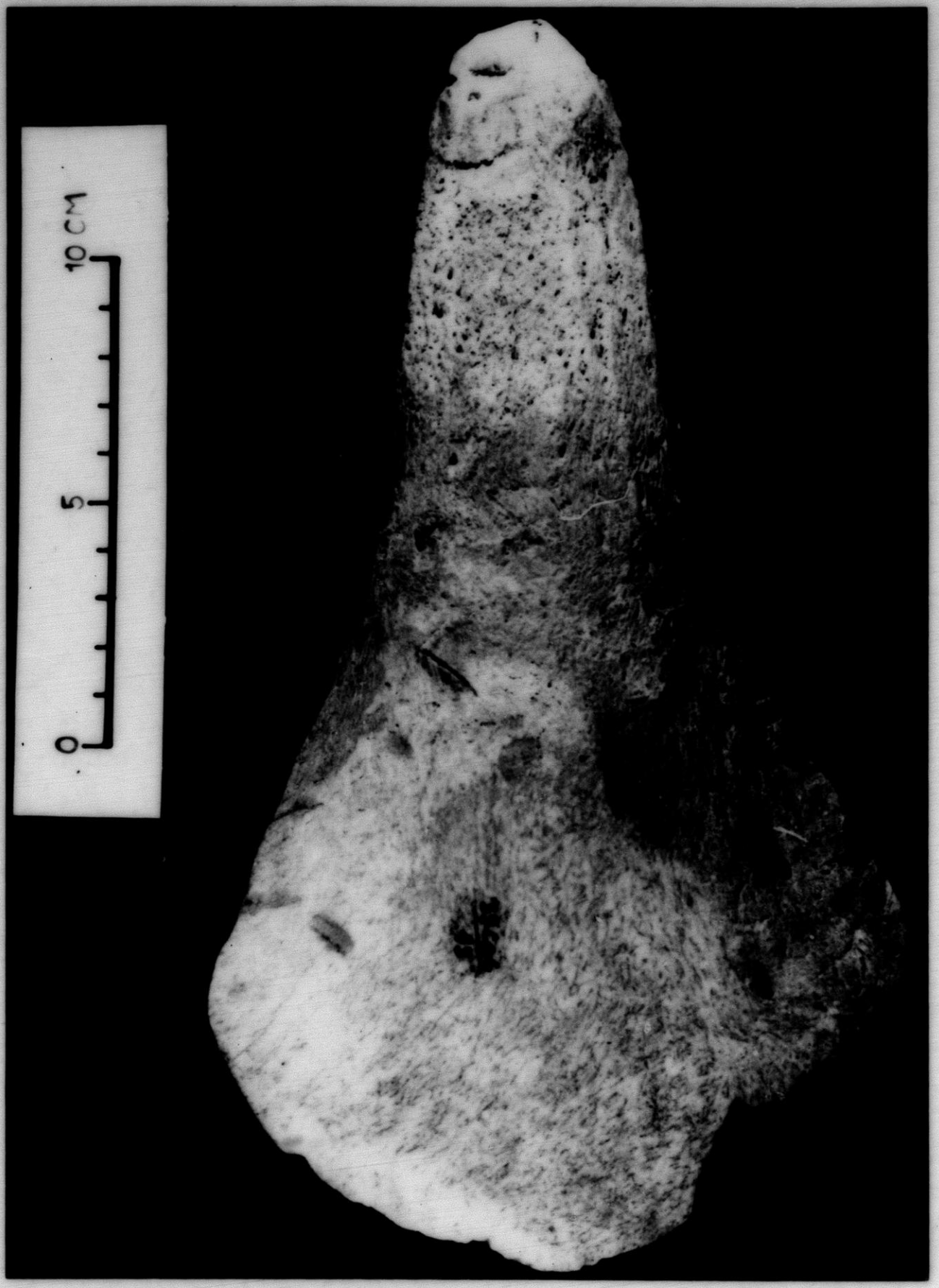



Figure 50. Bison skull hoe from 39CA6.

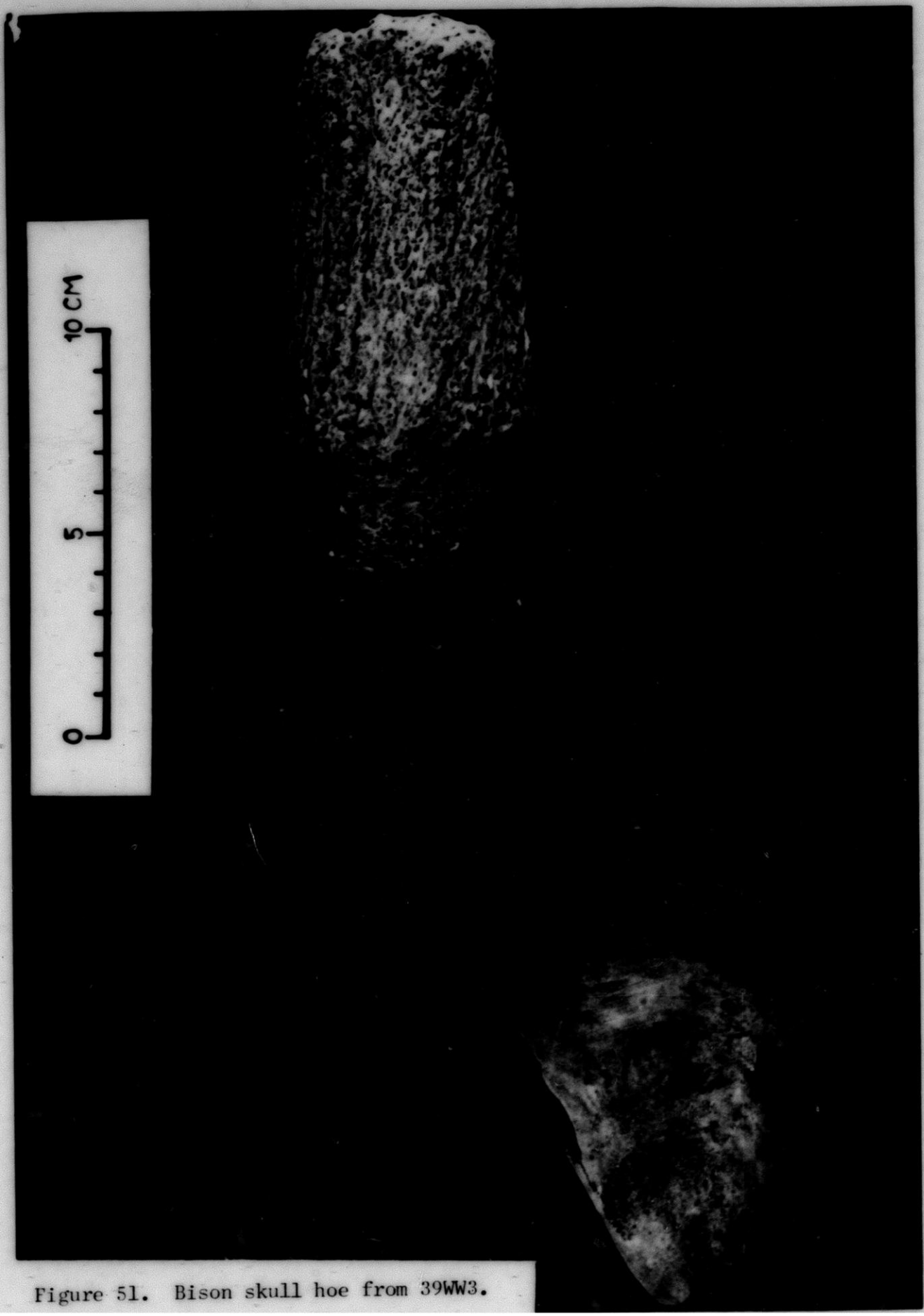



Figure 51. Bison skull hoe from 39WW3.

## Bison Robe Softener

One distinctive implement type, manufactured from a bison scapula, is confined in its distribution to 39CA6. The only modification on the scapula has been the cutting of a large perforation in the infraspinous fossa, the perforation tending to be triangular in shape (and thus conforming to the shape of the fossa) but extremely irregular in its margins. The margins of the perforation are undulating and worn smooth with a glassy polish suggesting that some kind of flexible material has been pulled back and forth in the aperture. An archaeological parallel to this specimen is an elk scapula found at the site of Aztalan in Wisconsin (Barrett, 1933: 289-90). The Wisconsin specimen, however, bears a rectangular perforation though its edges are similarly worn smooth and polished. Barrett calls attention to the use of a perforated scapula among the Winnebago (Carter, 1933) and Menominee (Hoffman, 1896: 260) as a bark shredder, bunches of the fiber being pulled back and forth in the perforation to remove all splinters and other hard fragments. The perforations of these, however, are described as being only an inch in diameter. A more direct parallel is to be seen in the perforated bison scapula reported by Schmitt and Toldan (1953: 172) at the Brown site, a component of the Washita River Focus in Oklahoma. An intact scapula had a hole 3 x 2 inches battered in the blade, some of the edges of the perforation being partially smoothed. Attention should also be directed to the implement type designated a "thong stretcher" in a series of reports by Wesley R. Hurt, Jr. (previously cited in connection with the description of the scapula hoes). Hurt has used the term thong stretcher for those hoes bearing a deep V-shaped groove in the sharpened bit, the sides of which are worn smooth as in the case of the implements now under discussion. As to function, "theoretically, a piece of rawhide thong was run back and forth through this V-notch to stretch it" (Hurt, 1952: 5). Although we are not familiar with

any ethnological support for such an assumed function, it is plausible. More direct ethnological evidence for the use of such a specimen, however, is to be found in the account by Grinnell of skin dressing techniques among the Cheyenne (1923: 216-17). As a part of the softening process he states:

> Some women preferred to use a buffalo shoulder blade in softening a robe. The inner part of the bone was cut away, leaving, however, a strong border. Then, by its joint, the shoulder blade was securely tied to a tree or to some immovable object, and the robe was passed through the hole in the bone and pulled backward and forward against the bone. (ibid: 216)

This description fits the implements with precision and hence we have designated the type "Robe Softeners". Implements which Metcalf (1956: 305-6) describes from the Dodd site as possible sickles looks much like broken implements of this same form.

Since the implement type has not been previously reported, it has seemed desirable to describe the four examples from 39CA6 individually.

Specimen # 10. Found in Feature 6, Cache Pit 1. Right scapula of a bison which is broken and split longitudinally through the infraspinous fossa, the posterior border and articular end being missing. An irregular perforation, 145 mm in length, with its margins polished through use was present in the infraspinous fossa.

Specimen # 19. Found in Feature 1, Cache pit 1. Left scapula of a bison, 403 mm in maximum length and 215 mm in maximum width. The perforation is 223 mm long by 93 mm in maximum width. While some wear and polish is present around the entire circumference, it is most extensive adjacent to the thickened posterior border. Knife marks are present on both sides of the spine near its base. Since these cover an area 18 mm in width they may have been derived either during the butchering process or through the initial stages of an attempt to prepare the spine for removal.

Specimen # 83. Found in Feature 3 on the house floor. Right scapula of a bison, 392 mm in maximum length and 210 mm in maximum width. The perforation is 200 mm long and 106 mm wide and subtriangular in outline. Smoothing and polish through use is found around the entire circumference of the perforation but with no other indications of use present.

Specimen # 24. Found in Feature 1, on the house floor. Right scapula of a bison, 473 mm in length and 257 mm in width. The perforation is 257 mm by 137 mm in maximum dimensions. Smoothing and polishing is found around the entire circumference but is most pronounced at the broad end of the perforation and on the posterior border.

Figure 52. Robe Softener manufactured from bison scapula. Site 39CA6.

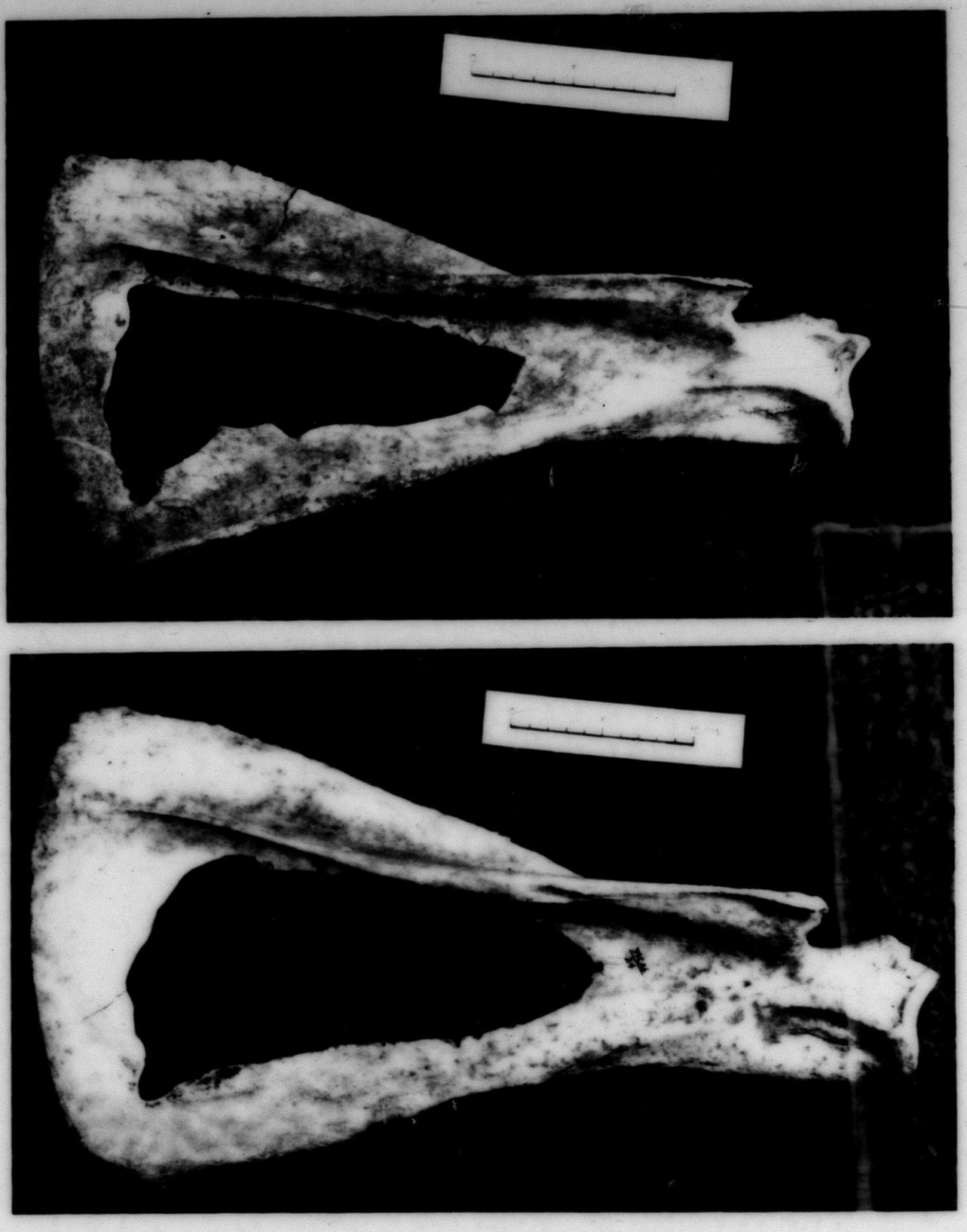


Figure 53. Robe Softeners from 39CA6.

## Hoe Fragments

We have simply classified as 'hoe fragments' those sections of bison scapulae that show modification similar to that which appears on the various types of hoes but where the neck and glenoid fossa is missing. Thus, the number of hoes is determined by the number of specimens having the butt or handle end of the implement present. By this procedure we would hope to avoid duplication in the tally for obviously the blade can be broken into many pieces. Broken sections of the blade, of course, can also be reused for other tools--particularly the scapula knife. Among the hoe fragments, however, we have no sharpened edges that could have been used as a knife other than those edges which are modified to produce the hoe blade. It is possible, of course, that fragments having a portion of the sharpened vertebral border could have been used as knives but without indications of further modification they can not be distinguished from a simple fragment.

230 such fragments were recovered from 39WW3, 94 from 39CA6, and 32 from 39WW10.

## Scapula Implement Fragments

Segregated from the above group is a series of additional fragments of implements manufactured from the bison scapula. While these may be reworked hoes, all show secondary modification indicating the intent to produce digging tools, cleavers or knives but their fragmentary condition precludes more precise classification. 2 such fragments were recovered from 39CA6 and 12 from 39WW3.

## Scapula Cleavers

The Arzberger site in South Dakota produced several bison scapula implements which Spaulding (1956: 49) described as "cleaver-like". Implements of the same general character and more specifically resembling those of the Mobridge area are described and illustrated by Cooper (1936: 53, 121) for sites of the St. Helena Focus of the Upper Republican Aspect in Nebraska. They are there designated "knives or choppers". The tool may be comparable to a specimen from a Woodland site in Nebraska (Vy-1) described by Hill and Kivett (1940: 165-166) which is identified as a beaming tool. The thinness and sharpness of the bone at the cutting edge varies in individual specimens. It may perhaps have been used as a variety of sickle, or perhaps simple as the equivalent of a heavy knife equipped with a handle.

As Cooper suggests, some of these implements and perhaps most were made from broken or worn out hoes. That this was not always the case is indicated by serveral specimens in which the unmodified vertebral broder of the bison scapula is retained. The thickened posterior border, always thinned in the scapula hoes, is not always treated in this fashion on the cleaver. The group sorted as 'cleavers' are placed in this category on the base of the edge which shows preparation for use or wear through use. In the case of the cleavers this is the edge which is cut longitudinally through the infraspinous fossa. The tool should not be confused with a slender digging tool which resembles it in outline but possesses its wear on the end rather than the side. The cleaver merges more gradually with a smaller scapula knife but an effort has been made to restrict the group to a larger, heavy form and particularly with a blutt end opposite the handle.

The scapula cleavers may be divided into two groups or varieties on the basis of the portion of the bison scapula utilized. In one group the trimmed and smoothed scapular spine forms a median ridge down the central portion of the implement (median ridge variety). The sharpened and/or worn working edge is produced in the infraspinous fossa. The group is probably almost exclusively manufactured from discarded scapula hoes although one specimen from 39CA6 (# 129) appears never to have been sharpened at the vertebral border, as it would had it been used as a hoe, and thus to have been specifically prepared for use as a cleaver. The unbroken specimens of the group range from 216 to 350 mm in length and from 56 to 115 mm in width.

A second group is manufactured from a longitudinal section of the bison scapula with the posterior border forming the back edge of the cleaver and the cutting or working edge again produced through the infraspinous fossa. Of the six specimens in this group only one has had the posterior border thinned as is commonly the case in the scapula hoes. Thus it would seem that they were largely made directly into cleavers from the scapula and that they are not reworked scapula hoes. The lack of sharpening on the vertebral border, clearly evident on some specimens, would appear to bear this out. One specimen in the group from 39WW3 (# 341) is unusual in having a very blunt working edge which is highly polished and originally seems to have had a series of notches or serrations on this edge though they are not largely obliterated through extensive wear. The specimens range from 285 to 325 mm in maximum length and from 51 to 121 mm in width.

| | 39WW3 | 39WW10 | 39CA6 |
|---|---|---|---|
| Median ridge variety . . . . . | 8 | 1 | 4 |
| Backed variety . . . . . | 3 | 1 | 2 |

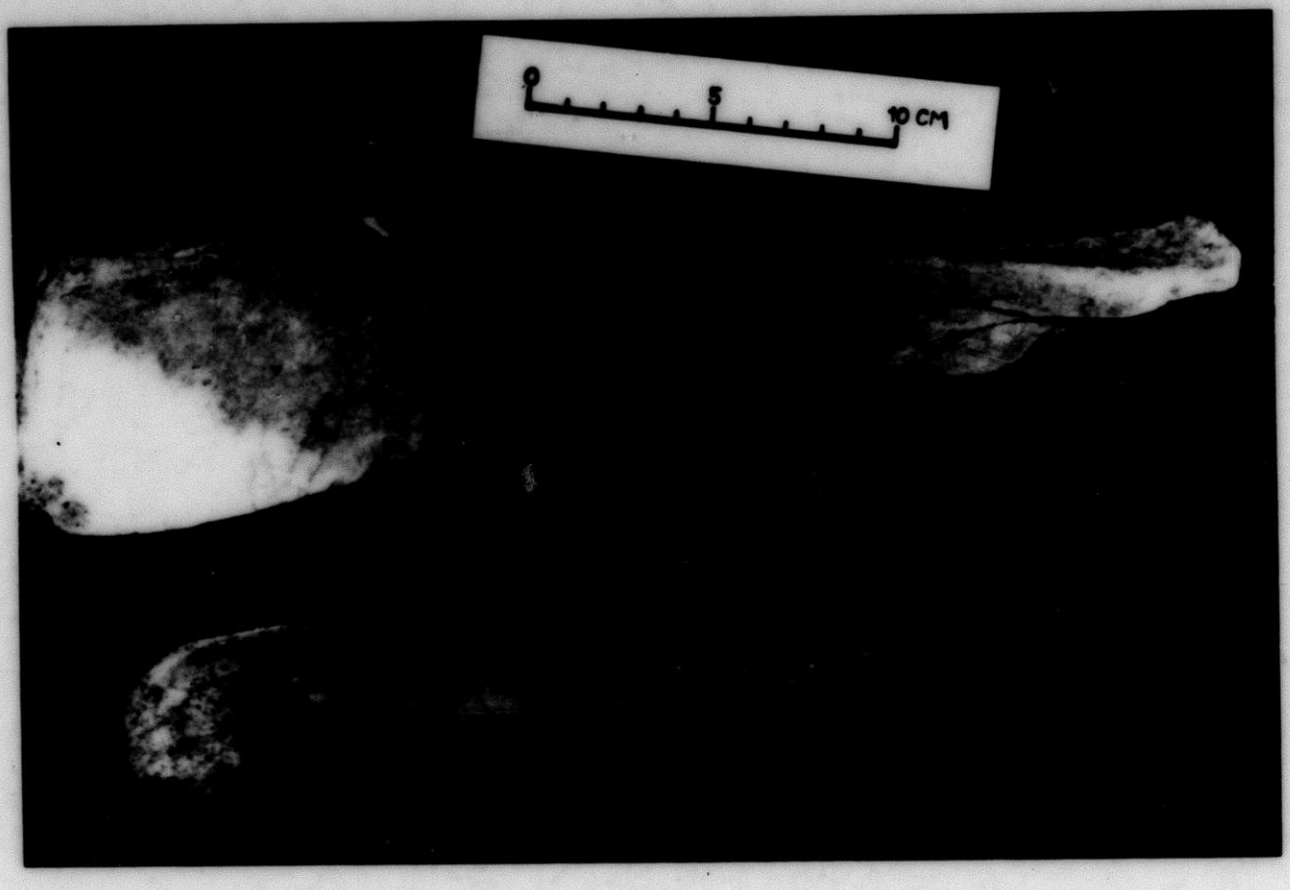



Figure 54. Scapula cleavers manufactured from bison scapula.

## Scapula Digging Tools

The specimens we have designated 'scapula digging tool' would appear to be largely produced from fragments of larger scapula hoes. Though somewhat varied in size and appearance, the group has in common their production from longitudinally split sections of the scapula. Thus they tend to be long narrow implements and are sorted from similar forms, particularly the scapula cleavers, on the basis of a working edge at the end of the implement. Many of the implements also have a sharpened edge in the longitudinal section cut through the infraspinous fossa. This may imply a dual or combination function. Such small digging tools could have served very effectively in digging post holes, for example, where the sharp knife-like edge would have been a considerable asset in trimming the hole. Although we have designated these implements 'digging tools' they may well have served other or multiple functions, for example as fleshing tools or in some other skin dressing activity. Most of the specimens are derived from sections of the scapula either broken or chopped through at the neck but a small group is clearly formed from a scapula hoe of the trimmed type with the present implement split all the way through the original handle.

As in the case of the cleavers, the implements may also be divided on the basis of the portion of the scapula utilized. Some bear the scar of a trimmed and smoothed scapular spine as a median rib (tabulated as median rib variety). This group ranges in length between 136 and 287 mm, and in width between 51 and 93 mm. A second group is cut from the posterior margin of the scapula and ranges between 112 and 319 mm in length and 48 and 91 mm in width.

| Scapula Digging Tools | 39WW3 | 39WW10 | 39CA6 |
|---|---|---|---|
| Median ridge variety . . . . . | 19 | 1 | 2 |
| with side knife edge . . . . . | 4 | 1 | 2 |
| Backed variety . . . . . | 22 | 4 | 16 |
| with side knife edge . . . . . | 5 | 1 | 10 |

The above tabulation does not include two specimens which we have segregated both because of their distinctiveness and to stress some of the problems encountered in attempting to classify a relatively amorphous body of material. Both specimens are from site 39WW3. One (# 106 from Feature 8) might have been placed in the 'backed' variety of scapula digging tools since it is made from a similar section of the bison scapula. It is distinctive in possessing a straight, sharpened edge at the end which is normally rounded. This straight spade-like end was produced by careful shaping of the tool. The dimensions of the specimen are 80 x 175 mm. A second unusual tool (# 227 from Cache 9 of Feature 15) further illustrates the difficulties encountered in the blending of the scapula knife, scapula digging tool categories. The specimen in question is simply a small sector (100 x 52 mm) from the infraspinous fossa of the bison scapula which has a short, convex cutting edge. The remaining edges while irregular are worn through use suggesting that this tool has been used in precisely its present condition. Here, then, we have a tool which is unlike the knives in its possession of a convex cutting edge yet like the digging tools in having this attribute at one end though far too small for the other tools placed in the group.

It seems well to stress that in all probability a very large portion of the tools manufactured from segments of bison scapulae are not highly

standardized. They have the appearance of being casually produced (and readily discarded) and designed to serve immediate and probably multiple needs. As indicated previously, the scapula digging tools indicated as also having a sharpened edge on the side could just as readily have been classified as knives as digging tools.

Figure 56. Scapula Digging Tools.

## Scapula Hoe/Digging Tool

To stress their deviation and intermediary character, we have placed in a separate category three small tools that might have been classed as hoes or as related to the digging tool group. They are manufactured from a scapula which is clearly smaller than that of the bison but are shaped in a similar fashion in that the spine has been trimmed off and the posterior margin thinned. They differ in that they are chopped or trimmed at the neck to produce a rounded or slightly pointed butt end. All three specimens of the group were found at 39WW3.

| # | Feature | Length | Width |
|---|---|---|---|
| 107 | 8 | 190 | 135 |
| 313 | 17 | 230 | 95 |
| 359 | 17 | 150 | 120 |

## Serrated Scapula Blade

One further unique specimen from 39WW3 (# 207 from Feature 16) resembles a small digging tool made from the posterior margin and section of the infraspinous fossa of a bison scapula but the rounded end is serrated. These notches are sharply cut as though with a metal blade. The dimensions of the implement are 134 x 55 mm. Hurt (1952: 41) mentions the presence of serrations on a spatula-shaped tool found at the Scalp Creek site (39GR1) South Dakota which may be similar.

39WW3
207

Figure 56. Serrated Scapula Blade.

## Bone Spatula

A carefully finished specimen from 39CA6 (# 18 found in Feature 1) is manufactured from a bison scapula, the spine having been trimmed quite flat on one face. It has the general outline and size of a table spoon with the end being sharpened. The specimen is 109 mm in maximum length, 43 mm in maximum width with the handle narrowing to 20 mm in width.

39CA6
18

Figure 57. Bone Spatula.

## Scapula Knives

Broken fragments of the blades of scapula hoes and perhaps sections from other scapulae were also fashioned into knives. As has been frequently pointed out, such specimens resemble the 'squash knife' of the Mandan. Like the other scapula implements, considerable variation in form will be found depending upon the portion of the scapula from which they are cut. Again, as in the case of the tools just previously discussed, the posterior border of the scapula may be retained to provide a thick, handle-like edge to the knife or the base of the scapula spine may provide a thickened ridge through the central portion of the knife. One further variant is to be found in the scapula knives in that they may be made entirely of the infraspinous fossa, a procedure which results in a thinner and more delicate knife than in the preceding variants. Whether such variations in manufacturing procedure provide useful cultural markers is difficult to determine since most reports simply lump all of these variants into a single class. The investigation as to whether such variants, here designated by descriptive names, may eventually have the status of culturally significant types we hope will be facilitated by a detailed presentation. We may repeat again that implements which perhaps also served as knives are to be found in the 'digging tool' category. Brief descriptive remarks regarding the range of attributes will be found following the descriptive name given to each variety and their frequency in the three sites are then tabulated.

Median Ridge variety. These knives share one major characteristic that gives them a strong appearance of similarity though this may be misleading. All are cut from a bison scapula in such a fashion that the base of the scapula spine which has been removed and carefully trimmed, forms a low,

medial ridge running longitudinally down the implement. A longitudinal section of the thin, compact bone of the infraspinous fossa has been carefully ground to a sharp, cutting edge. It should be recalled that if the tip of the implement in the direction of the vertebral border has also been sharpened or if this alone is sharpened, the implement is classed as a digging tool. In a few examples the section of the scapula adjacent to the scapula spine has been trimmed and smoothed at the butt end of the implement to provide a short handle for the knife similar to that found on the scapula cleavers. In fact these latter implements would have the appearance of small cleavers though the cutting edge does not have the nicks and scars commonly found in the cleaver group. In other examples no attempt was made to produce a demarcated handle for the tool. Unbroken specimens range between 159 and 219 mm in maximum length and 59 to 105 mm in maximum width.

Backed variety. Knives of this variety have been cut so that the thickened posterior border of the bison scapula serves as a blunt, back edge of the knife. In all but four specimens the posterior border has been thinned, indicating that like the median ridge variety the knives are probably manufactured from broken scapula hoes. The sharp cutting edge is again produced in the thin bone of the infraspinous fossa and in those specimens classed as knives no attempt has been made to sharpen the end. In two examples the posterior border is reduced to a blunt, handle-like surface, comparable to the cleaver handles. We have placed in the backed variety all examples with a blunt edge even though the posterior border has been extensively thinned by grinding. In a few examples this thickened portion extends for only a short sector of the total length of the specimen. The knives range in max-

imum length between 85 and 267 mm and between 21 and 116 mm in maximum width.

Thin variety. The knives of this group are made entirely from the compact, thin bone of the infraspinous fossa. It is a difficult group to characterize from the viewpoint of shape. Most specimens bear rough, irregular edges apart from the sector which has been carefully sharpened. These may represent fragments of larger knives--indeed, they may be knives of a different variety--but it is possible that no particular concern was felt to produce a knife of finished, symmetrical outline. Worn edges indicate that many of these knives of irregular shape were used in this condition. A single unbroken knife or finished outline has an ovate-acuminate shape and is 69 x 173 mm in maximum dimensions. Other fragments suggest more regular elliptical and ovate forms.

| | 39WW3 | 39WW10 | 39CA6 |
|---|---|---|---|
| Median ridge variety . . . . . | 6 | 1 | 2 |
| Backed variety . . . . . | 19 | 3 | 12 |
| Thin variety . . . . . | 22 | 2 | 7 |

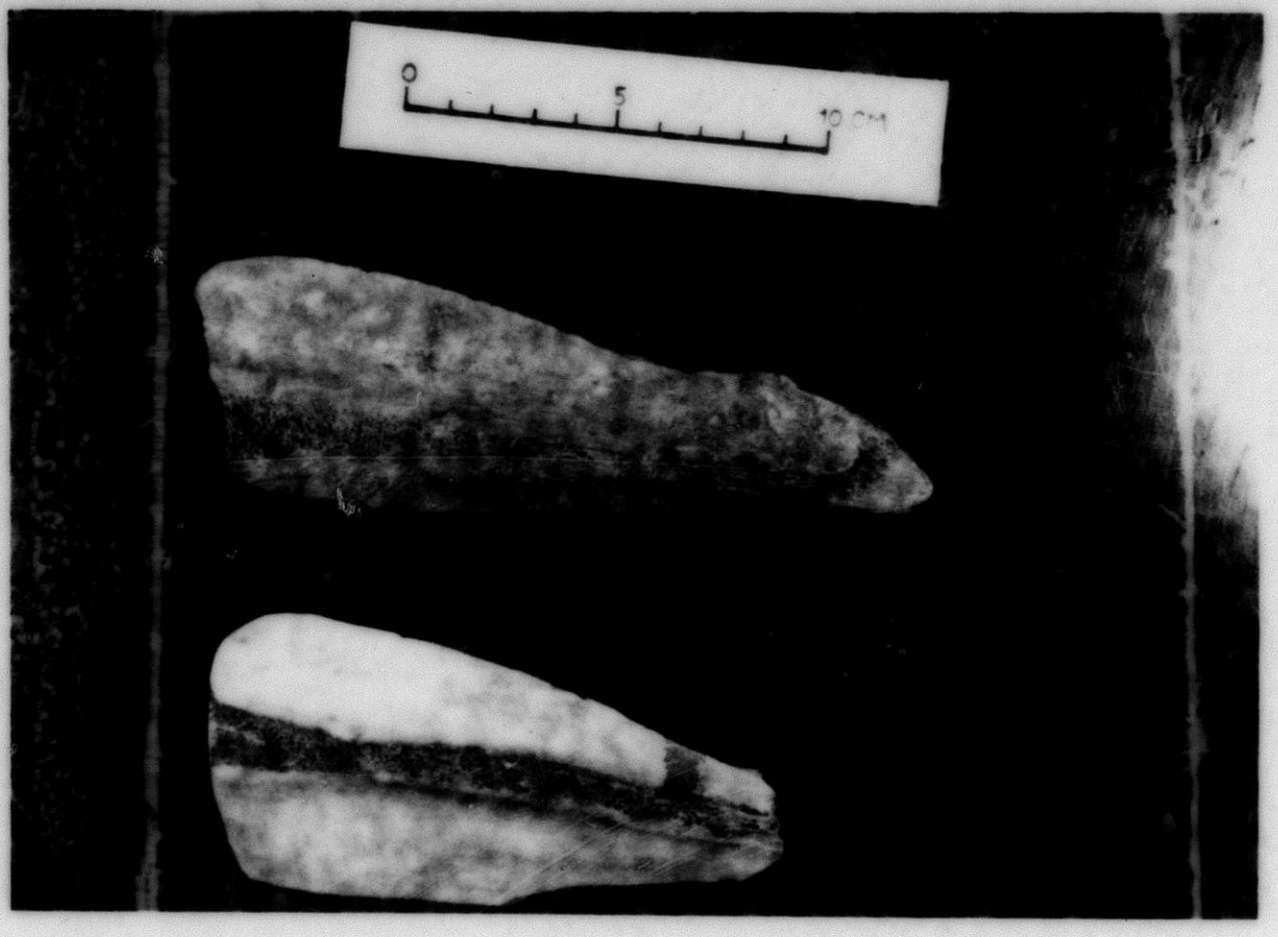



Figure 38. Scapula Knives, Median Ridge Variety.

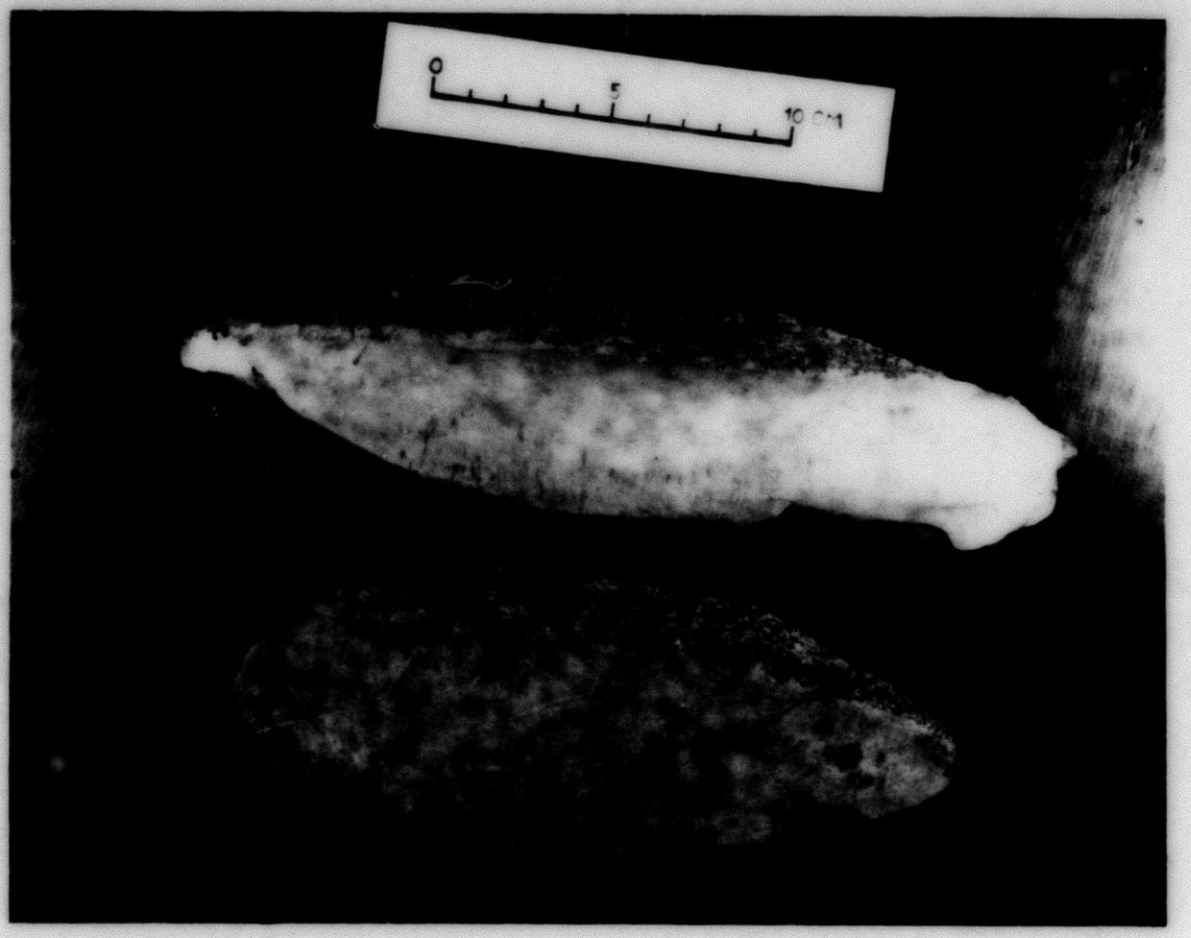
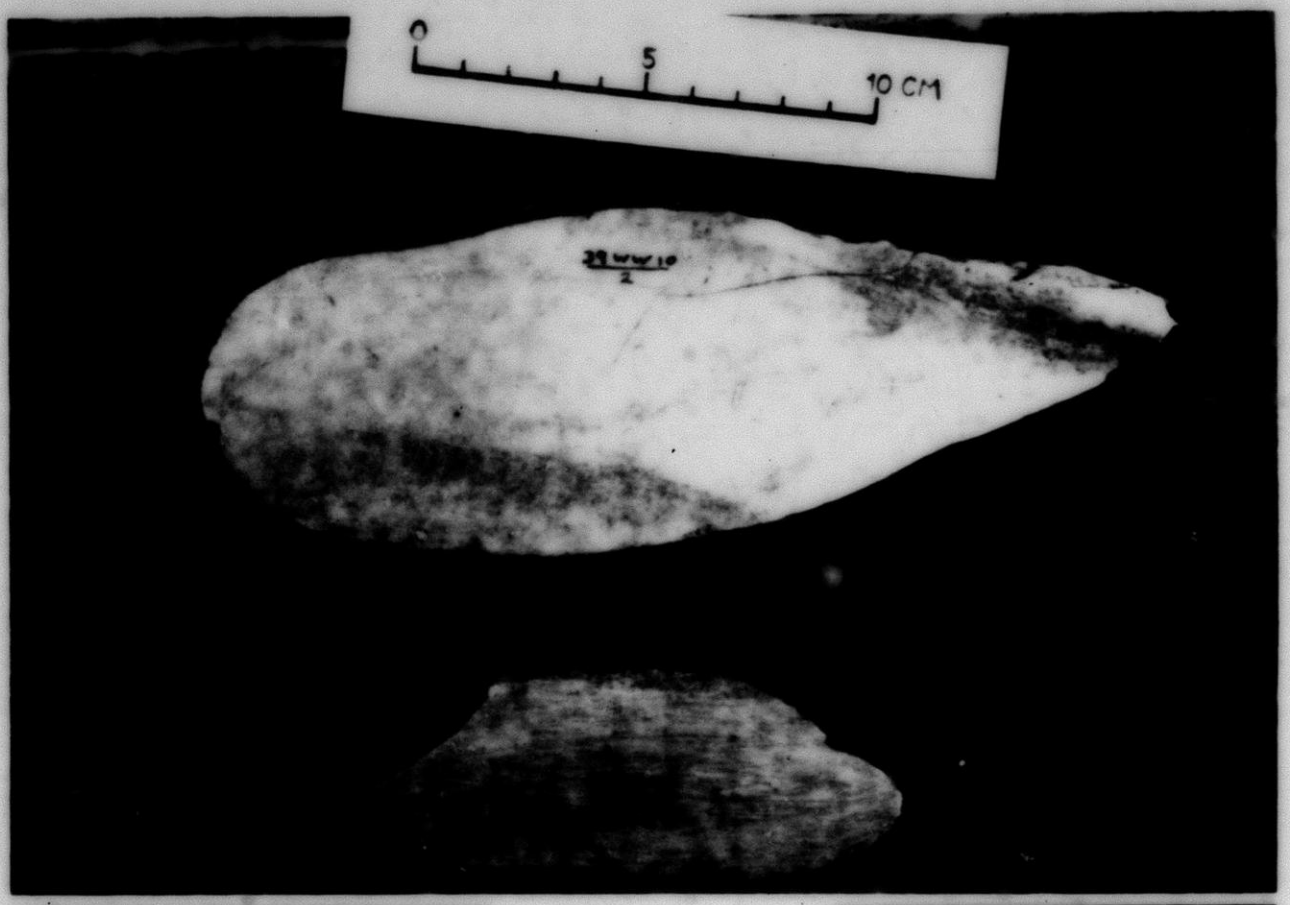



Figure 59. Scapula Knives, Backed Variety.



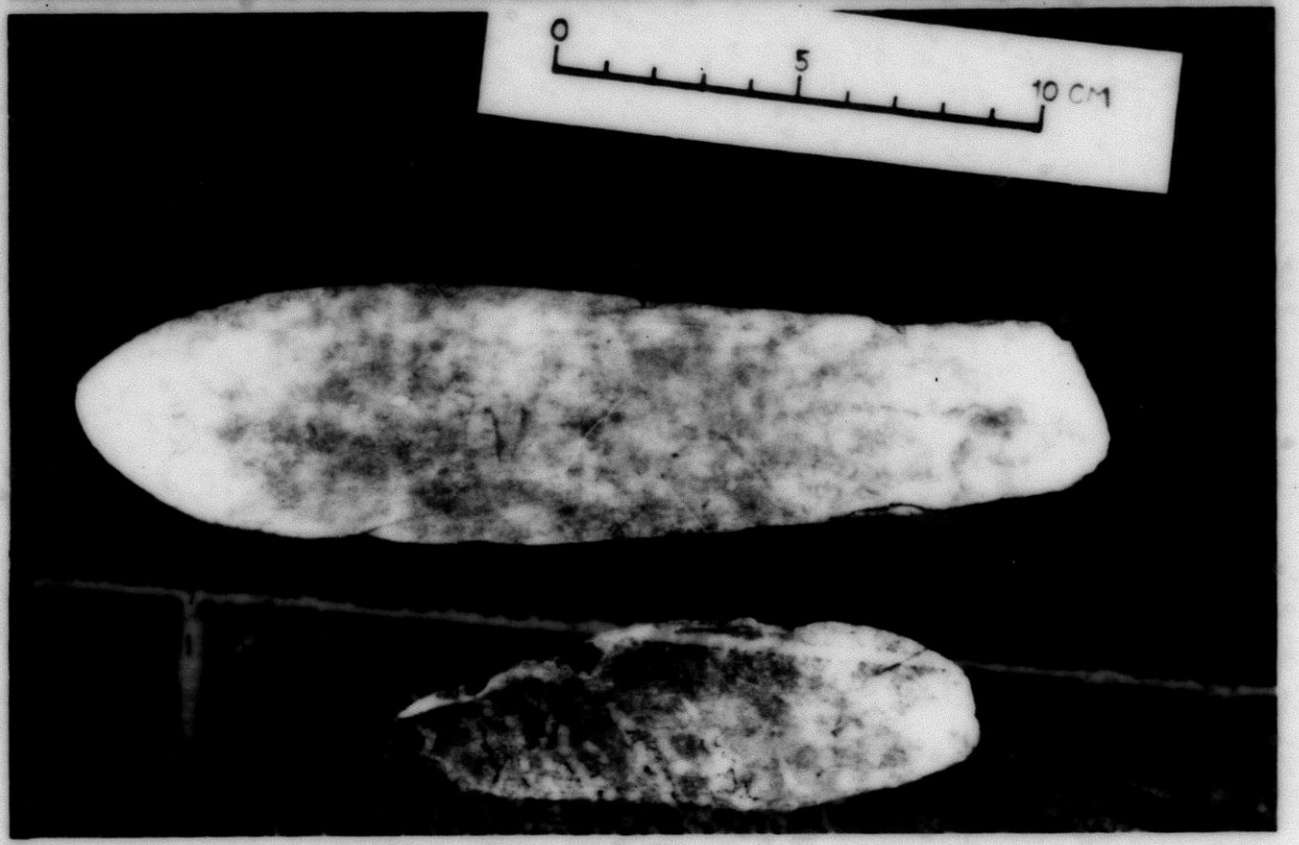




Figure 10. Scapula Knives. Thin Variety.

## BONE AWLS

Considerable progress has been made in the establishment of distinctive bone awl types in the Plains area. Some of these are already known by descriptive names and, where this is the case, they have been retained. In other instances descriptive names are suggested for varieties which are now recognized but designated as numbered types. In the grouping of the awls, the bone selected for use together with the modification of that bone have been the primary criteria used.

### Rib-edge Awls

This type was originally described by A. V. Kidder (1932: 217 and Fig. 182) as being made from a short section cut from the edge of a large rib. W. R. Wedel (1955: 119-20) has subsequently presented a convincing discussion of their having been made from the neural spine of a bison thoracic vertebra. Both sources of material may have been used, for not all portions of a bison rib will bear a degree of curvature that could be recognized in a finished awl. In cross section the awls vary from a markedly triangular form as a result of the converging faces of the rib or spine to a nearly rounded section where extensive modification of the original form has occurred. The butt end is distinctive in being bluntly rounded and approaching a low conical form. All are specifically to be identified by the presence of a strip of cancellous bone, varying in width, on an edge which is normally flattened.

Considerable variation is to be seen in the tip of the implement. Rarely do these implements taper to a very sharp point. Some specimens have a blunt, rounded tip which shows considerable wear or polish. These latter specimens were segregated by Kidder (1932: 229-232) as 'Rib-edge polishers'.

Kidder thought it likely that they were used in rubbing or polishing rather than as a flaking tool. This latter function was also suggested, however, in the terms 'triangular shaft flakers' used by Smith and Grange (1958: 111) and some of the South Dakota specimens of this collection also show wear and abrasion suggestive of use as a flaker. A sharp division between the categories--awl, flaker, and polisher--is not satisfactorily achieved for too many specimens seem to be of an intermediary category. Even in the pointed 'awl' group the specimens rarely have the sharp, needle-like tip found in many other awl categories. Kidder's designation of many of them as 'polishers' points perhaps to a specialized function with secondary use as both awls and flakers. In any event we have tabulated the specimens under the single name of rib-edge awl, listing the variation in tip as an alternative attribute. Obviously, where only the butt end is present, no specific assignment can be made.

The distribution of the rib-edge awl is discussed by Wedel (1955: 119) who suggests that for the central Plains they may be useful as a time marker for the protohistoric horizon. Lehmer (1954: 129), in his analysis of materials from the Oahe Dam area indicates that the rib-edge awl (designated Group 2 variety) appears to replace the flat rib awl in time. Their presence at 39WW10 in the Mobridge area confirms their appearance in pre-contact times.

| | 39WW3 | 39WW10 | 39CA6 |
|---|---|---|---|
| Butt end or shaft fragments . . . . . | 39 | 3 | 16 |
| With sharp tip: | 6+ | 1 | 4* |
| Length: Range . . . . . | 69-97 mm | 136 mm | 123 mm |
| Mean . . . . . | 78.4 mm | 136 mm | 123 mm |
| With blunt tip: | 22 | 5 | 15 |
| Length: Range . . . . . | 25-122 mm | 65-125 mm | 40-168 mm |
| Mean . . . . . | 74.2 mm | 84.2 mm | 88.0 mm |

* three specimens are represented by the tip only

+ one specimen is fragmentary

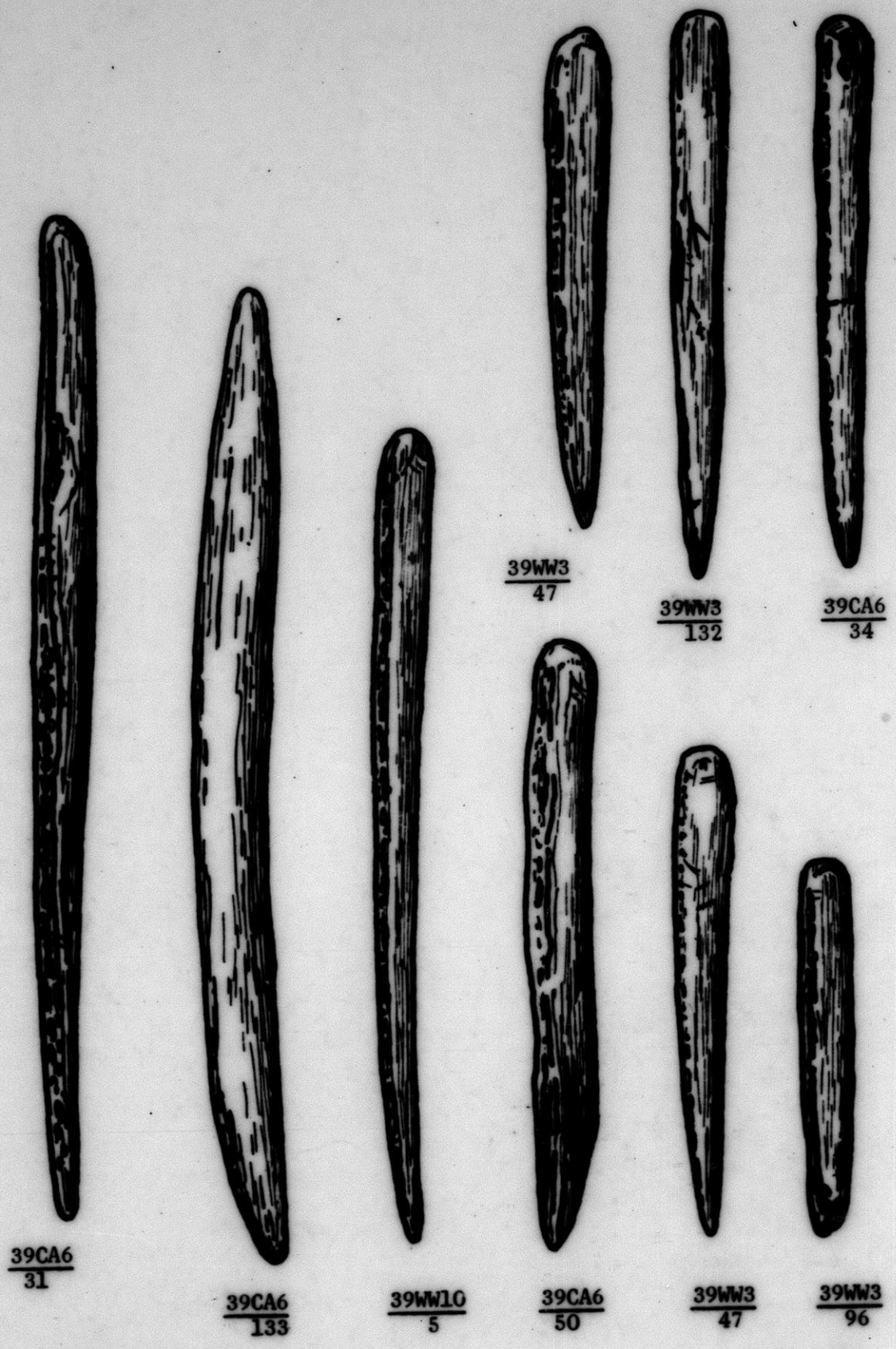



Figure 61. Rib-edge Awls.

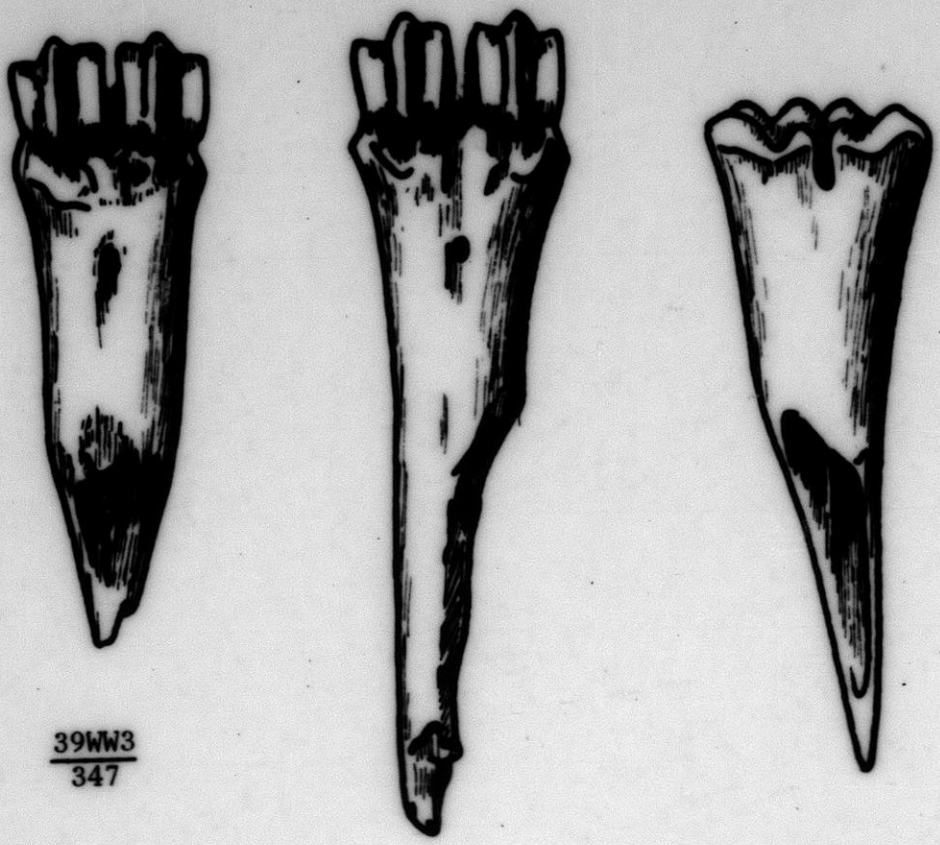
## Cannon-bone Awls

The simple designation of "cannon-bone awl" is reserved for those awls manufactured from a metapodial (deer or antelope) where the distal end is left intact as a handle. No grinding or smoothing appears on the condyles. Although common at other sites on the Plains (particularly the southern Plains), it is restricted here to a few examples from 39WW3 and 39CA6.

On one specimen from 39WW3 (# 347 found in Feature 17), the shaft was cut transversely 55 mm below the distal end of the bone and then sharpened to a point. Perhaps a millimeter or two is missing from the extreme tip, so that the present length of 77 mm approximates the original length of the tool. A second specimen from this site (# 181 from Feature 8) has the shaft split 45 mm from the proximal end, essentially through the vascular groove, so that the shaft of the awl appears on one side of the bone. Although the tip of the awl is missing, the fragment is 104 mm in length.

The single specimen excavated at 39CA6 (# 42) was located in Cache Pit # 3 of Feature 3. The tool was manufactured from the distal end of a metapodial of an immature deer or antelope. The epipheses were not consolidated and are now missing although they may have been present when the tool was in use. The cut in the shaft to produce the pointed end was made 40 mm below the present distal end of the bone and produced diagonally so that the functional portion of the awl appears at the side of the shaft rather than being centrally placed. The length of the specimen is 85 mm.

An additional example of this type found at 39CA6 is included in the Bamble collection. This highly polished implement has a total length of 108 mm.



39WW3
347

39WW3
181

39CA6
42

Figure 62. Cannon-bone Awl.

## Split Cannon-bone Awl

While this variety is similar to the preceding one in that the distal end of the metapodial bone is retained as a handle, it has been split between the condyles and essentially down the vascular groove with the section from one side of the shaft sharpened to a point. This type is common in South Dakota. It has been designated Type 4 by Hurt (1951: 26 and in subsequent publications) and Group 5 by Lehmer (1954: 66).

In some specimens the single condyle bears no further modification. In other examples, the single condyle is ground either slightly or extensively. However, even where extensive grinding is present and a smoothly rounded handle prepared, the identification of the bone is still certain. The presence or absence of grinding is recorded on the trait list which follows as well as the length of the awl which appears to be the other variable attribute.

| | 39WW3 | 39WW10 | 39CA6 |
|---|---|---|---|
| With butt end unmodified | 3 | | 2 |
| With butt end ground | 6 | 2 | 6 |
| Awl length (specimens with | 59 mm | 75 mm | 70 mm |
| "+" have a portion of | 72 mm | 76 mm | $75^{+}$ mm |
| the tip missing) | 75 mm | | $77^{+}$ mm |
| | 85 mm | | 78 mm |
| | 85 mm | | 95 mm |
| | $86^{+}$ mm | | $103^{+}$ mm |
| | 100 mm | | 155 mm |
| | 143 mm | | 183 mm |
| | $143^{+}$ mm | | |

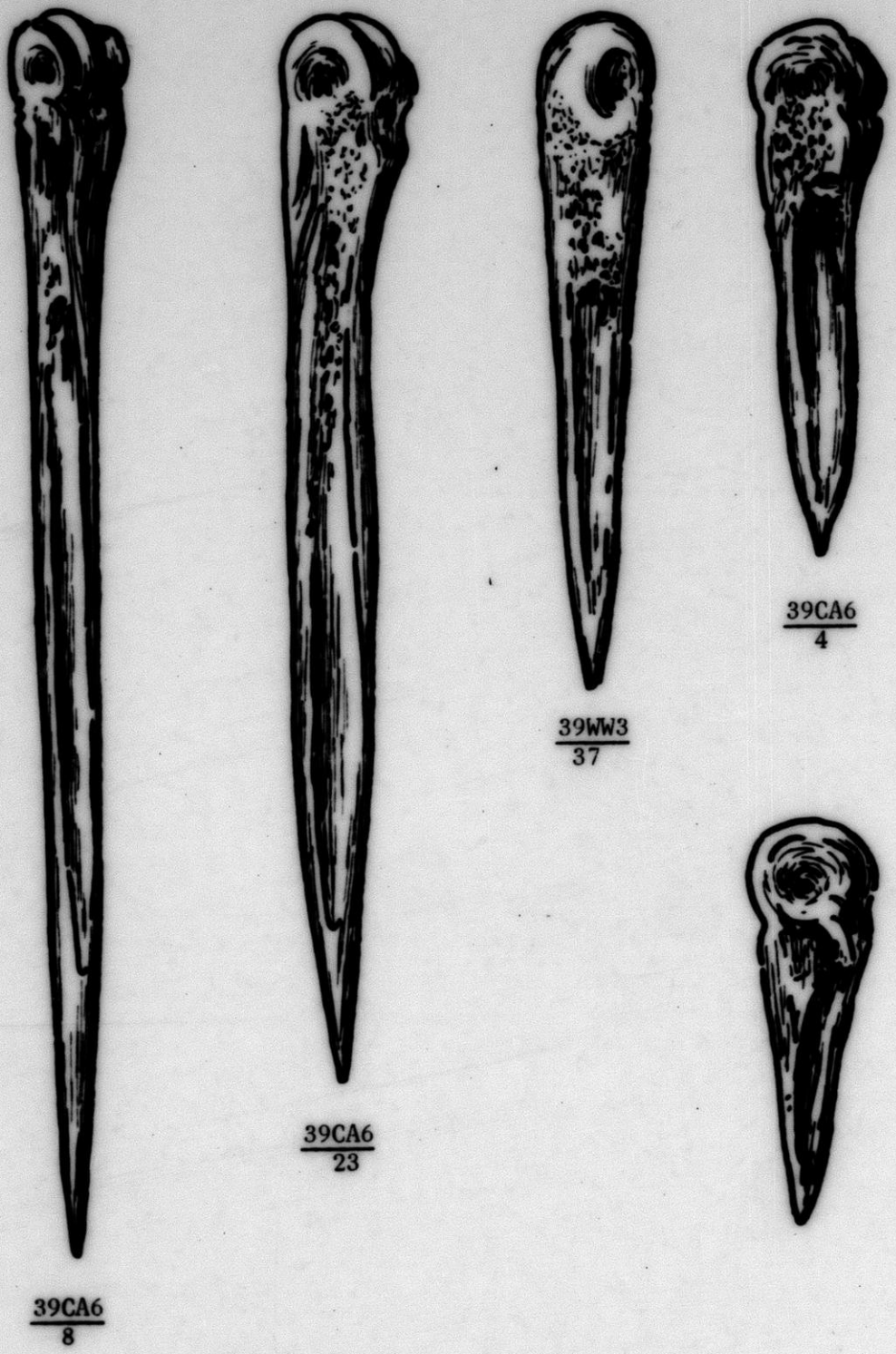



Figure 63. Split Cannon-bone Awl.

## Quartered Metapodial Awl

The bone awls of this group are manufactured from a quartered section of deer or antelope metapodial with a portion of the proximal end of the bone serving as a handle. The entire length of the awls has been carefully ground and polished, the articular facets being also smoothed and modified. Two specimens from 39WW3 are classed as 'rough variants' of the type in that on these specimens only a sector of about 40 mm in length immediately adjacent to the tip of the awl is smoothed. The remainder of the implements consists of rough and unmodified edges. The maximum width of the awls as well as the length is tabulated below. A measurement of the width essentially gives an indication of the extent of the facet retained, the narrow specimens being those that are extensively ground and modified.

| | 39WW3 | | 39WW10 | | 39CA6 | |
|---|---|---|---|---|---|---|
| Quartered metapodial type . . . . . | 5 | | 7 | | 4 | |
| Rough variant of above . . . . . | 2 | | 0 | | 0 | |
| Dimensions of specimens: (mm) | Length | Width | Length | Width | Length | Width |
| | | | 64 | 16 | | |
| * = rough variant | 73+ | 15 | 73 | 8 | | |
| | 85+ | 13 | 73 | 10 | 77 | 12 |
| | 86 | 15 | 86 | 16 | 81 | 15 |
| | 102 | 16 | 86 | 17 | 84 | 10 |
| | 108 | 11 | 92 | 16 | 86+ | 15 |
| | 118* | 27 | 136 | 9 | | |
| | 151* | 14 | | | | |

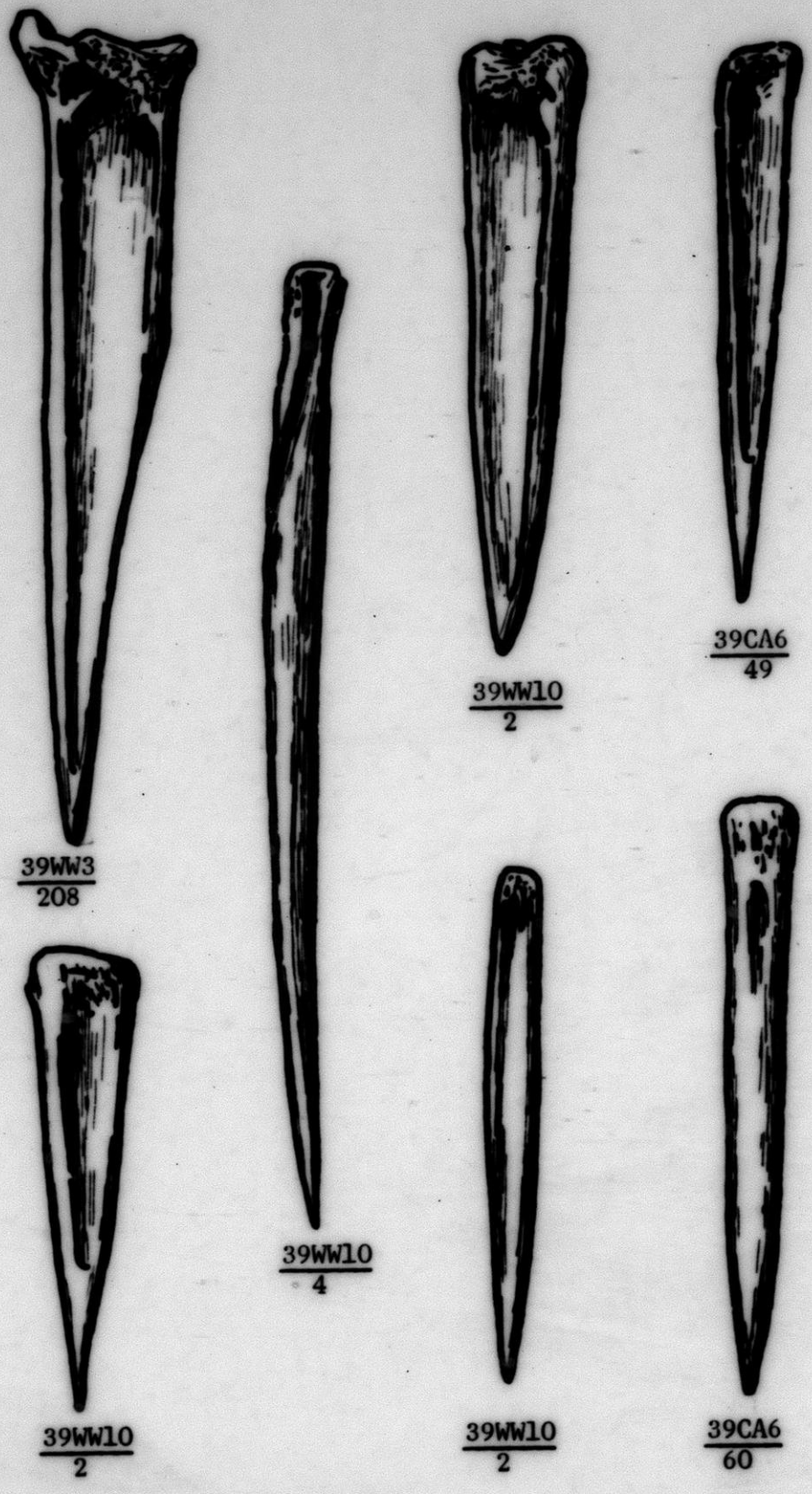



Figure 64. Quartered Metapodial Awl.

## Splinter awl

The designation 'splinter awl' is used for those awls which were manufactured from sections of the shafts of various bones. They are made from splinters of bone with no attempt to retain a portion of the epiphesis to serve as a handle. The type is a broad one and it is possible to subdivide into a number of categories that may be culturally significant. Some gross identification of bone can be made, at least to the extent of sorting splinters of bird bone from mammal bone. Another variable is to be found in the extent of the modification of the bone splinter. Two broad categories appear to accommodate the splinter awls from the three sites. In one group the edges of the splinter are smoothed only in the area immediately adjacent to the tip, this smoothing extending for a maximum distance of about 25 mm from the tip. In the second group the edges are smoothed for the entire length of the awl, though the butt end may or may not be similarly smoothed. In this latter group, the smoothing has not been carried to the extent of removing all surface irregularities either from the irregular fracture of the splinter or from natural features such as a vascular groove.

Two specimens are sufficiently unusual to warrant further description. One (# 54) from Feature 2 in 39WW10 consists of an awl formed from the splintered margin of a bison rib. Only an area 28 mm in length has been ground and brought to a sharp point, the remainder being rough and unmodified. A specimen (# 32) from Cache pit # 1 in Feature 15 of 39CA6 is an awl 73 mm in length manufactured from a splinter of mammal bone with the entire length carefully smoothed. Toward the butt end there are a series of notches, four on one side and two on the opposite side, on each edge. The notches suggest that a thread could be attached and the awl used in the same fashion

as a needle. Such features have been noted in other awls from the Plains, seemingly more commonly in Nebraska (Bell and Gilmore, 1936: 324; Hill and Cooper, 1936: 287; Hill and Cooper, 1937: 308). A related variety reported by Hurt (1951: 27) from the Swanson site appears to be more carefully finished.

| | 39WW3 | 39WW10 | 39CA6 |
|---|---|---|---|
| Smoothed entire length | 2 | 1 | 4 |
| Bird bone . . . . . | 1 | 0 | 0 |
| Mammal long bone . . . . . | 1 | 1 | 4 |
| Range in length . . . . . | 68-74 mm | 115 mm | 67-106 mm |
| Range in maximum width . . . | 9 mm | 6 mm | 6-13 mm |
| Only tip smoothed . . . . . | 5 | 3 | 3 |
| Bird bone . . . . . | 2 | 0 | 0 |
| Mammal long bone . . . . . | 3 | 2 | 3 |
| Bison rib . . . . . | 0 | 1 | 0 |
| Range in length . . . . . | 41-94 mm | 92-147 mm | 55-80 mm |
| Range in maximum width . . . | 8-12 mm | 6-16 mm | 8-12 mm |

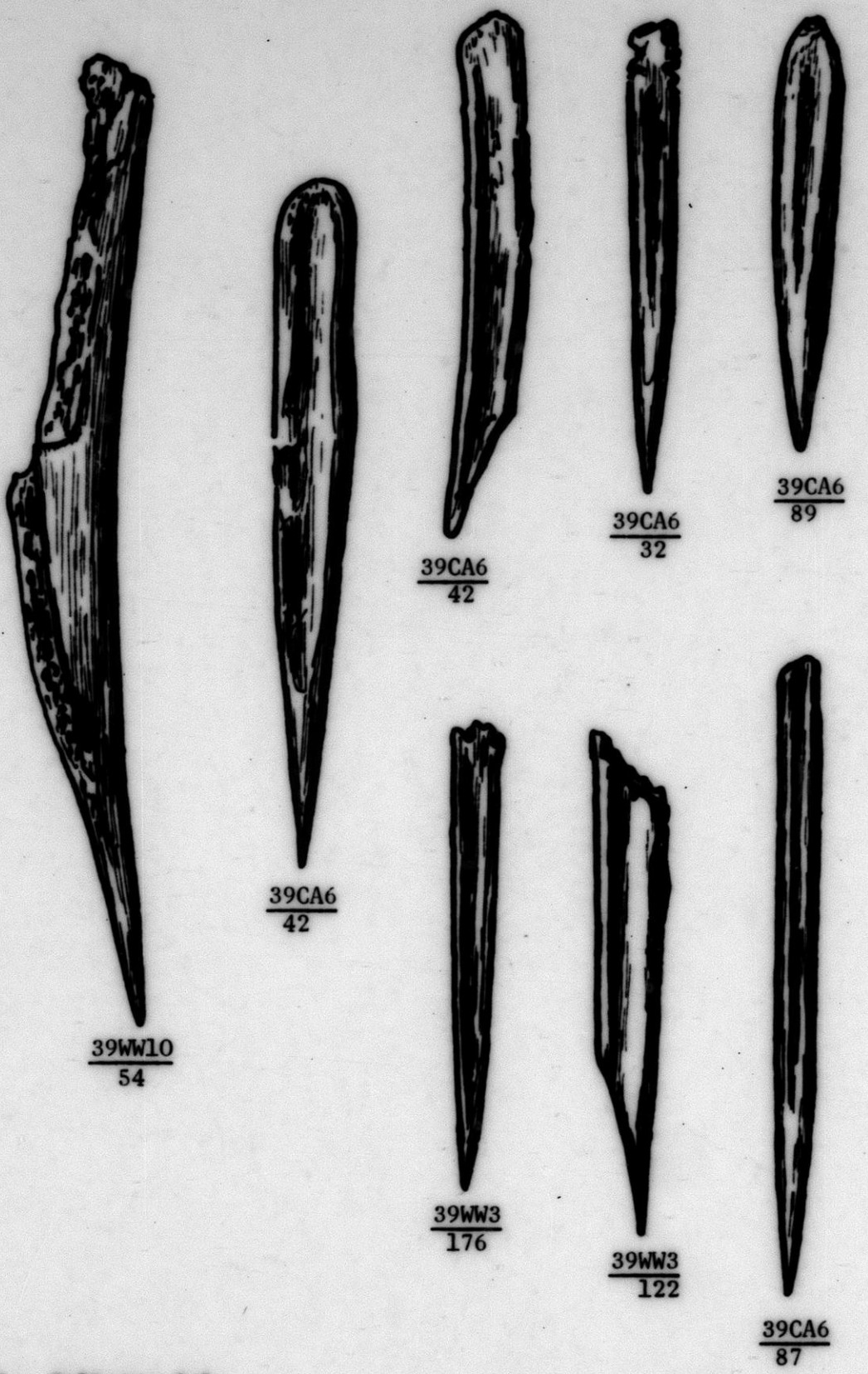



Figure 65. Splinter Awl.

## Flat Split-Rib Awl

The flat split-rib awl is manufactured from a section of mammal rib (probably bison). The rib has been split so that one face of the awl bears the cancellous tissue of the interior of the rib. This cancellous tissue is at times extensively ground and nearly removed while in other instances it is rough and only slightly worked. The sides of the tools are ground smooth and rounded and the butt end is similarly smooth and rounded. Since only three specimens were excavated, all from 39WW3, they are described individually.

One specimen (# 113 from Feature 8) tapers abruptly to a sharp point, a small portion of the tip being missing. The tip is produced not only by cutting from both edges but also by thinning from both faces. The sides of the implement are ground smooth and the butt end is rounded and smoothed. The dimensions are: length - 108 mm; maximum width - 20 mm; and maximum thickness - 7 mm.

A second specimen (# 433 from Feature 15, Cache 5) in contrast has the cancellous tissue ground and nearly removed. The sides and butt end are ground smooth and rounded. The point of maximum width occurs at about 1/3 of the total length from the butt end, the sides decreasing in width in both directions from this position. A portion of the tip is missing. The dimensions are: length - 188 mm; maximum width - 20 mm; and maximum thickness - 8 mm.

The third specimen (# 92 from Feature 10) is a small fragment from the contracting portion of the shaft of a similar implement to the preceding one, the cancellous tissue having been ground and smoothed. The fragment has been burned black and is 44 mm in length.

The flat split-rib awl has been reported from a number of sites in South Dakota and Nebraska. In South Dakota it has been reported by Hurt from the Swanson and Thomas Riggs sites (1951: 26) by Lehmer from all components in his Oahe Dam excavations (1954: 65) and by Wedel (1955: 199) from sites near Mobridge. In Nebraska it has been reported by Hill and Metcalf (1941: 196) at Dismal River. They would appear to be one of the Plain traits common at Pecos (Kidder, 1932: 217). We have used the name given by Wedel (1959: 252-4) in connection with his description of this form at the Tobias site in Kansas.

Although no excavated implements of the flat rib awl type were found at 39CA6 two unusual forms that may belong in this category were noted in the Bamble collection. One rib section of a bison (?) was split and had the cancellous tissue nearly completely removed by smoothing. One end was rounded while the other tapered abruptly to a point. All parts of the implement were highly polished and on one face there were several diagonal lines engraved. The extreme tip of the point has broken off. The implement is parallel sided, 20 mm in width, 158 mm in length and 4 mm in maximum thickness. A second artifact in the Bamble collection suggests a more ornamental function. Also manufactured from the rib section of a mammal, nearly all of the cancellous tissue has been removed in connection with the high polish the specimen bears. One end is spatulate in form with small notches at the edges. This end is 26 mm long to the shoulders, at which point the width descreases sharply to a parallel sided area 135 mm in length and 3 mm by 8 mm with a rectangular cross section. The total length is 161 mm and the implement tapers for the last 23 mm to form a sharp tip.

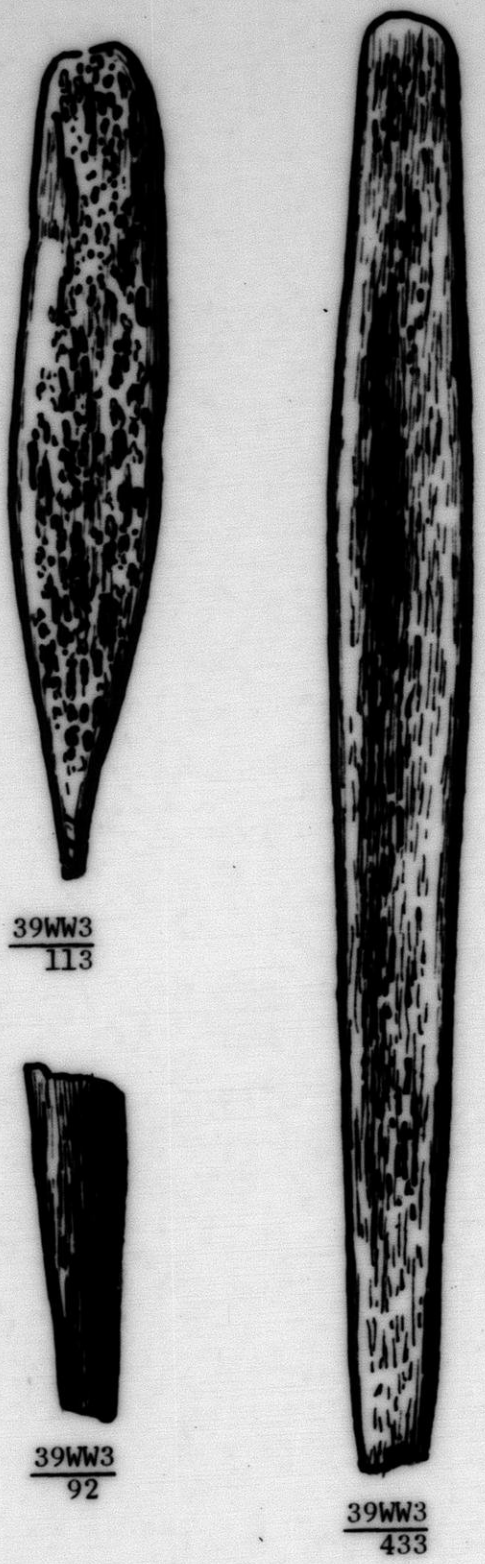



Figure 66. Flat Split-Rib Awl.

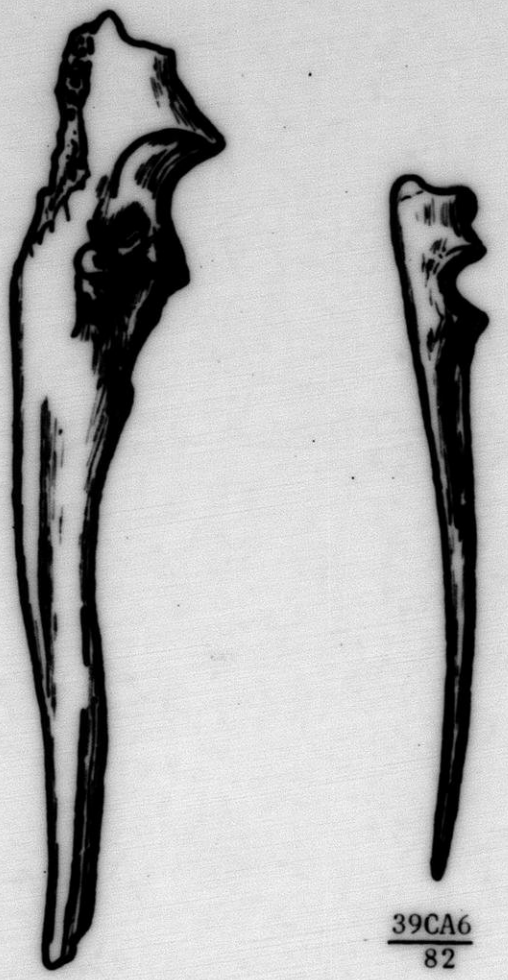
## Ulna Awls

One awl from 39CA6 (# 81 from Feature 2) is manufactured from the ulna of a small mammal. The only modification is to be found in cutting and polishing the shaft to produce a sharp point. The length of the implement is 88 mm.

A similar function may be inferred for a larger mammal ulna from 39WW3 (# 163 from Feature 12). A portion of the olecranon has been broken off and smoothing and wear polish on the shaft suggests that this tapered to a sharp awl tip though the tip is presently missing. The length of the specimen is 122 mm.

## Unclassified Fragments

A series of broken sections from the shaft or pointed tips of awls were present at all sites (39WW3: 7; 39WW10: 1; 39CA6: 5) which could not be placed with precision in the types previously listed.



39WW3
163

39CA6
82

Figure 67. Ulna Awls.

## Tubular Beads

The tubular beads are cut from the shafts of bird bones and are either straight or slightly curved. The ends are cut off squarely and smoothed and the sides bear a high gloss or polish. None of the specimens bear an incised decoration. Two of the three specimens from 39CA6 are fragmentary so that the length can not be determined. One from this site, however, was split longitudinally but the length of 89 mm. combined with a diameter of 11 mm can be determined. This is the largest bead in the series. Of the remaining specimens two were from 39WW10, one of these being 4 mm in diameter and 51 mm in length and represents the most slender of the beads. The other four specimens were from 39WW3.

In compiling a table to show the dimensions, an attempt was made to select units of measure that would facilitate comparison with other sites. A series of useful measurements are to be found in Wedel's Introduction to Kansas Archaeology (1959) though a variable scale in several of his tables would appear to be a lapse in his usual descriptive precision (compare Table 17 with Tables 5 and 11). It is of interest to note that the South Dakota specimens cluster much closer to the Kansas specimens from Scott County than they do with the more easterly sites in this state.

Tubular Beads.

| LENGTH / DIAMETER | 26-38 mm | 39-51 mm | 52-63 mm | 64+ mm | ?(fgts.) | Total |
|---|---|---|---|---|---|---|
| 4-6 mm | | 1 | | | | 1 |
| 7-9 mm | | 1 | 3 | | | 4 |
| 10-12 mm | 1 | | | 1 | | 2 |
| 13-15 mm | | | | | 1 | 1 |
| 16-18 mm | | | | | 1 | 1 |
| Total | 1 | 2 | 3 | 1 | 2 | 9 |

## Bone Fishhooks

Although the fishhooks appear to segregate into two groups on the basin of size, they are quite uniform in their other attributes. They are cut from sections of thick mammal bone, though one small example bears traces of cancellous tissue on one face. The shaft contracts in diameter toward the end where it is scarified by numerous small scratches and notches to provide purchase for the attachment of the line. Except for a very slight degree in the two large specimens from 39WW3 the point, which is uniformly barbless, is not deflected to any extent from the plane formed by the shaft.

In the larger specimens, # 249 (39WW3) has a total length of 67 mm, with the length of the point being 36 mm. A second large specimen from this site (# 37) is 75 mm in total length but the length of the point is only 21 mm. Another large fishhook is from 39CA6 and was seen in the Bamble collection. Its total length was 63 mm and since the tip was missing no measurement could be taken on the length of the point.

By contrast, a small fishhook from 39WW3 (# 19) has a total length of 40 mm, the tip unfortunately being missing. A still more delicate fishhook from 39CA6 (# 1) has a total length of 34 mm, with the tip being 11 mm long. A single fishhook from 39WW10 (# 2) is 35 mm in total length, the tip being again missing.

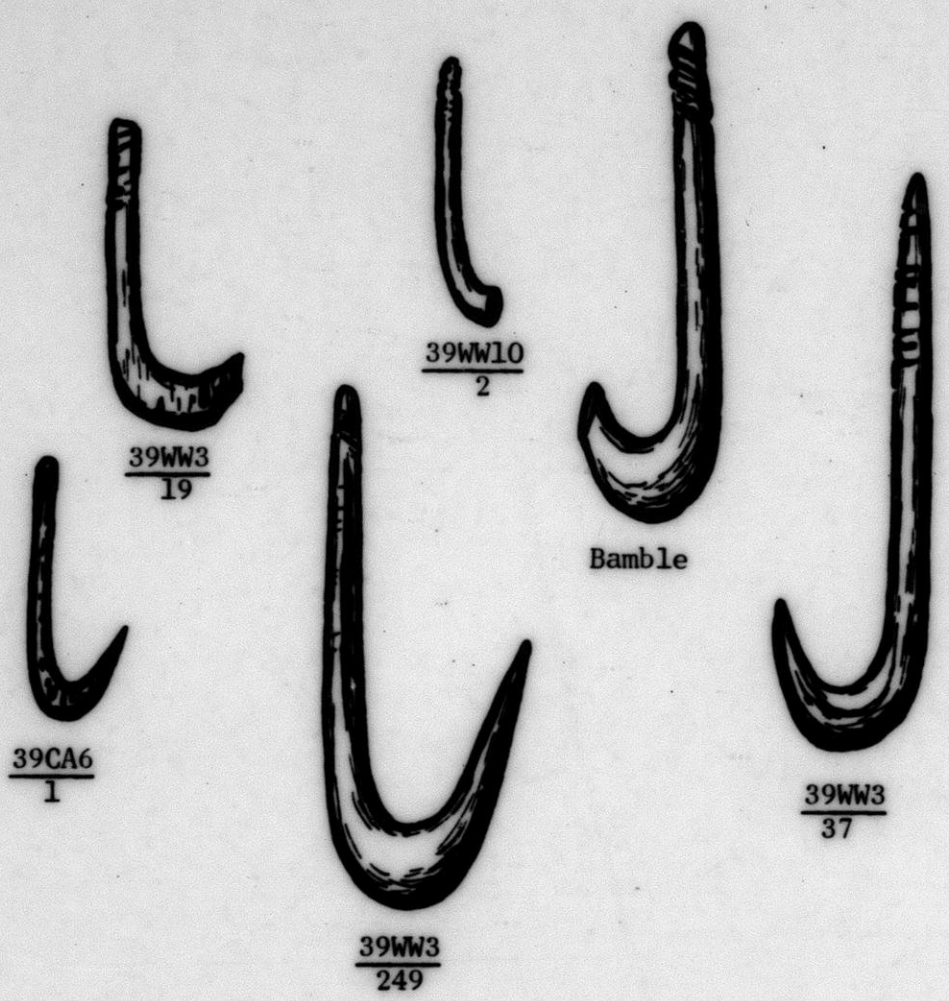
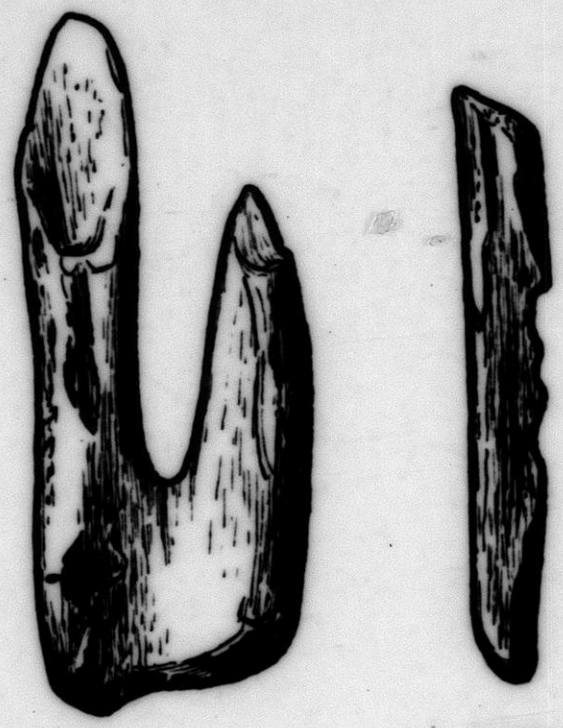



Figure 68. Bone Fishhooks.

## Unfinished Fishhook

A splinter of bone (# 27 from site 39WW10, Feature 2), 76 mm in length bears extensive evidence of workmanship yet clearly is an unfinished tool, Since the only artifact which would appear to be potentially derived from it is a fishhook so the specimen is of considerable value in indicating the patterns of workmanship involved. The section of mammal long bone has been extensively ground along one edge, the exterior of which seems designed to represent the shaft of the hook. The rounded curve of the hook is also carefully finished and the specimen is broken at this point, probably the reason for discarding it at this stage. Work had been progressing at the task of shaping the inner side of the shaft, evidently by thinning the bone through whittling and then by flaking off the thinned edge. Since this whittled area bears numerous longitudinal scars we assume that the whittling would have been carried out with a stone knife and that the scars are derived from the jagged edge of the knife. An end or side scraper could presumably produce the same effect and be equally useful in this operation.

A second specimen from 39CA6 (# 61 from Feature 2) appears to also represent an unfinished fishhook. The puzzling feature of this section of mammal long bone which roughly resembles a hook in outline is the high degree of polish and wear on the pointed ends. It is assumed, however, that it is a fragment of an earlier implement and that this polish is derived from its earlier use. A deep notch has been cut in the center to separate the point from the shank and smoothing appears to have been proceeding around all parts of the potential hook. The bone fragment is 90 mm in length.



39CA6
61

39WW10
27

Figure 69. Unfinished Fishhooks.

## Bone Pins

A light, delicate specimen from 39WW3 (# 37 from Feature 4) provides the basis for establishing a category of 'bone pins' with probably a primarily decorative function. This specimen has a total length of 77 mm. The diameter of the shaft varies between 2-3 mm, the tip being bluntly pointed and the opposite end provided with a spatulate head with a six-sided outline.

Another fragment from 39WW3 (# 47 from Feature 5) may be a portion of a shaft from such an object, the pin tapering in diameter (or width) from 5 mm to 2 mm. The specimen is broken at the broader end, the total length being 52 mm.

From 39WW10 (# 12 from Feature 2) was recovered a fine sliver of mammal bone, square in cross section, which is 74 mm in length and 2 mm in width. Though both ends are broken, a slight polish appears on the sides. If it is compared with the other specimens it may perhaps be unfinished but some other function or shape is possible.

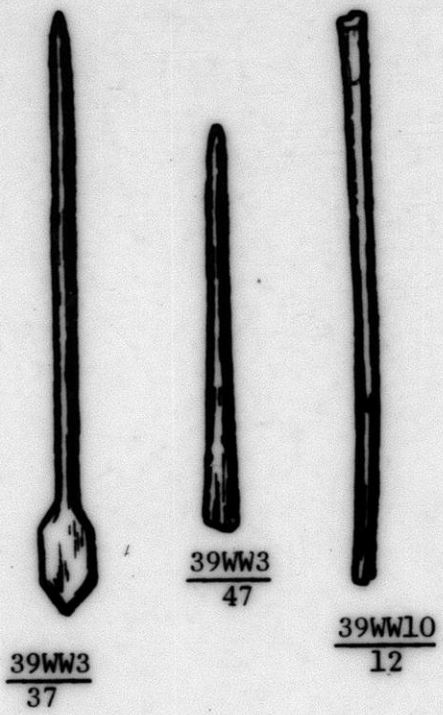



Figure 70. Bone Pins.

## Hide Grainers

Most common among the sections of animal bone cut or trimmed to expose the cancellous tissue are those objects classed as hide grainers. Their use is substantiated by report written by Edwin Thompson Denig in 1854 on the "Indian Tribes of the Upper Missouri" (Denig, 1930: 540-41) in which he describes the technique of skin dressing particularly among the Assiniboin. The final step in the preparation of a buffalo hide was to rub it with a "pumic stone or porous bone". James Mooney's article on skin dressing in the Handbook of American Indians (1910: 592) more specifically describes the graining process. "This is done with a globular piece of bone, as large as can be conveniently held in the hand, cut from the spongy portion of the humerus of a buffalo or other large animal. With this the whole surface of the skin is rubbed as with sandpaper to reduce the hide to uniform thickness and smoothness and to remove any hanging fibers".

This description fits the local archaeological specimens which are primarily made from the head (proximal end) of a bison humerus which has been trimmed from the shaft to expose the interior cancellous tissue. The condylar end is normally intact with perhaps a small section of the shaft as well. This surface presumably was held in the hand, the diameter ranging from 79 to 114 mm with the size perhaps depending on the amount of wear or use of the specimen. In a few instances the articular surfaces also showed wear which was beginning to expose the cancellous bone. An additional feature present on one specimen was a series of rectilinear incisions evidently designed to roughen the surface of the cancellous bone. Similar implements appear to have been more rarely made from the distal end of a bison tibia. It should be noted that such bone fragments classified as

hide grainers bear smooth wear facets on the cancellous tissue. A few additional specimens comprising the head of bison humeri in which the cancellous tissue is rough and jagged as though freshly trimmed are not classified as implements. They may represent unfinished tools.

Placed in the same category is a small series manufactured from the condylar head of a bison femur. Both the surface of the condyle and the opposite surface of cancellous bone are worn smooth through use. The dimensions are obviously smaller, ranging from 37 to 52 mm in diameter. It is to be noted that these implements do not have the sharp, wedge-shaped form of the "paint brush" or paint applicator but may perhaps be a hide grainer intended for use with smaller pelts. Wedel (1959: 260) reports a similar specimen from the Tobias site in Kansas.

Two specimens from 39CA6 consist entirely of cancellous bone, smoothly worn on all surfaces, and one specimen from 39WW3 is similar but bears a small sector only a few centimeters in extent of the more dense surface bone. These objects range in maximum length from 81 to 94 mm and in thickness from 39 to 47 mm. The surfaces are smoothly convex or have generally plane facets. Where the edges of the facets meet, they are bluntly rounded. It will be seen that the characteristics of these objects do not conform to the descriptions of the paint applicators (see especially the thorough description by Waldo R. Wedel who suggests their derivation from the thoracic vertebra of the bison and covers their archaeological distribution and ethnographic citations to their use) (Wedel, 1955: 122). In view of the differences in size and shape and the absence of pigment staining, it is assumed that these specimens are also hide grainers rather than paint applicators.

| Hide Grainer Distribution | 39WW3 | 39WW10 | 39CA6 |
|---|---|---|---|
| Head of bison humerus: | 39 | 1 | 14 |
| Articular surface unmodified . . . . . | 34 | 1 | 13 |
| Additional wear facet on articular surface . | 5 | | 1 |
| Distal end, bison tibia . . . . . | 1 | | 0 |
| Condylar head, bison femur . . . . . | 3 | | 0 |
| Cancellous bone only . . . . . | ; | | 2 |

## Paint Applicators

Only a single specimen from 39WW3 (# 280 from Cache Pit # 9 in Feature 15) fits the characteristic description of a paint applicator. This specimen is a thin, wedge-shaped piece of cancellous bone having dimensions of 74 x 50 x 15 mm. Compact, articular bone is present only at the thick end of the specimen which tapers to a sharp edge on all other sides. Although the specimen clearly conforms to the description of the 'paint brushes' it bears no pigment stain.

A second specimen which may be a fragment of a similar artifact (# 47 from Feature 5) was found at the same site. It is a small wedge-shaped piece of cancellous bone which is crescent-shaped in outline. No traces of pigment can be detected in this specimen either. It is 43 mm in maximum length, 19 mm in maximum width and 14 mm in maximum thickness.

## Bone Whistles

A total of five specimens from 39WW3 and 39CA6 may be classed as bone whistles. In view of the variation which they exhibit, each will be described individually.

From 39WW3, one specimen found on the surface (1B), like the others is manufactured from a tubular section of bird bone with the surface slightly polished and the ends cut squarely and smoothed. An aperture of triangular shape was cut in one end but the specimen immediately above this is broken. This recent break appears to nearly coincide with an older break which perhaps took place at the aperture for its top could not have been more than about 1-2 mm from the present end of the specimen, a placement too close to the end for this class of object. Yet the section of the end of the tube which is present is smooth and polished indicating that it could not have been discarded when originally broken. The tube has a maximum length of 108 mm and a maximum diameter of 12 mm. The aperture seems to be 7 mm high and 7 mm wide.

A second specimen from 39WW3 (# 349) found in Cache pit # 9 of Feature 15 appears to have had a similar history. The specimen is 153 mm in maximum length and 13 mm in maximum width. Again a portion of a triangular aperture is present at one end but the specimen is irregularly broken immediately at the top of the aperture. The broken section is worn smooth from continued use. Along one side (assuming the face bearing the aperture is the front) is an engraved decoration consisting of four X's separated and bordered by two parallel lines. The opposite side bears only two parallel lines near the aperture.

The third specimen from 39WW3 (# 140) found in Feature 11 is thought to be an unfinished and fragmentary whistle. One end of the tube is cut squarely while the other has a rough break. A triangular area like the aperture for a whistle ( 8 x 9 mm) has been engraved on the surface with the top of the engraving 25 mm from the end of the tube. The fragment is 63 mm long and has a diameter of 11 mm.

Of the specimens from 39CA6, one (# 21 from Feature 5) is cut from the long bone of a large bird with the diameter varying between 10-13 mm. The epiphysis at the large end has been completely removed by a square cut but the one at the smaller end has been only partially removed though the cut removing half of it provides an open end for the tube. A triangular aperture (7 x 9 mm) has been cut 32 mm from the large end. The overall length of the whistle is 194 mm.

The second whistle from 39CA6 was associated with Burial 1 in Feature 4. The tube is cut squarely at both ends and has a maximum length of 196 mm and a maximum diameter of 14 mm. An aperture of triangular shape (9 by 13 mm) is set 37 mm from one end. The specimen is polished and bears longitudinal striations and transverse file (?) marks but no decoration.

Wedel's discussion of the tribal use of similar specimens (1955: 126) associating their use with warriors and as badges of membership in the age societies is in conformity both with the association of the one specimen (39CA6) buried with an adult male, and with the continued use of the objects after breakage.

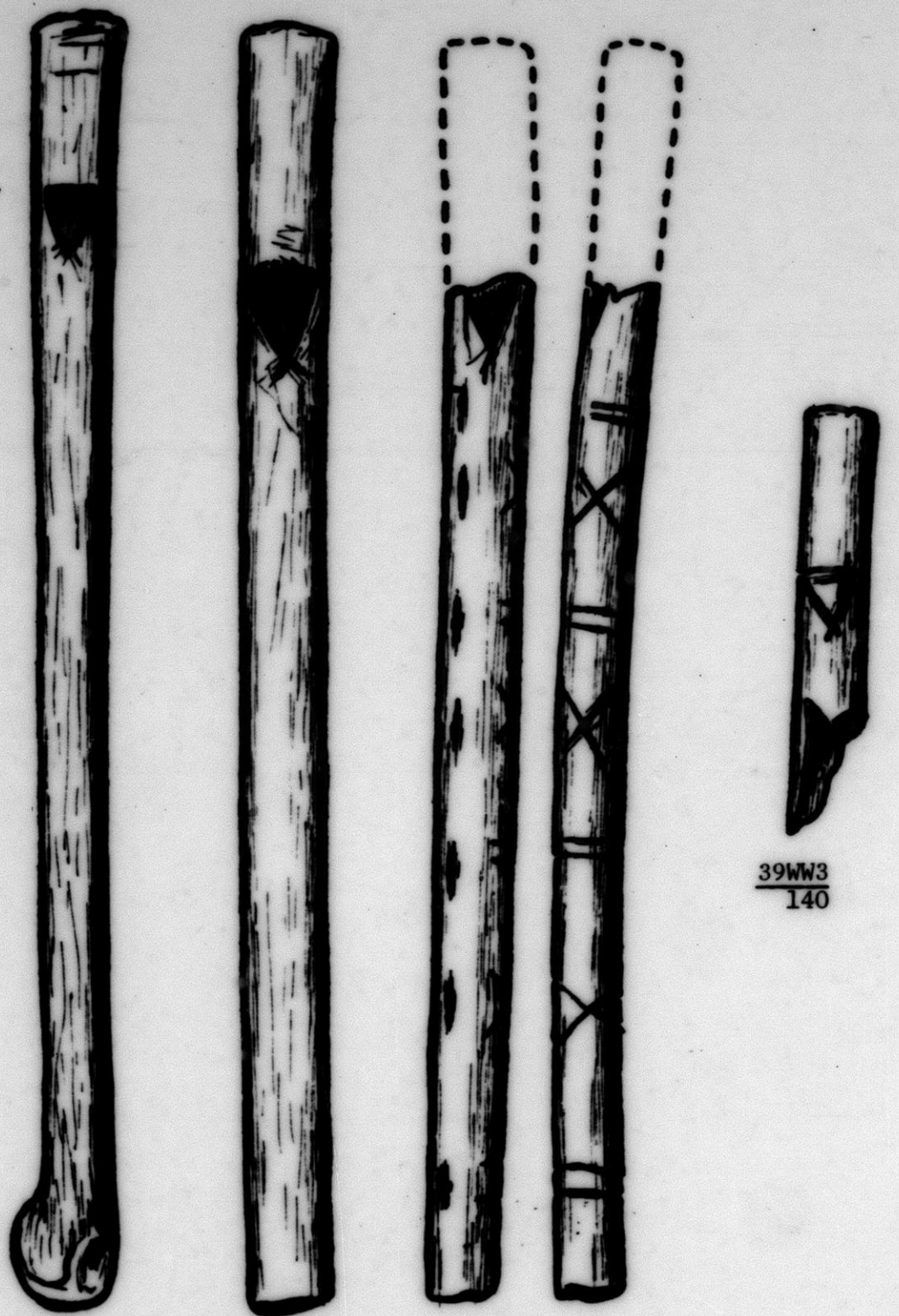



Figure 71. Bone Whistles.

## Shaft Straightener

The bone or antler tool bearing a single or multiple circular perforations and commonly showing marks of wear or usage indicated by worn facets on the opposed edges of the perforation when the two faces of the implement are compared, ranks among man's early inventions considering its initial appearance in Upper Paleolithic sites of the Old World. Archaeological literature in the Plains and adjacent areas appears rather evenly divided in designating the implement a 'wrench' or a 'straightener'. Since the earliest and still most comprehensive report which treated the ethnographic distribution of the implement in North America, Kaj Birket-Smith's The Caribou Eskimos (1929: pt. 1, 105; pt. 2, 361), designated the implement as an 'arrow straightener' this latter term is retained. In its archaeological manifestations, it is not possible to be certain that an arrow shaft rather than a dart shaft is necessarily involved so that a simple designation of 'shaft straightener' seems preferable.

In the description of specific implement types in connection with the shaft straightener, an identification of the bone element used appears to be of crucial importance. The southern Plains, for example, shows a much stronger use of a long bone, such as a deer radius, in contrast to the common use of a bison rib in the central and northern Plains. Beyond the limits of the Plains, antler appears to have been a favored material extending back in time to the Archaic though this material is also commonly used in the Plains by the peoples of the Nebraska and Upper Republican cultures.

The specimens from our South Dakota sites are made exclusively of bison ribs and we would therefore designate these as Rib Shaft Straighteners. In their description it seems desirable to note a number of attributes: (1) the

presence of a single or of multiple perforations; (2) the size of the perforations; (3) the spacing between perforations; and, (4) indications of wear or marks of usage on the perforations. Detailed information on the above attributes should provide a basis for an evaluation of some of the alternative functions suggested for the shaft straighteners (e.g., as gauges).

Since only two shaft straighteners with a single perforation on each were found at 39WW10, our comparisons are essentially limited to the two remaining sites. The frequency of some of the attributes are tabulated below. In tabulating the number of perforations per rib, it should be noted that only in a single specimen from 39WW3 was a total of three perforations found intact upon the rib. Three specimens from 39WW3 and one from 39CA6 bore two intact perforations. Thus although the number of specimens with multiple perforations is high, these occur most commonly on broken specimens frequently with the break having taken place through one of the perforated sectors. It should also be noted that where a sector of a broken perforation appears at the end of an implement the edges of the break are frequently worn and polished indicating that the use of the implement continued with the remaining perforation. Some light is also thrown on this question by the presence of three implements with partially completed drill holes. One specimen from 39CA6 (# 42) bears the edge of a perforation at one broken edge. 20 mm distant from this end another perforation was drilled and saw use. This end is split and broken though this may represent a recent break. Then 61 mm distant toward the opposite end of the rib fragment, another perforation had been initiated. The conical drill hole had been initiated entirely from one face and had reached a

perforation had been initiated. The conical drill hole had been initiated entirely from one face and had reached a maximum diameter of 10 mm, penetrating to the cancellous tissue on the interior of the rib. The implement had been discarded before any drilling had been initiated on the opposite face. In one specimen from 39WW3 (# 404) bearing a single perforation at the end where a break is to be found, traces of the initial holes (c. 5 mm in diameter and 2 mm deep) which have been begun to drill a new perforation are to be found 39 mm from the broken perforation. The beginnings of the drill holes are present on both faces and offset about 6 mm from each other--perhaps this offset represents an error in judgement and led to the implement being discarded. The second specimen (# 454) also had broken at the end at a point where the perforation was placed. The beginning of a new perforation is to be seen in a drill hole 8 mm in diameter and about 4 mm deep placed 20 mm from the broken perforation. Here the drill hole appears on only one face. These observations would suggest that normally only a single perforation is in use at one time on the shaft straightener. When this perforation breaks, or perhaps becomes badly worn, then additional perforations are prepared. The frequency distribution of total number of perforations (or fragments of perforations) on a single specimen is as follows:

| # Perforations | 39WW3 | 39WW10 | 39CA6 |
|---|---|---|---|
| 1 | 17 | 1 | 13 |
| 2 | 20 | | 10 |
| 3 | 8 | | 4 |
| 4 | | | 1 |

The above data would at least suggest that the ribs were prized and not readily discarded in favor of a fresh rib when a new perforation was needed.

So far as the diameter of the perforation is concerned, this measurement is taken at the point of minimum constriction of the perforation, not the maximum diameter of the drill hole. Further, the measurement was taken opposite to the direction at which the major wear facets appear so as to reflect as closely as possible the size hole that was prepared for the implement. It is this measurement that is considered functionally important.

| Diam. Perf. | 39WW3 | 39CA6 |
|---|---|---|
| 5 MM. | | 1 |
| 6 mm. | 1 | 2 |
| 7 mm | 2 | 4 |
| 8 mm | 5 | 3 |
| 9 mm | 4 | 6 |
| 10 mm | 5 | 10 |
| 11 mm | 17 | 9 |
| 12 mm | 11 | 8 |
| 13 mm | 3 | 2 |
| 14 mm | 1 | 1 |
| 15 mm | 1 | 2 |
| 17 mm | 1 | |

Perforations are of variable size on a single specimen though occasionally they will be identical.

The spacing between perforations is also highly variable, both on single specimens and between specimens. The range in the placement of perforations is between 15 mm and 46 mm. Except in one specimen the wear facets on the perforations consistently indicate that pressure was applied

to the shaft in the same direction as the long axis of the implement. The sole exception (from 39WW3) showed wear facets transversely to the long axis of the rib.

Two specimens from 39WW3 bear what might represent a decoration which is finally incised on the bone. One (# 113) is made from a section of bison rib one end of which is broken and the other cut off squarely and smoothed. At the cut end the specimen bears a series of finally engraved lines, four on one face and five on the reverse face, spaced 5 to 9 mm apart. A second specimen (# 393), a section of bison rib bearing portions of two perforations, has on one face a series of fine transverse scratches covering nearly the entire surface. A final variant, again only seen on one specimen from 39WW3 (# 418) is a shaft straightener manufactured from near the proximal end of a bison rib and bearing two perforations. On both faces transverse striations appear in an area of about 10 mm around each perforation. The working of the surface appears to have been designed to thin the bone at this point. From 39CA6, one specimen (# 7) bearing portions of three perforations has transverse parallel scratches at one end.

## Split Rib Shaft Straightener

A single specimen from 39WW3 (# 181) deviates from the conventional form in consisting of a section of bison rib which has been split longitudinally to retain only one face of the rib. The interior section has been ground smooth to remove the cancellous bone but not polished. One end (the only unbroken end) tapers slightly in width and is then cut off squarely. The implement bears two perforations 9 and 10 mm in diameter and spaced 54 mm apart. The perforations are rather straight sided and lack the clear marks of usage commonly found on the shaft straightener. The maximum dimensions of

the specimen are: length - 109 mm; maximum width - 28 mm; maximum thickness - 6 mm.

Comprising as it does, a single specimen, it is difficult to determine whether it should be regarded as a valid type. Though thin, such an object would of course be even so of greater thickness than those specimens from other sites where the blade of a scapula has been similarly fashioned. In a few instances shaft straighteners appear to have been manufactured from ribs originally fashioned into knife handles. Where a handle has had a slot cut for the insertion of a knife blade it would perhaps readily split. Perhaps this unique specimen split in such a fashion and despite this was still shaped for use as a shaft straightener.

## Scapula Shaft Straightener

A small section of bison scapula (74 x 36 mm in maximum dimensions) bears a sector of a smoothed and worn perforation at one margin, indicating that it is probably a portion of a shaft straightener. The implement fragment is from site 39WW3 and was found in Feature 14.

The use of the scapula for a shaft straightener has previously been reported by Wedel for the Mobridge area (1955: 120) and by Kidder for Pecos (1932: 241).

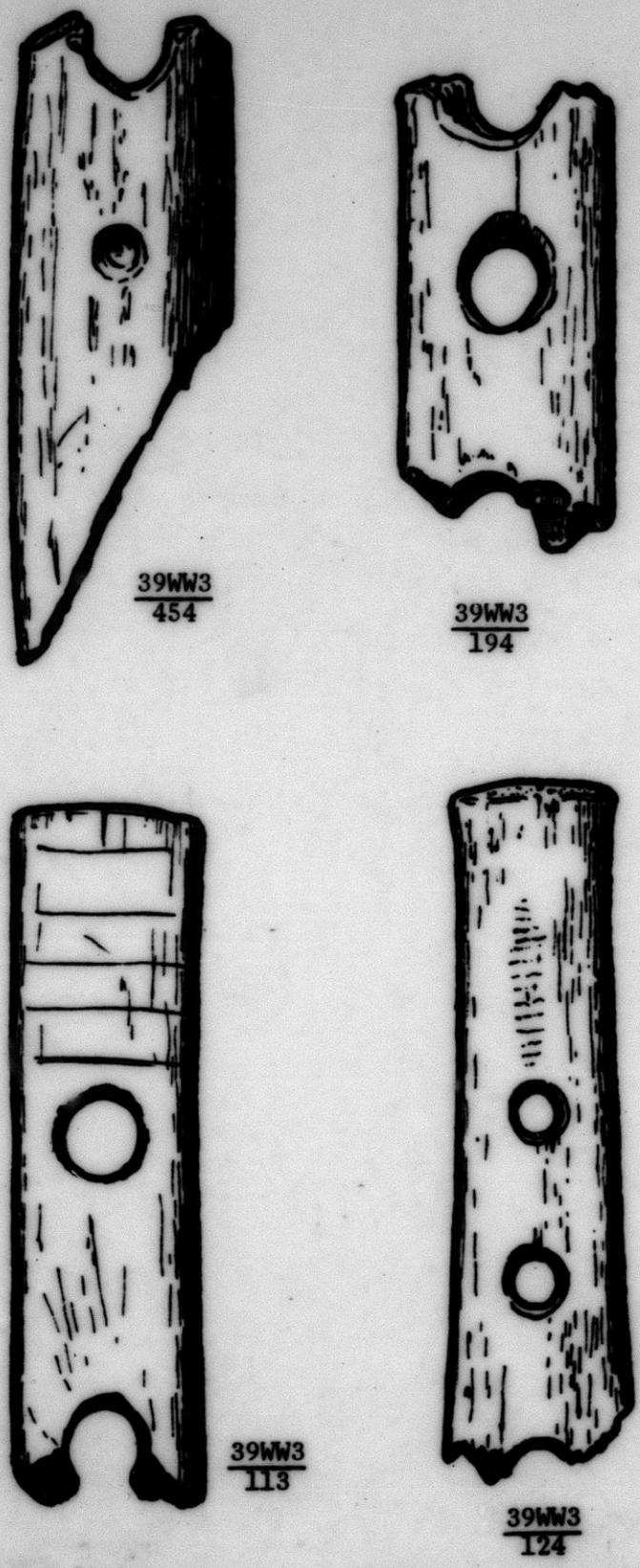



Figure 72. Rib Shaft Straighteners. Note unfinished perforation in upper left specimen.

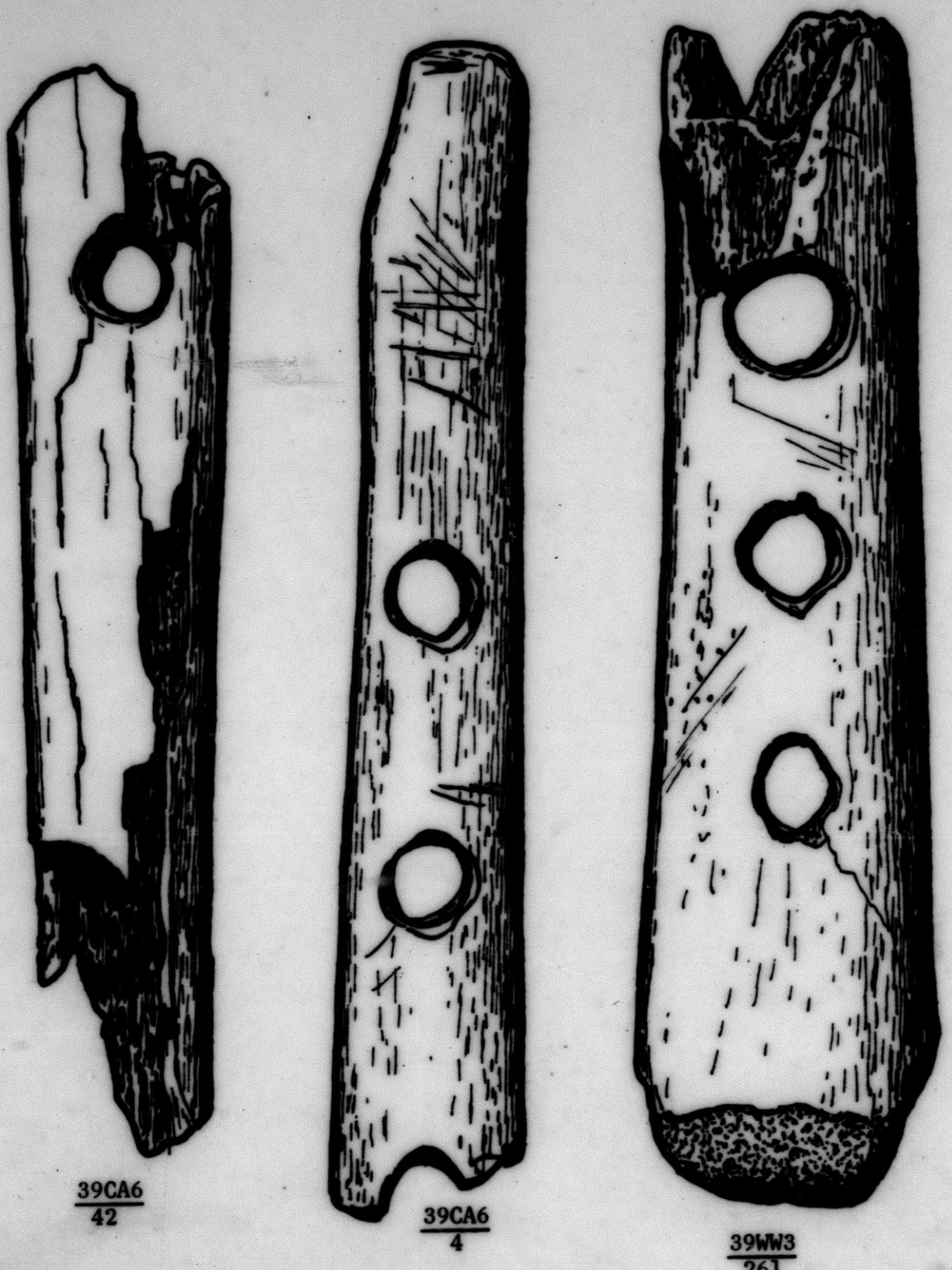



Figure 73. Rib Shaft Straighteners.

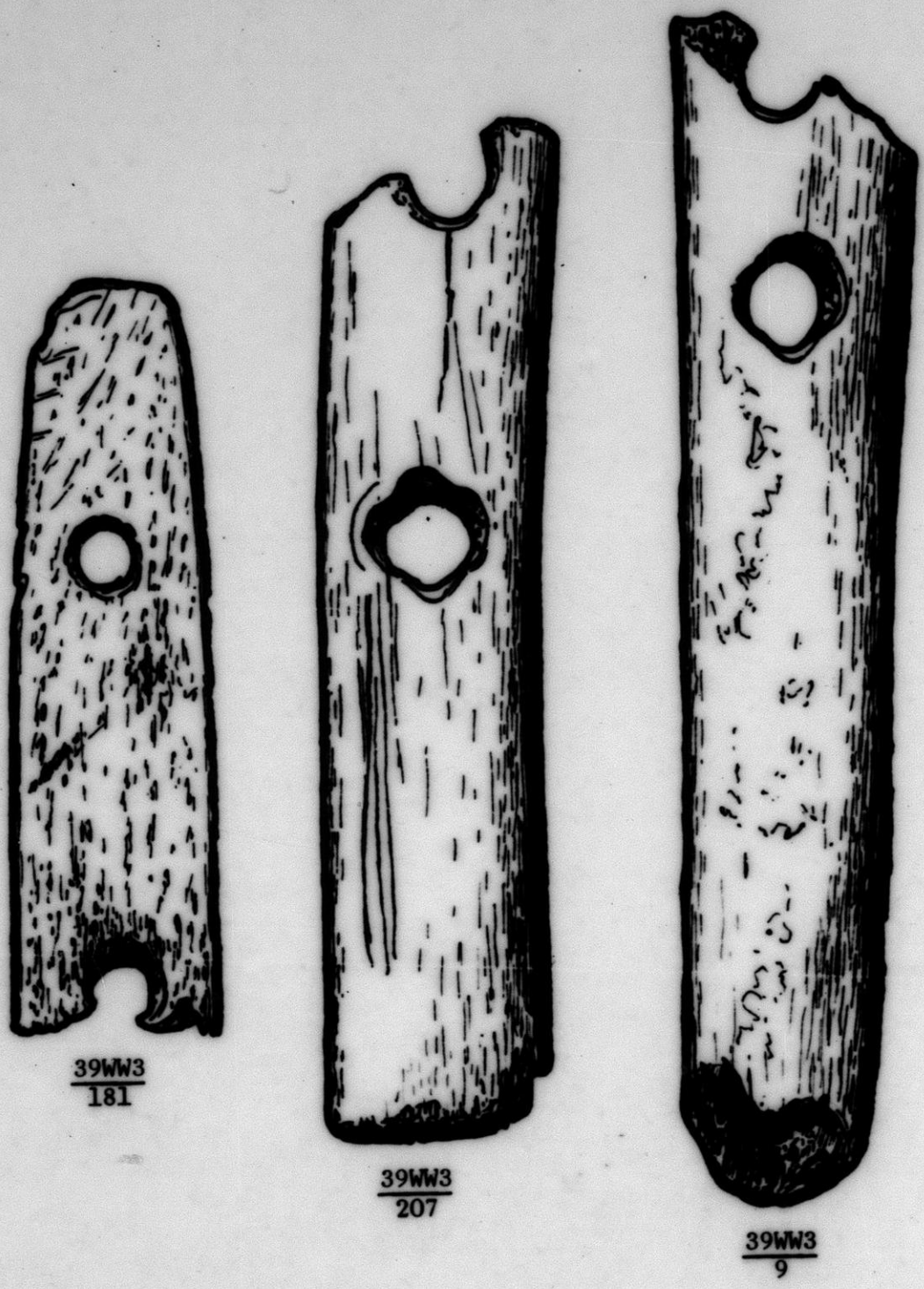



Figure 74. Rib Shaft Straighteners. Specimen on left is split rib variety.

## Bone Knife Handles

A common implement type at 39WW3 and 39CA6, but not found at 39WW10, is the bone knife handle. It consists of a section of mammal rib equipped with a slot on one edge in which a knife blade was set. W. R. Wedel (1955: 122-23) has discussed the distribution of such tools indicating that in earlier horizons they were equipped with chipped stone blades and in later horizons with metal blades. None of the specimens from 39WW3 and 39CA6 are provided with a slot sufficiently capacious to suggest a stone blade though perhaps when the ribs are fresh a stone blade can be forced into a narrow slot. One of the specimens from 39WW3 (# 249 from Cache 7 in Feature 8) was still provided with an oval iron blade 57 mm in length and two of the handles from 39CA6 present in the Bamble Collection retained fragments of iron blades in the handles as did one of the specimens found during the excavations (# 42 from Cache 3 of Feature 3). Other specimens from both sites bore green stains suggesting the use of a brass or copper knife.

Many of the ribs are sufficiently large in size to indicate that the bison rib was used but the identification is not certain for others that are light and delicate in appearance. The sternal extremity is present on some ribs, in others the ends have been cut squarely or diagonally or the end is simply roughly broken and then smoothed. Both the anterior and posterior border is used for the slot, the surface being prepared by a smooth flattening along the entire border while in other examples a depressed socket, 2-5 mm in depth is prepared for the insertion of the blade. Further modifications which appear include a series of incisions across the handle and single or multiple notches on the handle. Two of the handles from 39CA6 are equipped with two slots, present on opposite margins and on opposite ends of the handles.

Presumably both of these were not in use at the same time. At 39WW3 the length of the slot ranged between 31 and 171 mm, the average being 77.5 mm. At 39CA6 the slot ranged in length between 43 and 93 mm, the average being 64.9 mm. A contingency table has been prepared showing the distribution of intact specimens in terms of maximum length of the handle and maximum width. Maximum width, of course, reflects the size and position of the rib section selected for use as a handle.

| Maximum Length / Width | 86-100 mm | 101-115 mm | 116-130 mm | 131-145 mm | 146-160 mm | 161-175 mm | 176-190 mm | 191-205 mm | 206-220 mm | 211-235 mm | 236-250 mm | 251-265 mm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17-20 mm | 1 | 1 | 1 | 1 | 3 | 3 | 2 | | | | | |
| 21 - 24 mm | | | 2 | 1 | 3 | 2 | 3 | 1 | 1 | | | |
| 25-28 mm | | | | 2 | | 1 | 1 | 1 | | | | |
| 29-32 mm | | | | | | 1 | | | | | | |
| 33-36 mm | | | | | | 1 | | | | | | |
| 37-40 mm | | | | | | | | 1 | | 1 | | 2 |

The figures would appear to confirm the presence of a large and small variety of knife handle. The four largest specimens are from 39WW3. If we use as a size division, a large category comprising those specimens between 33 and 40 mm in maximum width the site distribution is as follows.

| | 39WW3 | 39CA6 |
|---|---|---|
| Bone knife handles: | | |
| Small size . . . . . | 14 | 19 |
| Large size . . . . . | 4 | 1 |
| Fragmentary knives . . . . . | 11 | 6 |

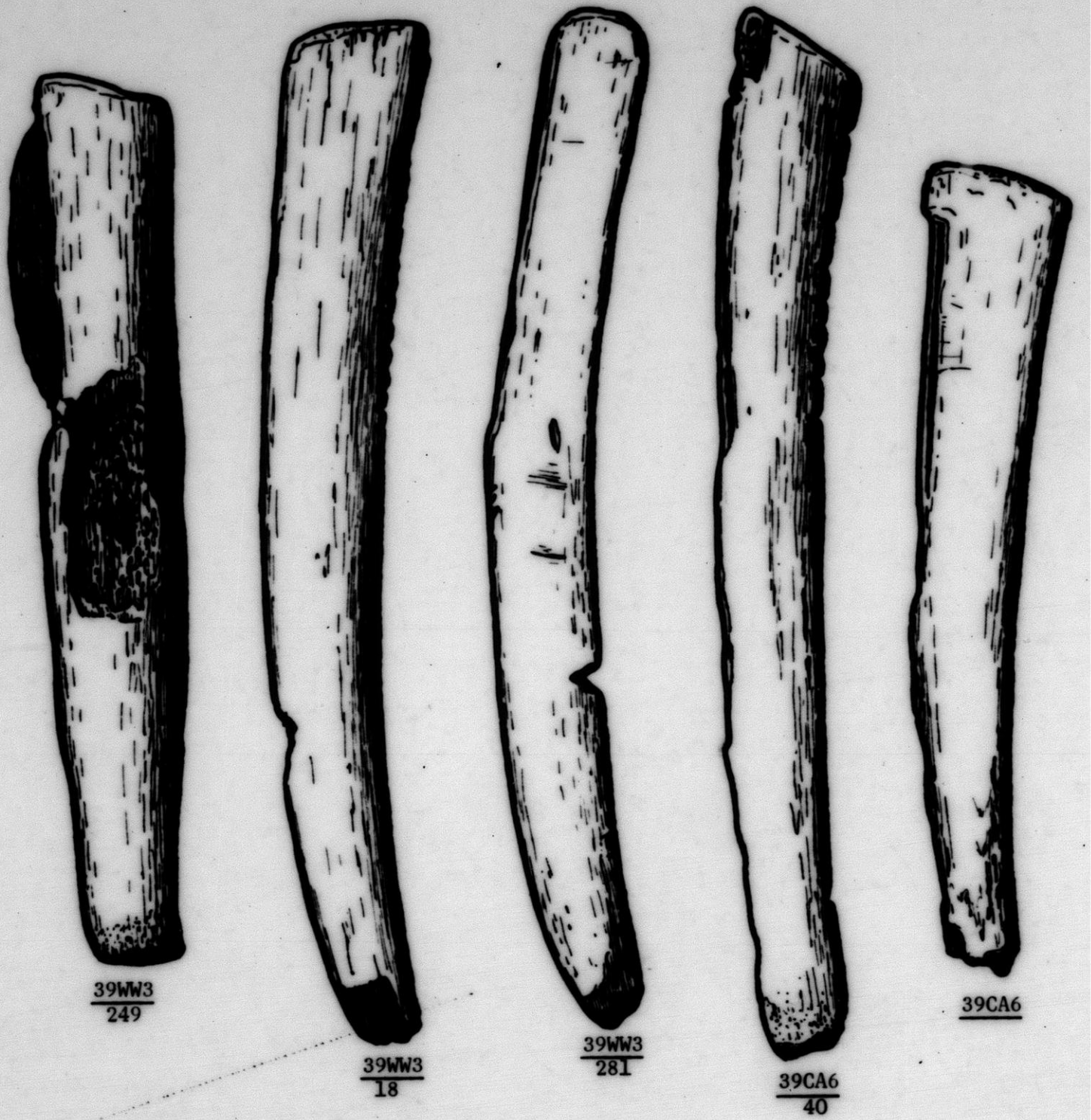



Figure 75. Bone Knife Handles.

## Scraper Handles

Another bone implement manufactured from a mammal rib which is closely related to the knife handle, we have designated a scraper handle. Again they were found only at 39CA6 and 39WW3, with the single example from the latter site having been found on the surface. The two examples from 39CA6 (# 43 and # 104) were found in feature 1 and feature 4, respectively.

They consist of sections cut from the rib of a bison or some other large mammal. In the two examples from 39CA6 which are 96 and 109 mm in length, the sections were cut by grooving around the circumference until it was detached. A cavity, 15 and 22 mm in depth, was then reamed in the larger end, of sufficient size to accommodate a chipped stone scraper. In the example from 39WW3, 71 mm in length, the end having the cavity is rounded while the opposite end is irregularly broken. All three specimens bear a gloss on the surface evidently acquired during use.

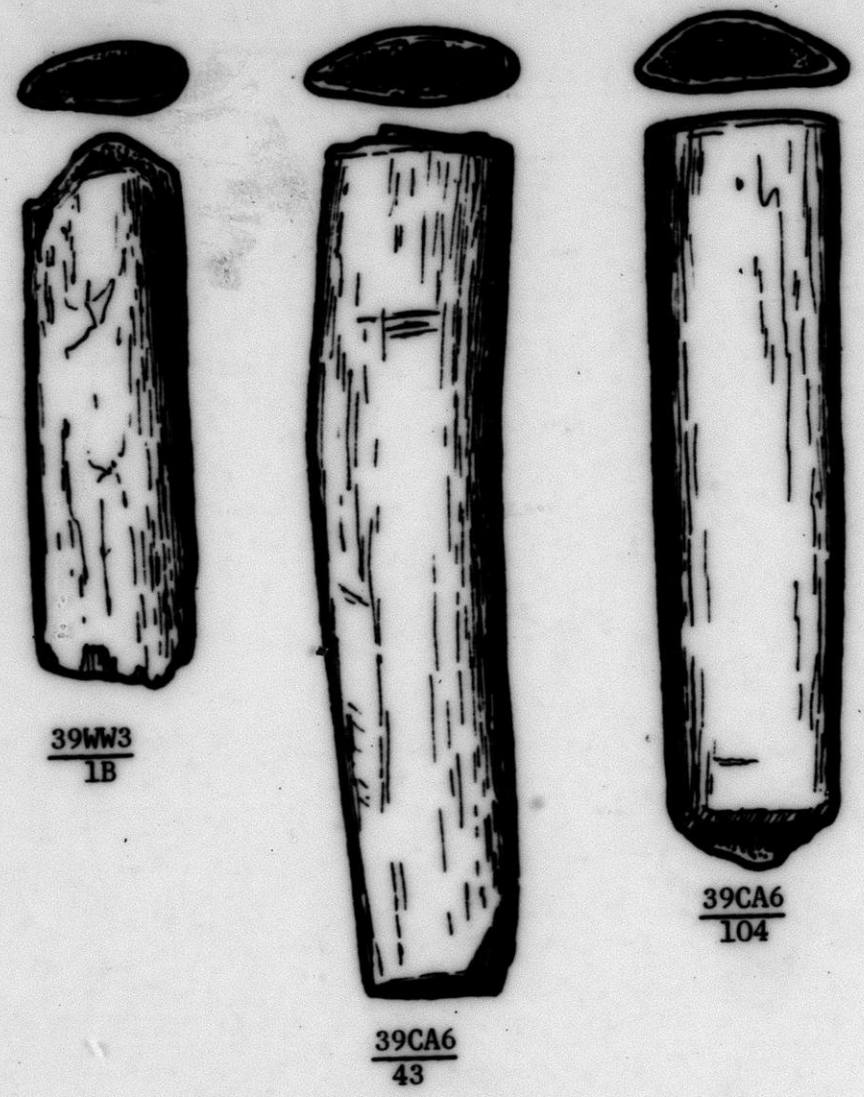



Figure 76. Scraper Handles.

## FLAKING TOOLS

The tips of the implements placed in this category are blunt rather than sharply pointed as in the case of the awls. Some are smoothly polished at the tip while others bear nicks, scars and flattened facets suggestive of use as a flaking tool. Perhaps a number of uses are involved including that of the rib-edge awl (q.v.). Lehmer (1954: 66) has designated a comparable group of specimens 'punches' but the implication in this of a tool which is hammered at the butt end seems undesirable. The butt end is commonly very irregular and bears no marks of abrasion. We shall follow his lead, however, and group the flakers according to the material from which they are manufactured. It is of interest that the relative proportions of these categories seem markedly different from that in the Oahe Dam area.

### Antler Flakers

The group consists of a series of antler prongs, probably largely of deer but in a few instances elk may be represented. Of the 34 specimens from 39WW3, six had been manufactured by cutting a groove around the antler and then snapping the tip off. This small series is much more uniform in size than the total series. Although the range in length of this group is 44 to 87 mm, four of the specimens fall between 75 and 79 mm. Two additional specimens from 39WW3 are roughly hacked at the butt end, as though with an axe or heavy knife, and then snapped off. The remainder of the antler flakers show no special treatment of the butt end before, or after, this was snapped off. None of the specimens from 39CA6 (14) or from 39WW10 (1), show the use of the groove technique in removing the tine though one specimen from 39CA6 shows indications of the chopping technique.

Several of the flakers, in addition to the faceting and smoothing that may be the result of usage, exhibit longitudinal cutting scars resulting from work to thin the tip of the tine. Some specimens from 39WW3 are burned either over the entire tine or at the tip only. While this may have been intended to harden the implement, it is possible that it is only accidental or the result of the use of the object to rake materials from the fire. An analysis of the range in length of the entire series is probably not too meaningful since the collection includes some broken tines. In view of the absence of workmanship at the butt end, these specimens can not be differentiated from those that are intact except on the basis of extreme shortness. The specimens range to a maximum length of 182 mm.

## Splinter Flakers

The flakers placed in this group are manufactured from splinters of mammal long bone or from splintered sections of other elements. The unifying attribute of the group is that only the tip has been smoothed and polished to produce a blunt point. Flakers, other than those of antler, have been placed either in this category or in the one which follows, the 'shaped' group. In this latter group they have been worked over the entire surface to produce a smoothed implement.

Extremely diverse bones have been used to form this category of tools. From 39WW3 one specimen is manufactured from a splinter of bison rib. Two examples from 39CA6 are made from a section of a scapula spine and one from the same site is from the margin of the scapula. The remainder are manufactured from splinters of long bone, quite varied in size, shape and thickness.

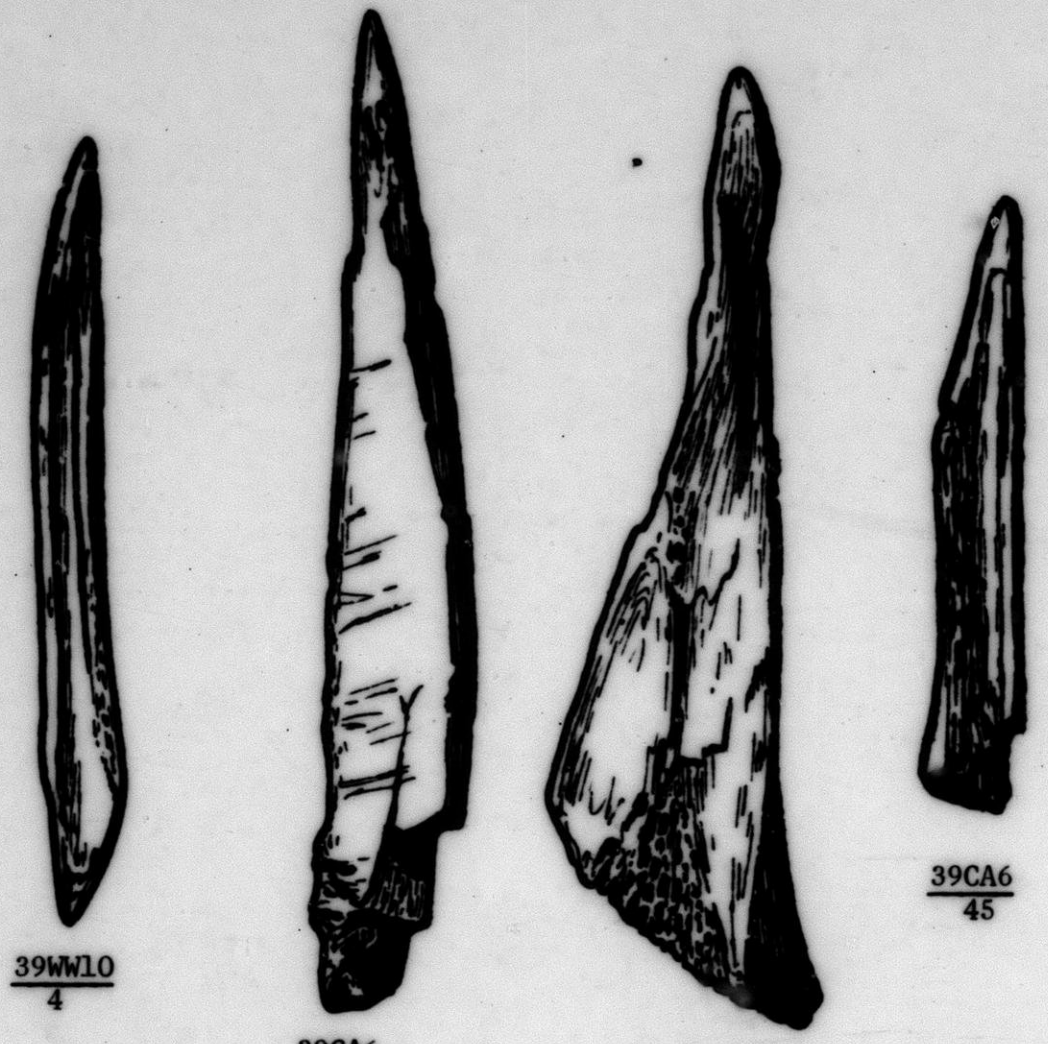



Figure 77. Splinter Flakers.

## Shaped Flakers

The flakers of this group are essentially similar to the preceding class but the edges of the bone splinters have been ground smooth. Some of the irregularities of the original splinters, however, are retained. The range is from a blunt, heavy splinter from 39WW3 which is 129 mm in length with a maximum thickness of 17 mm to a slender splinter from 39WW10 which is 124 mm in length but has a maximum thickness of only 7 mm.

## Frequency of Flaking Tools

| | 39WW3 | 39WW10 | 39CA6 |
|---|---|---|---|
| Antler flakers . . . . . | 34 | 1 | 14 |
| Splinter flakers . . . . . | 4 | 1 | 7 |
| Shaped flakers . . . . . | 2 | 1 | |

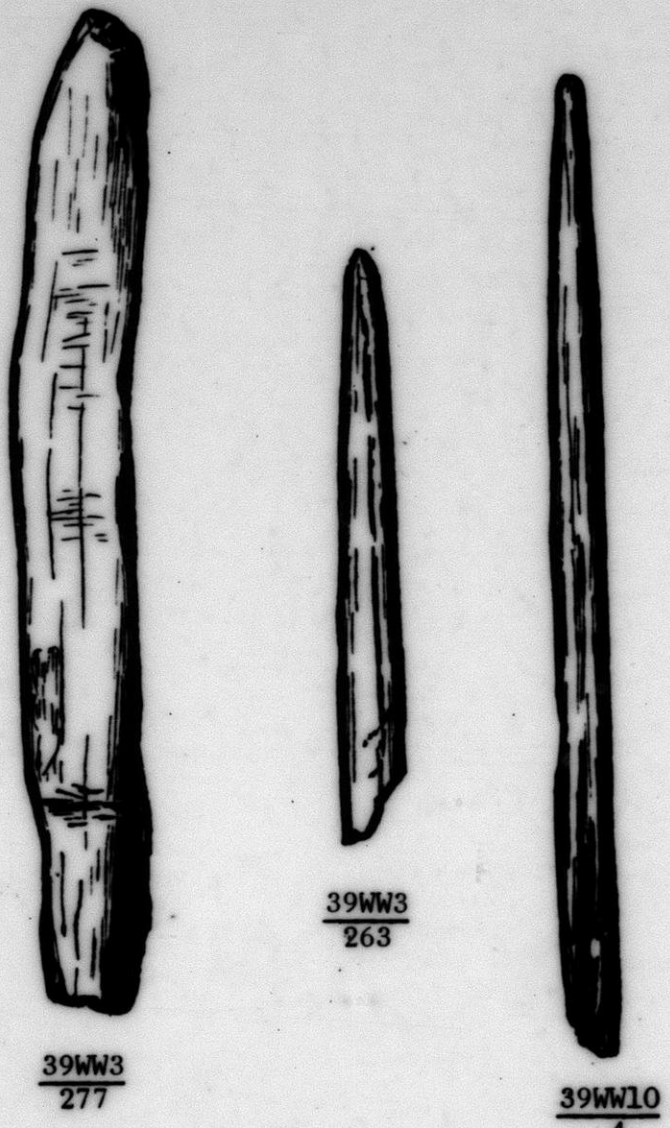



Figure 78. Shaped Flakers.

## QUILL FLATTENERS

For this group of flat, spatualate-shaped objects we have retained the name indicating the function of the tools which has been frequently suggested in the literature of the northern Plains (Hurt, 1952: 6; Lehmer, 1954: 67; Wedel, 1955: 123-26). It is clear that there is a very considerable range in the extent of workmanship on these tools, largely centered on the extent to which the cancellous tissue of the split surface of the bison rib has been smoothed down. For the purposes of this report, a three-fold division is suggested: rough, smooth, and polished. In the rough category the cancellous tissue bears little evidence of grinding to create a smooth surface. When the finger is run over the surface of the cancellous tissue a textured surface like sand-paper is felt. In the smooth category, the cancellous tissue is still to be seen abundantly but the surface has been carefully smoothed, and feels smooth to the touch. In the polished category, both surfaces have been brought to a high, reflective polish and usually with the cancellous tissue completely obliterated though traces might occasionally remain.

### Polished Quill Flatteners

The polished quill flatteners are not only the most carefully finished so far as surface finish is concerned, they also have the most symmetrical outlines and usually bear an engraved decoration. Despite the high degree of finish on all surfaces, it is the rounded ends of these specimens that bear the highest gloss and indications of use. In this attribute they are directly comparable to the less carefully finished specimens.

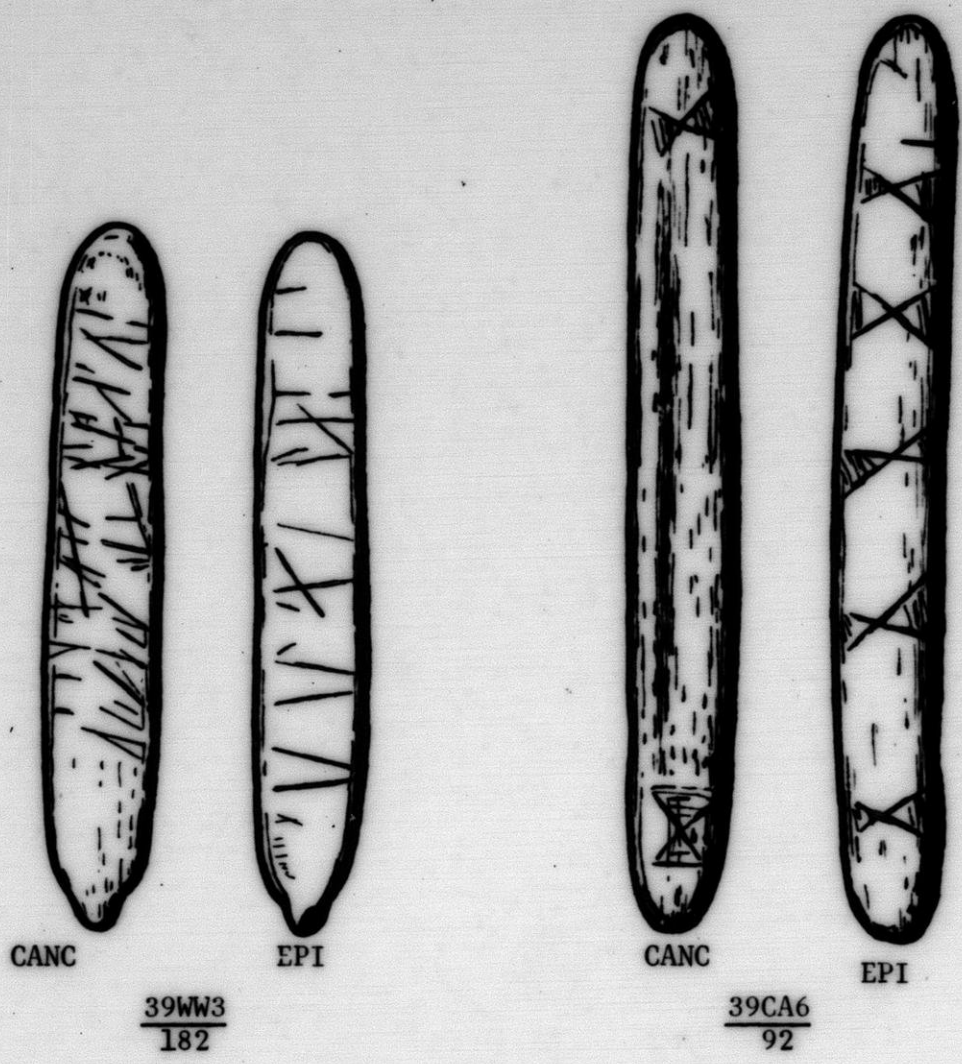
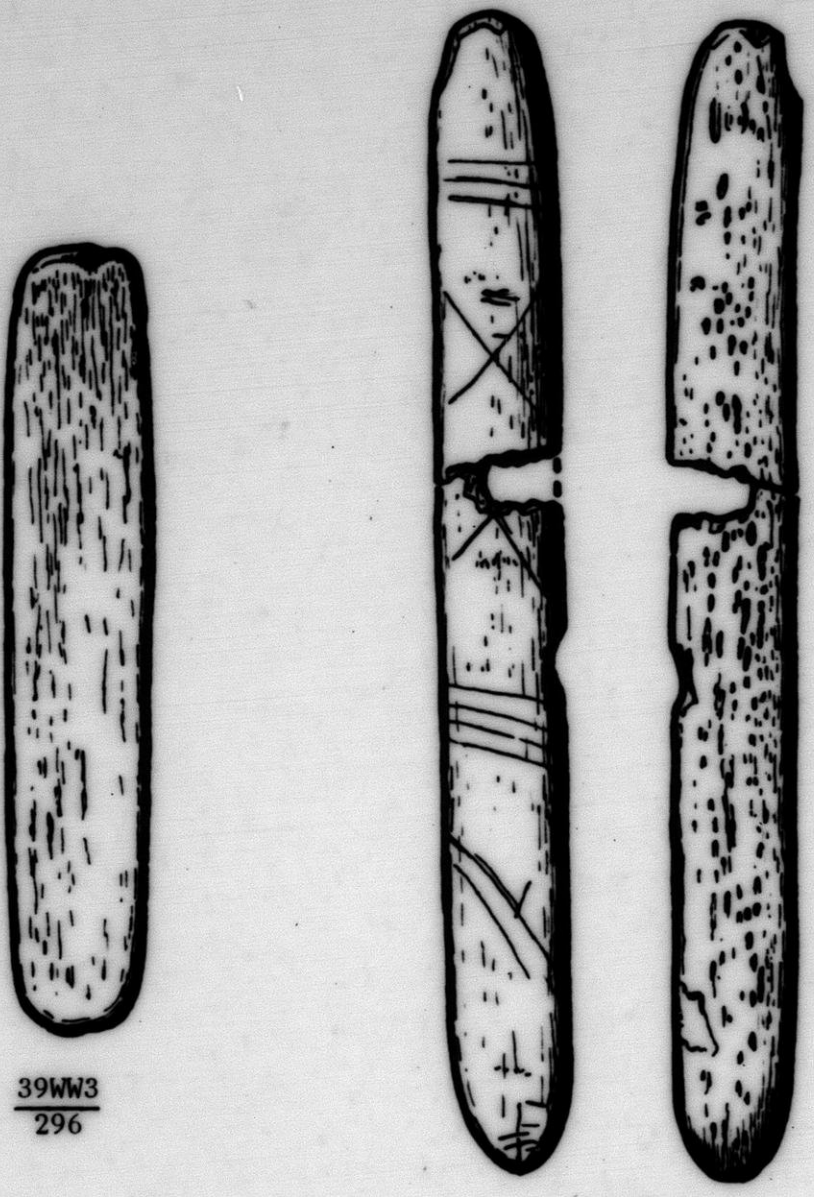



Figure 79. Polished Quill Flatteners. Paired specimens show front and back.



39WW3
296

39WW3
213

Figure 80. Polished Quill flatteners. Paired specimens show front and back.

Attributes of the small number of polished quill flatteners are tabulated below:

| Site | # | Feature | Length | Width | Thickness | Decorated |
|---|---|---|---|---|---|---|
| 39WW3 | 182 | 15 | 89 mm | 14 mm | 4 mm | Yes |
| 39WW3 | 213 | 8 (C7) | 145 mm | 15 mm | 5 mm | Yes |
| 39WW3 | 296 | 15 (C9) | 100 mm | 18 mm | 4 mm | No |
| 39CA6 | 92 | 4 | 117 mm | 14 mm | 4 mm | Yes |

Details of the decoration can best be seen on the accompanying sketches. Specimen # 182 from 39WW3 is unusual in having a small knob-like protuberance at one end.

## Smoothed Quill Flatteners

As indicated previously, cancellous tissue remains in abundance on one face of this variety despite the fact that it has been ground to the extent that it is now smooth to the touch. The variety, in addition, is less carefully finished in that the outlines are not symmetrical and no decoration is used. The dimensions of the specimens found are tabulated below:

| Site | # | Feature | Length | Width | Thickness | |
|---|---|---|---|---|---|---|
| 39WW3 | 47 | 5 | ($25^{+}$mm) | - | 3 mm | (fragment) |
| 39WW3 | 150 | 1 | ($45^{+}$mm) | 14 mm | 3 mm | (fragment) |
| 39WW3 | 166 | 15 | 147 mm | 19 mm | 4 mm | |
| 39WW3 | 252 | 15 (C1) | 133 mm | 16 mm | 4 mm | |
| 39CA6 | 2 | 3 | 107 mm | 22 mm | 5 mm | |
| 39CA6 | 45 | 7 | ($93^{+}$mm) | 20 mm | 4 mm | (fragment) |
| 39CA6 | 136 | 11 | ($146^{+}$mm) | 20 mm | 4 mm | (fragment) |

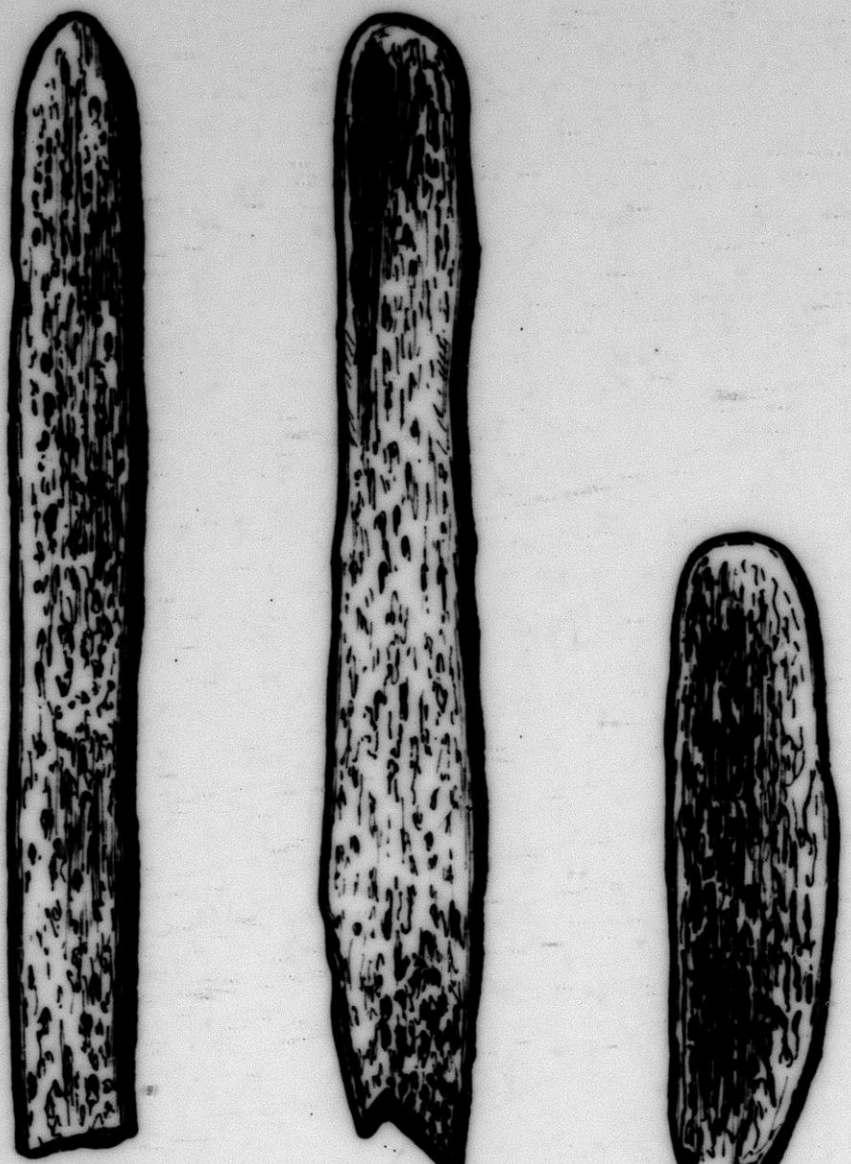



Figure 81. Smoothed Quill Flatteners.

## Rough Quill Flatteners

The cancellous tissue in this variety is rough and in some examples does not appear to have been smoothed. A somewhat more pointed end is found in some examples, but again the characteristic sector indicating use is a rounded end bearing a high polish. In comparison to the other two categories, an unusually high proportion of the rough variety appear to have been broken.

Two of the largest implements of this group were associated with the burial at 39CA6 found in Feature 4. They are respectively 349 and 317 mm in length with one end being primarily the rounded end showing evidence of use. The sides are undulating, little attempt being made to finish them carefully, and while some smoothing of the cancellous tissue has taken place it is still rough. Although Wedel (1955: 123-26) has shown that 70% of the burials in the Mobridge area having quill flatteners as grave goods are female, in this single instance we are dealing with the burial of an adult male.

## Rough Quill Flatteners

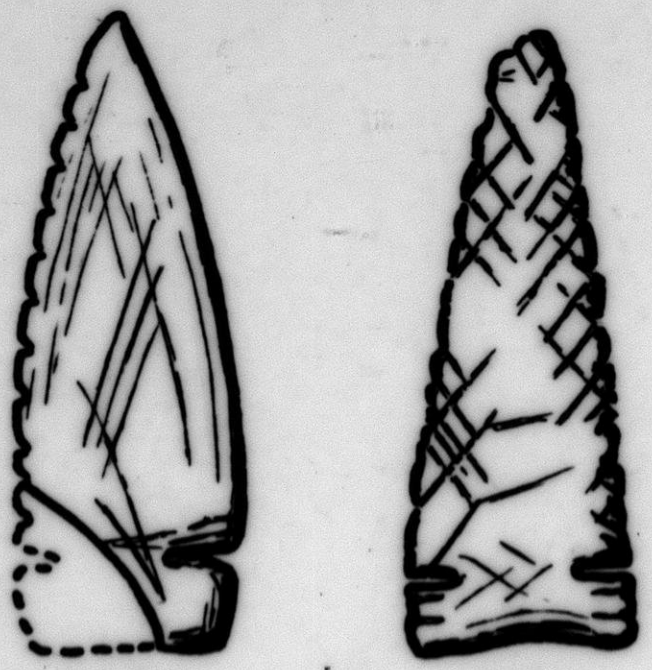
| Site | # | Feature | Length | Width | Thickness | |
|---|---|---|---|---|---|---|
| 39WW3 | 1B | Surface | (145+mm) | 16 mm | 6 mm | (fragment) |
| 39WW3 | 37 | 4 | (137+mm) | 18 mm | 9 mm | (fragment) |
| 39WW3 | 47 | 5 | 83 mm | 20 mm | 4 mm | |
| 39WW3 | 216 | 18 | (132+mm) | 26 mm | 11 mm | (fragment) |
| 39WW3 | 239 | 17 | 99 mm | 17 mm | 6 mm | |
| 39CA6 | 1 | Surface | (95+mm) | 23 mm | 7 mm | (fragment) |
| 39CA6 | 1 | Surface | (89+mm) | 21 mm | 8 mm | (fragment) |
| 39CA6 | 9 | 3 (C2) | 154 mm | 16 mm | 6 mm | |
| 39CA6 | 45 | 7 | (104+mm) | 18 mm | 4 mm | (fragment) |
| 39CA6 | 46 | 7 | (44+mm) | 15 mm | 6 mm | (fragment) |
| 39CA6 | 60 | 2 | (80+mm) | 23 mm | 4 mm | (fragment) |
| 39CA6 | 90 | 4 | (116+mm) | 22 mm | 8 mm | (fragment) |
| 39CA6 | 146 | 4 (Bur.) | 349 mm | 18 mm | 6 mm | |
| 39CA6 | 146 | 4 (Bur.) | 317 mm | 18 mm | 6 mm | |

## Notched Bone Knives

D. H. Lehmer (1954: 71) has classified somewhat similar specimens as ornaments, designating them 'spear-shaped bone pendants'. A utilitarian function seems more plausible, the objects probably being used as knives. We have designated them 'notched bone knives' but their clear resemblance to a side-notched projectile point should be indicated.

The knife function is most clearly indicated on one specimen from 39WW3 (# 37 found in Feature 4). It is a subtriangular section of mammal scapula with notches at the side near the base, presumably present originally on both sides though now one corner is missing. One edge of the blade is smoothed and blunt while the other side is thinned and notched. Clearly this latter edge of the blade served as a cutting edge and would work effectively to cut soft material such as pumpkin and squash. The specimen is 79 mm in length, 29 mm in width and 3 mm in maximum thickness.

A second specimen from 39WW3 (# 239 from Feature 17) seems to be more clearly an imitation of the form of a notched, triangular chipped stone point. Two deep side notches are present near the base and both surfaces of the blade are scarified by cross hatching with the edges of the blade slightly serrated by this scarification. A small portion of the tip of the specimen is missing. It has been manufactured from a flat plate of mammal bone. The length is 78+ mm; the maximum width is 29 mm, and the maximum thickness is 4 mm.



39WW3
37

39WW3
239

Figure 82. Notched Bone Knives.

## Barbed Antler Point

A unique implement from 39CA6 (# 129 from Feature 1) is a barbed point manufactured from what appears to be heavy elk antler. In its present condition the point has three substantial barbs along one side but since it is broken both at the tip and base, additional barbs may originally have been present. In cross section the implement is slightly planoc[illegible]x the flat side being that which bears the spongier inner tissue of the antler. The present length of the specimen is 110 mm. and the maximum width is 35 mm. The barbs taper to a blunt point and have an average length of 15 mm. The maximum thickness is 13 mm.

39CA6
129

Figure 83. Barbed Antler Point.

## Utilized Ribs

The utilized ribs comprise a numerically important class yet one which probably masks a multiplicity of functions. The specimens placed in this group consist of sections of ribs, probably almost entirely those of bison, where one and occasionally both ends show wear as a result of use.

Bison ribs and fragments of bison ribs obviously provide a readily adapted tool for use as a digging implement. Simply fracturing the rib provides a sharpened end. Many such ribs were doubtless picked up and used as occasion demanded when the occupants of the village were confronted with the need to dig a post hole or cache pit. The group of specimens under consideration include a number which show a moderate amount of wear on a fractured end. Perhaps this wear is the result of such fortuitous use of broken ribs. Other specimens, however, show very extensive wear and in some instances deliberate modification of an end through whittling and grinding in order to produce the shape desired. The wear facets on some resemble those found on quill flatteners or in other instances those on flaking tools. It has not seemed practicable, however, to attempt a sorting of the ribs into different functional categories on the basis of the kind of wear exhibited. Too many of the specimens may well have had multiple functions though we have assumed they are largely digging tools. The ribs range up to 472 mm in length. Many of the smaller specimens are doubtless fragments of larger specimens.

| | 39WW3 | 39WW10 | 39CA6 |
|---|---|---|---|
| Utilized ribs . . . . . | 40 | 1 | 23 |
| Average length (mm) . . . . | 208 | 330 | 199 |

## Serrated Rib

A unique specimen from 39WW3 (# 421 from Cache 4 of Feature 8) bears a series of fine notches on both the anterior and posterior border of a large bison rib. The rib is 430 mm in length. Both ends had been snapped or broken and the rough edges subsequently smoothed though with no attempt to make the ends regular or symmetrical in shape. The surfaces are highly polished through handling or use. A series of shallow notches, spaced about 2 mm apart, were cut for a distance of about 120 mm near the midsection of both the anterior and posterior borders. Extensive use of the implement, perhaps as a sickle, has smoothed the notches and given the edges a high gloss.

## Sharpened Rib

Another specimen from 39WW3 (# 487 from Feature 8) consists of a section including the sternal end of a bison rib which is 447 mm in length. The posterior border has been cut and ground to sharpen the edge. Both this border and the blunter anterior border which is otherwise unmodified, bear a high gloss indicating extensive use. A fresh fracture suggests the implement may originally have been somewhat longer.

A small section of bison rib from the same site (# 416 from Cache 4 of Feature 8) may be a fragment of a similar implement. One border shows sharpening from both faces to produce a sharp edge and a high gloss is present on both margins. This fragment is only 115 mm in length.

## Utilized Scapula Spine

Another implement which may profitably be compared with the utilized ribs is the small group of scapular spines that also show indications of use. The scapular spines were doubtless trimmed from the bone during the production of hoes. The resultant trimmed spine would be broad and thick adjacent to the acromion and taper to a slender point at the opposite end. In five specimens (two from 39WW3, one from 39WW10, and two from 39CA6) this sharp tip is either slightly worn or used to such an extent that it bears a high polish. No other portion of the spine shows any modification. The specimens range in length from 223 mm to 310 mm.

## Perforated Antler Tool

A perforated antler tool of unknown function was found at 39WW3 (# 327 from Feature 17). The thick end of the antler section has been cut off smoothly as though with a metal saw at a slight angle to the long axis of the shaft. 5 mm above this beveled end a circular perforation, 5 mm in diameter, has been drilled through the antler. The pointed tip of the antler has been removed by a rough chopping and the resultant fractured end bears no smoothing. It is possible that the tip was removed after the original tool had been discarded. The surfaces of the antler except for the fracture at the tip and an additional break at the broad end are smooth and bear a slight polish. The specimen is 227 mm in length and varies in diameter from 13 to 21 mm.

## Antler Drift

A section of antler, 37 mm in maximum diameter and 61 mm in length, was found on the surface at 39CA6. The base of the antler, where a slight swelling suggests it was close to the original burr, has been given a smoothly convex form. Slight wear and smoothing appears on the sides and this end, such as is found on antler rubbing tools or drifts. The opposite end is freshly broken and the interior hollowed out. The hollowing of the interior appears to be much fresher than the smoothing and fractures which appear on the exterior. Judging by the color of the breaks, the interior cavity is likely a more recent modification.

A second drift (# 505 from Feature 18) was recovered in the excavations at 39WW3. Again, it is the section near the burr which has been ground to produce a smoothly convex facet. The opposite end was roughly hacked to shape without extensive smoothing subsequently. The specimen is 81 mm in length and 39 mm in maximum diameter.

## Fleshers

A series of 13 fleshers (also frequently designated gouges) were recovered from 39WW3 and 39CA6. The bison and elk metatarsus was most commonly used for this purpose (9 examples) and will be considered first.

The beveled scraping edge of the flesher is uniformly produced at the posterior end of the shaft. It has been demonstrated on the basis of a number of finds that the original tool frequently included not only the cannon bone but the ankle-bones and the heel-bone as well, these bones being attached by the dried ligaments (Kidder, 1932: 233, e.g.). This was not noted in our excavations though the presence of these bones could have been overlooked by the excavators. That the ligments were in place when many of

the specimens were used seems probable. Although the surfaces of the bones are highly polished through use, this polish does not extend over the points of attachment of the lateral and annular ligaments. Further, no signs of wear or polish can be seen on the proximal extremity. Such polish would, of course, be precluded, were the additional bones present. This interpretation based upon the extent of polish does not hold true for one specimen (39WW3, # 113) where the lateral surfaces are completely polished and slight wear is seen at points on the proximal extremity. We would conclude that at least this example was used without the additional bones being attached.

It might be concluded that the need to retain the heel- and ankle-bones was the governing factor in the placement of the sharpened end of the flesher at the posterior end of the bone. This placement, however, might have been determined on the basis of anatomical knowledge of the structure of the bone. In the metatarsal the anterior and central portion of the shaft has the greater thickness of compact bone while at the posterior end spongy bone predominates with a thin wall of compact bone. Thus a cut is readily made at this end and the bevel easily produced by removing the spongy substance and a minimal amount of grinding is needed to produce the sharpened end (compare, for example, the sagittal section of the metatarsal bone of the horse in Sisson and Grossman, 1956, fig. 1).

The length and shape of the bevel varies considerably in the fleshers (as also does the maximum length of the implement), a factor which may simply be related to the length of time the flesher was in use. Grooves are frequently worn on the shaft of the specimens which may be related to the practice described by Mooney (1910: 592) of using a thong which went from the tool to the wrist of the individual and provided added leverage in use.

Metatarsus Fleshers

| Site | Spec. # | Feature | Length | Length Bevel | Notches ? |
|---|---|---|---|---|---|
| 39CA6 | 1 | Surface | 235+ mm | 85 mm | (top missing) |
| 39CA6 | 92 | 4 | 161+ mm | 115+mm | (edge missing) |
| 39WW3 | 102 | 8 | 248 mm | 55 mm | yes |
| 39WW3 | 113 | 8 | 224 mm | 80 mm | yes |
| 39WW3 | 174 | 8 | 206 mm | 115 mm | yes |
| 39WW3 | 272 | 8 | 227 mm | 117 mm | yes |
| 39WW3 | 352 | 17 | 185 mm | 30 mm | yes |
| 39WW3 | 37 | 4 | 182 mm | 65 mm | yes (?) |

With the exception of the last specimen (# 37) which appears to be manufactured of an elk metatarsus, the species represented would appear to be bison.

Tibia flesher. Two fleshers were manufactured from the distal end of the bison tibia. These specimens lack the high degree of polish and care shown in the finishing of the implements manufactured from the metatarsus. In one specimen from 39CA6 (# 125 from Feature 11) the cutting or scraping edge is produced by rough, jagged breaks in the bone with virtually no subsequent attempts to smooth and modify this area except directly on the working end which is polished and notched. This implement has a maximum length of 171 mm. A second flesher made from the same bone is from 39WW3 (# 291 from Feature 8). In this instance the diagonal bevel, 85 mm in length, producing the working edge has been finished with somewhat greater care. However, a polish appears on the implement only on the back and particularly near the working edge. This edge is at a slight angle and bears no notches. A worn facet terminating in an oval perforation, 22 x 14 mm in dimensions, which extends into the internal cavity from which the cancellous tissue has been removed is present

on the anterior face adjacent to the distal end of the tibia. The surfaces of this latter area are rough and show no indications of smoothing that would cast light on the functional nature of this perforation. The implement has a maximum length of 180 mm.

Femur flesher. A single example of a flesher made from the femur of a large mammal (elk or bison?) was found at 39CA6 (# 77 from Feature 2). The chisel-like working edge, which is smooth and lacks notches, was formed by cutting across the shaft diagonally to produce a bevel 45 mm in length with a rough break continuing for an additional 35 mm. The exact nature of the opposite end is uncertain since the epipheses of the bone were not yet consolidated and this portion is missing. The present length of the implement is 195 mm. This end of the tool also exhibits some rough breaks that appear to be recent in origin.

Flesher fragments. Two fragments of the sharpened ends of fleshers were found at 39WW3. One specimen (# 272 from Feature 8) is clearly a section from a metatarsus and bears notches on the working end. The fragment is 131 mm in length. A second specimen (# 20 from Feature 2) is from a lighter and more delicate bone and so extensively worked that the features of the bone are obscured. The fragment is 71 mm in length and has a marked U-shaped profile which is carefully smoothed on both interior and exterior. The convex working edge is notched.

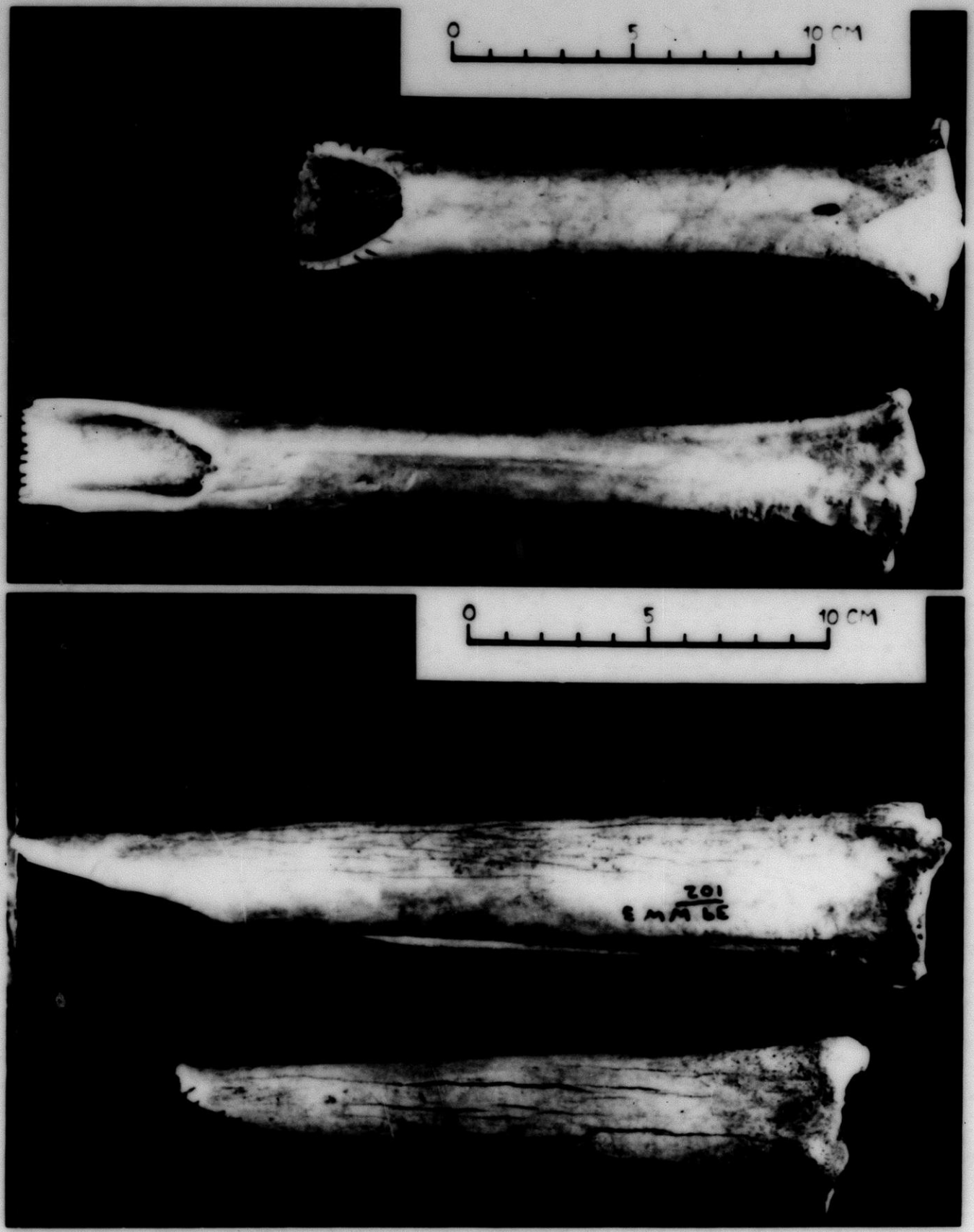



Figure 84. Bone Fleshers. Front and side view.

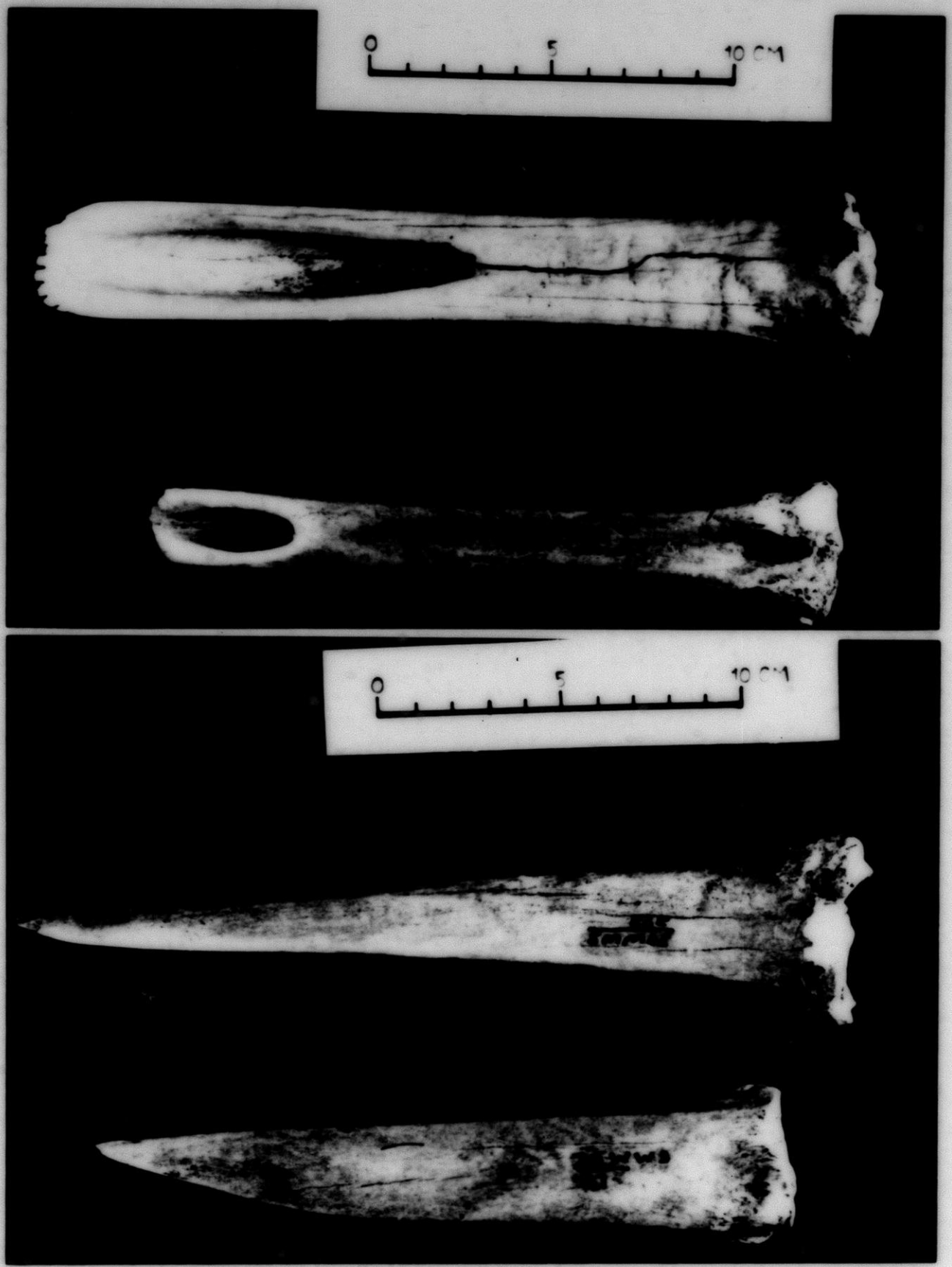



Figure 85. Bone Fleshers. Front and side view.

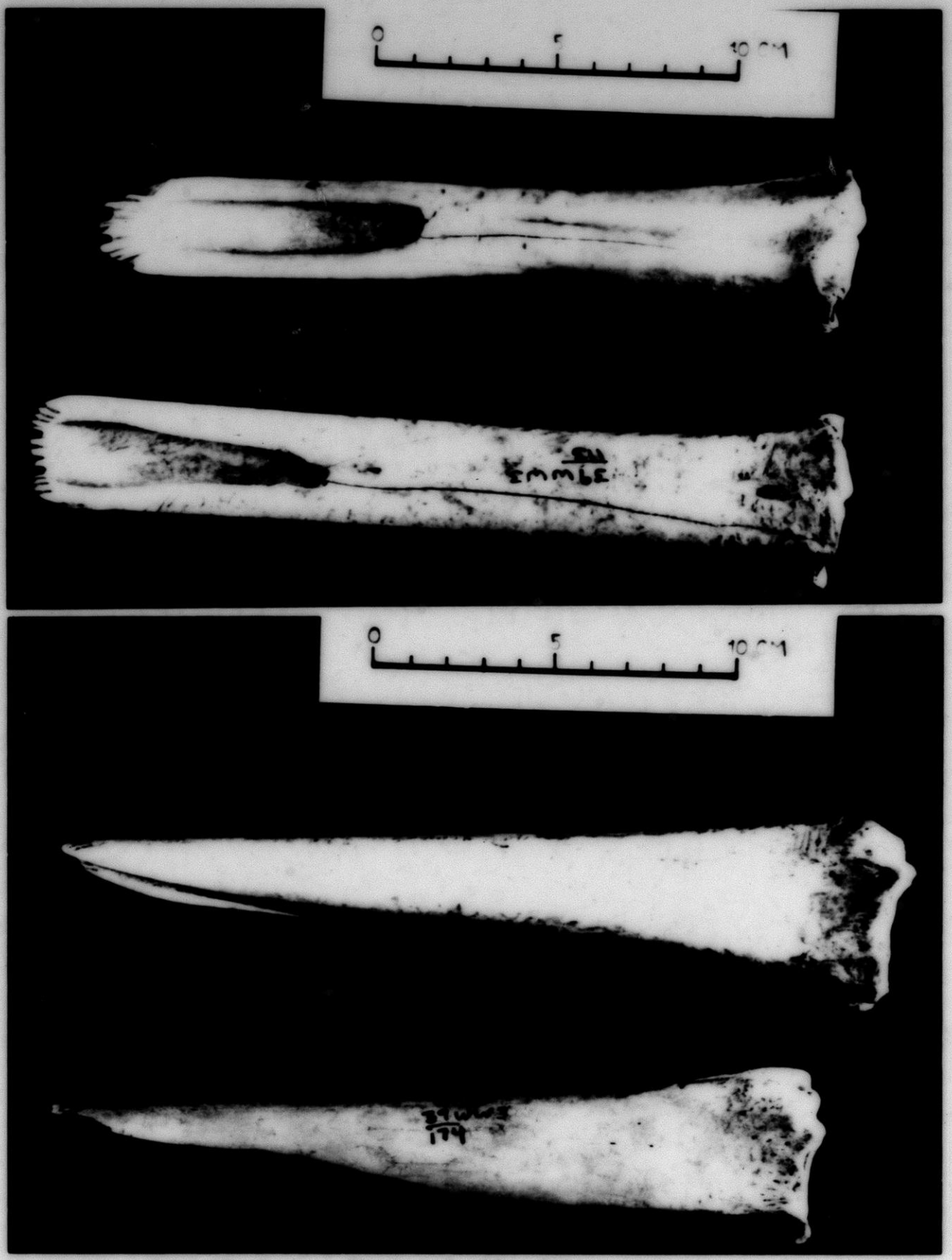



Figure 86. Bone Fleshers. Front and side view.

## Ulna Pick

A single specimen from 39WW3 (# 165 from Feature 12) is an example of the implement commonly designated an ulna pick. Manufactured from a bison ulna, the shaft has been split diagonally and the fractured tip is polished and shows evidence of extensive use. A portion of the olecranon has been broken off but this sector does not show the battering that is occasionally reported on specimens from other sites. The implement has a maximum length of 208 mm.

Similar implements have been reported by Strong (1935: 103, 164), Wedel (1935: 247) (1935a: 201), Cooper (1936: 54), Dunlevy (1936: 198), Champe (1936: 267), Hill and Kivett (1940: 166), Hill and Metcalf (1941: 200), Spaulding (1956: 53), Smith and Grange (1958: 112), and Gunnerson (1960: 203). The implement would thus appear to occur sporadically from Nebraska through South Dakota, ranging in time from the Woodland horizon to the historic period.

39WW3
165

Figure 87. Ulna Pick.

## Worked Deer Mandible

A section of a deer or antelope mandible was recovered from 39WW3 (# 486 from Feature 13). The fragment, 108 mm in length, bears longitudinal striations and smoothing marks on the bone as well as a slight polish. Two deep vertical notches, and a portion of a third at the broken sector, appear on the opposite and outer edge of the mandible. The function of the mandible is not known, yet indications of use are to be clearly seen.

## Notched Bones

Notches on bones have been previously described in connection with the worked deer mandible and the bison rib thought to have been possibly used as a sickle. A fragmentary mammal ulna from 39WW3 (# 159 from Feature 2) also bears 15 sharply cut notches spaced 2-4 mm apart on the base of the shaft. The ulna has been broken through the semilunar notch and near the tip of the shaft. The notches begin immediately below the edge of the semilunar notch and continue for a space of 45 mm. There is no obvious trace of wear on the notches so the function of the object remains in doubt. A section of mammal rib from the same site (# 56 from Feature 14) is 112 mm long and 18 mm wide and bears a series of 17 fine cuts along one edge, spaced 2 to 5 mm apart. Perhaps the cuts were made preparatory to thinning for they are too fine and delicate to suggest a use as a rasp.

## "Needles"

The term "needle" has been used in Plains archaeological literature for a wide variety of artifact types ranging from eyed forms tapering to a sharp point comparable to a modern needle (Holder and Wike, 1948: 54; Willy in Hurt, 1952: ), to curved, flat specimens of relatively uniform width. The latter group has been compared by Wedel (1959: 164) to the mat-weaving needles of the Menominee (Skinner, 1921: 245) but have also been designated 'bracelets' (Will and Spinden, 1906: 172).

Although we have retained the name 'needle' for the group, the range in form within the category is considerable and may reflect an equal diversity in function. Two varieties are segregated on the basis of manufacturing technique which may be useful for comparative purposes. In one variety, the inner curved surfaces bears a longitudinal groove while in the second variety this inner surface is either lat or curved but the groove is absent.

### "Needle"-Grooved Variety

It is probable that the groove on the inner surface of this variety is a device to facilitate the bending of the artifact to a suitable curve. The specimens of the group appear to be made of compact bone so that the thinning of one face by means of the groove might well compensate for the lack of cancellous tissue in this sector.

All of the specimens are fragmentary so that the complete length can not be ascertained. The longest specimen (measuring along the curve) is 108 mm in length. A suggestion of a blunt, rounded tip is provided by one example (39CA6/104). The groove on the flat surface, the cross section

being plano-convex, fades out immediately adjacent to a tip that is bluntly formed by a rounded bevel on the opposite convex side. The tip, however, does not have a comparable degree of polish and finish to the remainder of the side so that one can not rule out the possibility that this is a later modification to the implement. In another specimen (39CA6/1), similar in form, the groove on the plane surface extends for only about one half the length of the fragment. The smooth shaft contracts from 6 to 5 mm in width suggesting a slight taper as it nears a point. The present short length of two specimens bearing eyes (both 39WW3/96), 73 and 28 mm respectively, is the result of the end having been snapped off following the production of an encircling groove. The resultant burr produced by the snapping process was not smoothed off, suggesting that these ends were discarded and perhaps the remainder of the implement reshaped. In neither example, however, is the reason for this evident since the eye is unbroken and shows no evidence of wear. The inner groove is variable but most commonly 3-4 mm in width and 1-2 mm in depth. In two specimens (39WW3/96 and 413) the groove has benn broadened to produce a markedly concave inner face. Three specimens have a circular eye placed close to the squared end of the artifact (39WW3/96 - perforation 2 mm in diameter and 5 mm from end; 39CA6 - perforation 2 mm in diameter and 3 mm from end; and, 39CA6/104 - perforation 2.5 mm in diameter and placed 4 mm from end). One specimen (39WW3/96) has an elongated, slit-like eye which is 6 mm in length and 1 mm in width which has been placed 9 mm from the squared end. The lits producing the eye were cut at an angle so that the bevel extends for 1 mm on each side of the actual aperture on both faces. A final variant in the perforation forms has an additional, smaller perforation which barely

penetrates to the interior, placed adjacent to the major perforation. This second perforation would appear to be decorative in character. In one specimen of this group (39WW3/367) the larger perforation is 2 mm in diameter and placed 6 mm from the squared end. The smaller perforation, only 1 mm in diameter, was drilled 6 mm from the larger one. The second implement of the group with double perforations (39WW3/403) has a circular perforation 2 mm in diameter placed 7 mm from the squared end with the smaller perforation, 1 mm in diameter, located 9 mm from the larger. In both specimens a shallow groove connects the two perforations on the outer face.

| Site | # | Feature | Width | Thickness |
|---|---|---|---|---|
| 39WW3 | 96 | 10 | 7.5 mm | 5.5 mm |
| 39WW3 | 96 | 10 | 8.0 mm | 3.0 mm |
| 39WW3 | 403 | 17 | 9.0 mm | 4.0 mm |
| 39WW3 | 367 | 17 | 9.0 mm | 4.0 mm |
| 39WW3 | 413 | 17 | 7.0 mm | 3.5 mm |
| 39WW3 | 415 | 8 | 7.0 mm | 2.5 mm |
| 39CA6 | 1 | Surface | 6.0 mm | 4.0 mm |
| 39CA6 | 4 | 3 (C1) | 5.0 mm | 4.0 mm |
| 39CA6 | 104 | 7 | 7.0 mm | 4.0 mm |
| 39CA6 | 104 | 7 | 6.0 mm | 4.0 mm |

## "Needle"- Non-grooved variety

Even greater variability in some attributes is to be found in this group of "needles". They range from thin flat strips of bone, smooth on the exterior and interior curved surfaces, to specimens that are oval and circular in cross section. This latter group will normally have a sector

of cancellous tissue on the inner portion of the curve, a factor which perhaps permitted the development of a curved tool in the group that is circular in cross section. That this is indeed the case seems to be demonstrated by one section of an eyed needle from 39WW10 (# 2). The specimen is rather crudely made from a splinter of bone which has cancellous tissue on one edge of the face which bears the eye. In this instance the curvature is also to the same side in contrast to the normal situation where the curvature is on the opposite plane. As in the case of the preceding group, all of the specimens are fragmentary so that the length of a complete needle can not be ascertained. The longest fragment is 113 mm in length.

The shape of the eye is also a variable attribute. One needle (39WW3/392) which is round in cross section has a rectangular slit-like eye (7.5 mm long and 1 mm wide) placed 7 mm from the squared end. Eyes that are an elongated ellipse in outline appear on two specimens. A curved fragment (39WW10/2), oval in cross section (5 by 4 mm) tapers slightly in diameter to a rounded end where the eye (1 by 3 mm in dimensions) is placed 5 mm from the end. In this variant the eye appears to be produced by gradually incising a groove from both faces until the perforation is produced. A similar technique was used on a flat needle (39WW3/207) where the eye (5 mm long and 1.5 mm in maximum width) is located 7.5 mm from the squared end. In the specimen of this group first described (39WW10/2) where the curvature is to the side, after a longitudinal groove was worked in both faces for the eye, a circular perforation was drilled which was 1 mm in diameter and located 7 mm from a bluntly rounded end. Another flat needle (39CA6/4) which is convex on the exterior surface and plane on the

inner curved surface, a circular perforation 3 mm in diameter was drilled 2.5 mm from a squared end. A final variant, so far as perforations are concerned, is a specimen (39WW10/2) which is slightly oval in cross section (maximum diameter 6 x 5 mm). It tapers to 4 mm in width at one end which has a slit in which an eye may originally have been drilled. This end, however, is worn smooth so that perhaps the slit is a functional portion of the implement. It would have facilitated pushing sewing thread through holes in an object to be sewn.

An alternative to an eye is to be seen in two flat sections of needles. One specimen (39WW10/25) is slightly curved and 56 mm in length. Although its thickness is a uniform 2.5 mm, it tapers in width from 7 mm to 3.5 mm at a squared end. A shallow notch is cut in each side of this narrowed sector, 3.5 mm from the end. A deviant form (39WW3/36) is similarly flat with rounded edges and has a uniform thickness of 3 mm. This specimen tapers from 11 mm to 6 mm in width and has a single shallow notch placed 2.5 mm from the narrow end. This latter specimen is also deviant in having a longitudinal groove, but one placed on the exterior surface of the curve rather than on the interior as in the variant first described. Here it may possibly be intended as a decoration rather than as a means to bend the bone for the bend is in the opposite direction from that previously noted.

What are possibly sections of unfinished needles were found in what probably represents raw material or stages in the manufacture of bone implements. Such items clearly document the use of a groove and splinter technique in the working of antler (elk). It may be noted here that while the needles are frequently described as being manufactured from ribs, this

is not evident from the structure of the bone. Such curvature as is found may well be the result of bone bending techniques rather than a reflection of the natural curvature of the bone.

| Site | # | Feature | Width | Thickness | Section |
|---|---|---|---|---|---|
| 39WW3 | 36 | 3 | 6-11 mm | 3 mm | flat |
| 39WW3 | 37 | 4 | 6 mm | 5 mm | oval |
| 39WW3 | 37 | 4 | 6 mm | 4.5 mm | oval |
| 39WW3 | 37 | 4 | 7 mm | 5 mm | oval |
| 39WW3 | 37 | 4 | 6 mm | 5 mm | oval |
| 39WW3 | 37 | 4 | 4 mm | 2.5 mm | rectangular |
| 39WW3 | 132 | 13 | 7 mm | 6 mm | oval |
| 39WW3 | 174 | 8 | 7.5 mm | 7 mm | circular |
| 39WW3 | 174 | 8 | 7.5 mm | 7 mm | circular |
| 39WW3 | 174 | 8 | 8 mm | 7 mm | oval |
| 39WW3 | 207 | 16 | 6 mm | 3.5 mm | flat |
| 39WW3 | 392 | 17 | 7 mm | 6.5 mm | circular |
| 39WW3 | 454 | 13 | 6 mm | 5 mm | oval |
| 39WW10 | 2 | 1 (C2) | 7-6 mm | 7-6 mm | circular |
| 39WW10 | 2 | 1 (C2) | 6 mm | 5.5 mm | circular |
| 39WW10 | 2 | 1 (C2) | 6-5 mm | 6-5 mm | circular |
| 39WW10 | 2 | 1 (C2) | 5 mm | 4.5 mm | circular |
| 39WW10 | 2 | 1 (C2) | 5 mm | 4 mm | oval |
| 39WW10 | 2 | 1 (C2) | 6 mm | 4 mm | subrectangular |
| 39WW10 | 2 | 1 (C2) | 6 mm | 5 mm | oval |
| 39WW10 | 21 | 2 | 7.5 mm | 5.5 mm | oval |

| Site | # | Feature | Width | Thickness | Section |
|---|---|---|---|---|---|
| 39WW10 | 25 | 2 | 7-3.5 mm | 2.5 mm | flat |
| 39CA6 | 4 | 3 (Cl) | 7 mm | 3 mm | flat |
| 39CA6 | 4 | 3 (Cl) | 7 mm | 3 mm | flat |
| 39CA6 | 6 | 6 | 6 mm | 2.5 mm | flat |
| 39CA6 | 66 | 1 | 7 mm | 4 mm | oval |
| 39CA6 | 67 | 1 | 7 mm | 4 mm | oval |
| 39CA6 | 100 | 14 | 6 mm | 6 mm | circular |
| 39CA6 | 103 | 7 | 8 mm | 4 mm | oval |
| 39CA6 | 104 | 7 | 7 mm | 4.5 mm | flat |

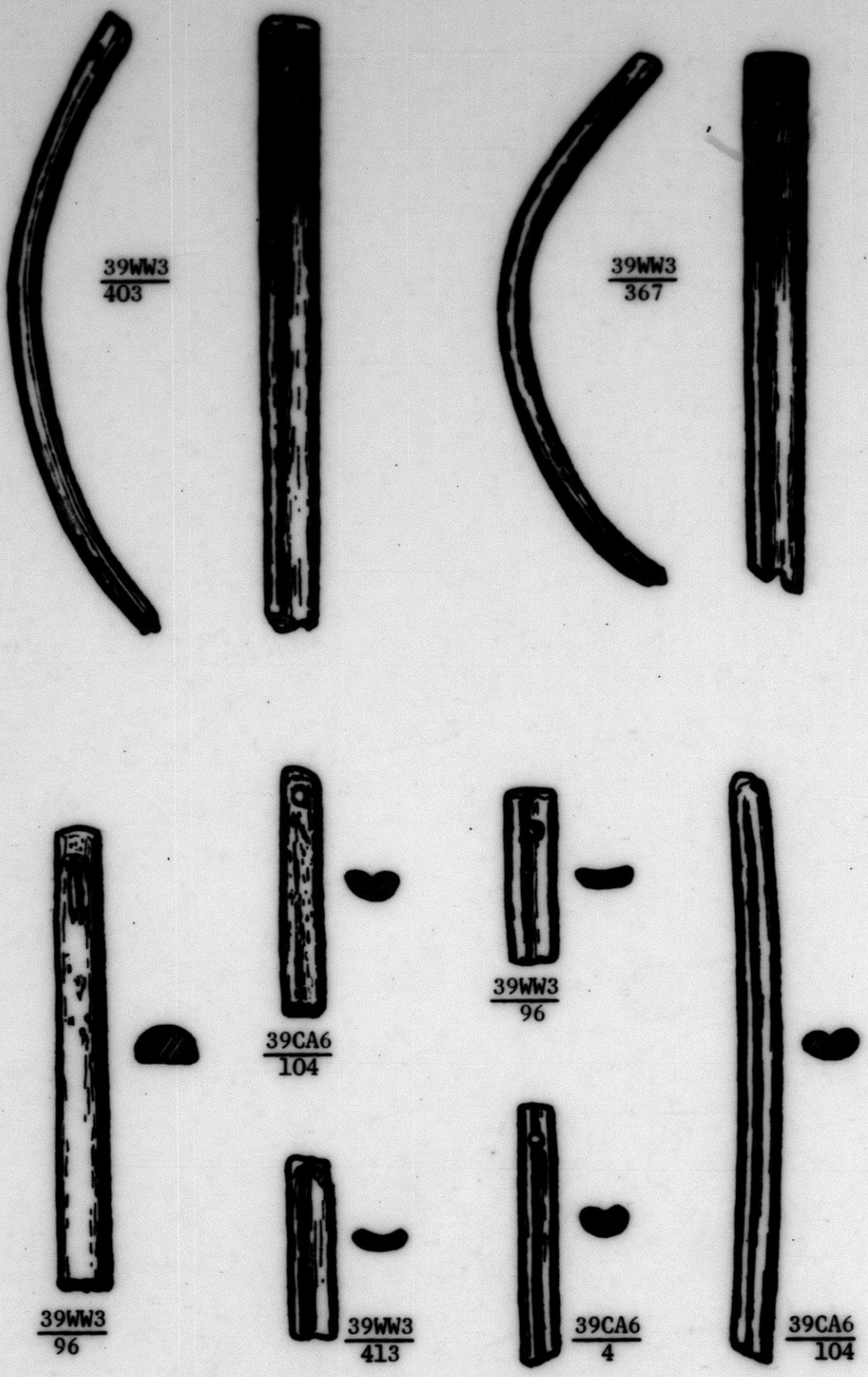



Figure 88. "Needles" - Grooved Variety.

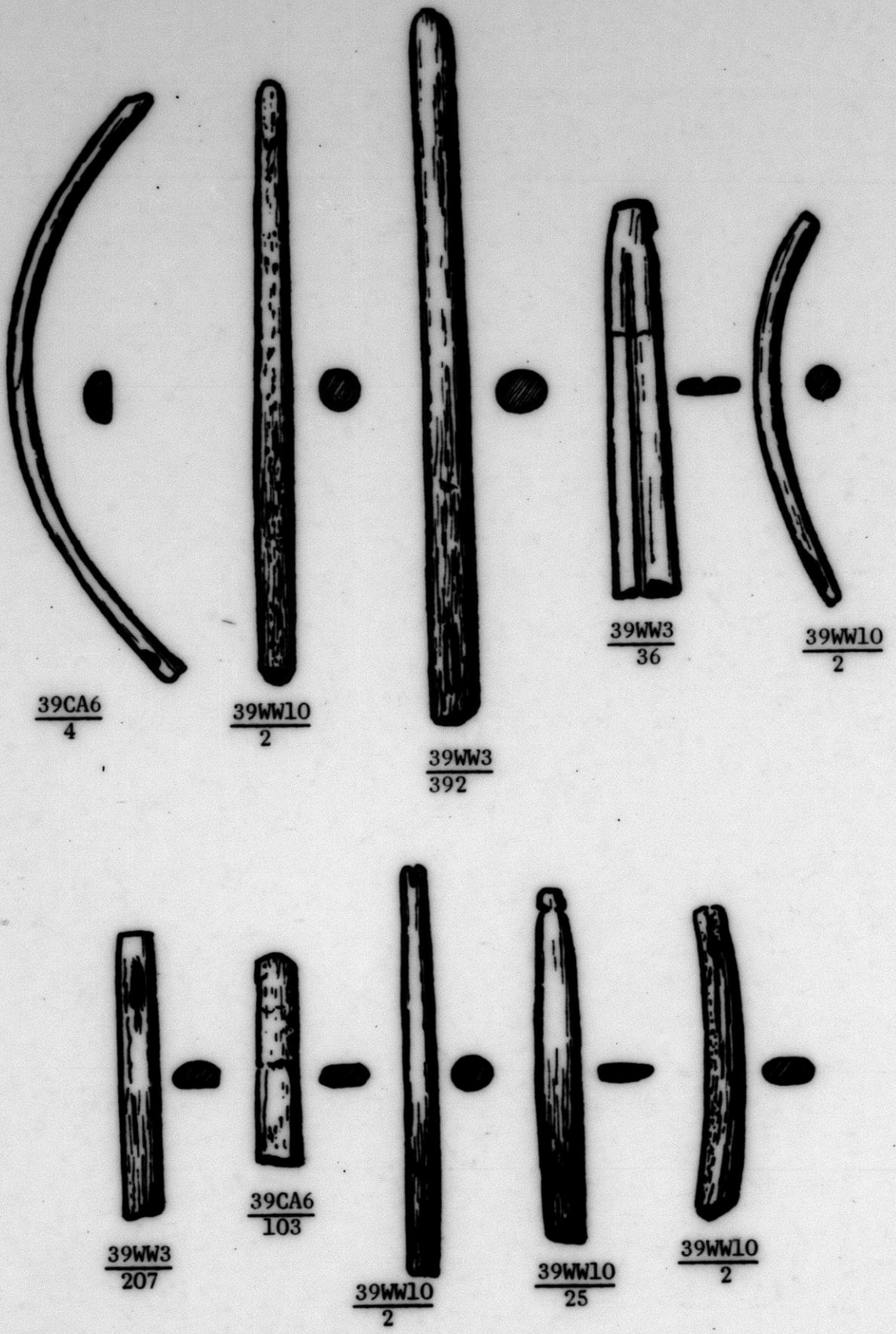



Figure 89. "Needles" - Non-Grooved Variety.

## Bone Rings

We have found no specific archaeological or ethnological parallel for the specimens we have designated 'bone rings'. Short fragments of these specimens could readily be confused with bone needles, and it is possible that some of the fragments with both ends broken are erroneously classified. When the specimen is intact or when either end is present, the form is sufficiently distinctive to permit positive identification.

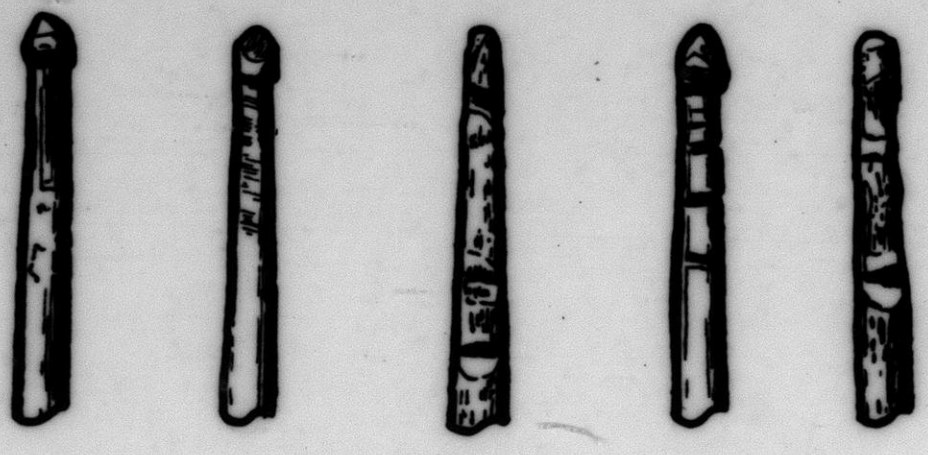
Site 39WW3 yielded two complete specimens (mended from several fragments) and nine fragments, the fragments representing a minimum of five additional specimens. All were found in a refuse area, Feature 9, which provides no clue as to their function.

Like the bone needles, the rings are curved strips of bone, oval in cross section with cancellous tissue on the inner side of the curve. The maximum thickness and width (6 mm and 8 mm) occurs at the center of the object which has a gradual taper to both ends, the bone thinning to 5 mm in width and 2.5 mm in thickness. In cross section the bone is a smoothly rounded ellipse. The two ends of the bone are readily differentiated. One end is provided with a bulbous knob having the width of the bone strip (5-5.5 mm), a length varying between 6-8 mm and a height of 2 mm above the level of the bone strip. The knobs are steep-sided adjacent to the central portion of the bone strip and are gently thinned toward the end of the strip. The opposite end of the artifacts is thinned and smoothed, lacking a knob, but on the interior, cancellous side the face is roughened. While this roughened area varies slightly in different specimens, at least two or three notches are cut to a depth of 1 or 2 mm and clearly designed so that the knob on the exterior face at the opposite end can fit into this

socket. Thus by further bending the strips of bone, fitting the knob in the socket, and lashing them in place a neatly shaped ring is formed. One alternative attribute present on two of the seven knobbed ends is a series of transverse scratches on the outer face, immediately adjacent to the knob and extending for 15 mm. Clearly this roughening was designed to facilitate a secure purchase when the ends were bound together.

The length of the two repaired specimens was measured with a flexible steel tape around the outer face of the curved bone, the lengths being determined as 327 and 328 mm respectively. If the bones were then bent and lashed in place with the knob in the most distant circle, a ring 92 mm in diameter (for the specimen 327 mm in length) and 91 mm in diameter would result. If the first notch were used, an exterior diameter of about 100 mm would be achieved.

The diameter is such that the use of the specimens as bracelets would be appropriate but whether this function is the appropriate one can not be determined unless some ethnological parallels or similar specimens in a more meaningful archaeological context are obtained. Unless such parallels can be found we are, in that event, provided with an example of innovation that must be attributed to the occupants of site 39WW3.



39WW3
38

39WW3
38

Figure 90. Bone Rings.

## Conical Antler Points

A conical point from 39WW3 (# 96 from Feature 10) resembles the conical antler point except in its small dimensions. The specimen is only 26 mm in length and 7 mm in maximum diameter at the base. A conical hole, about 6 mm deep, extends up the base. The basal sector is somewhat rough and irregular so that the object may originally have been larger. The Bamble collection contains two specimens of this artifact type from 39CA6 of somewhat more conventional dimensions. These implements are 46 and 48 mm in length and have maximum diameters at the base of 12 and 16 mm respectively. In the excavations at 39CA6, however, the only antler point of this general category found was a fragment of one (# 45 from Feature 7) which had been ground on four sides to give a square cross section. The center had clearly been hollowed out for hafting but the basal sector has been broken away so that form can not be determined. The implement is 64 mm in length. In the excavations at 39WW3, a three-sided section of antler tip (# 11, from Feature 1), 49 mm in length was recovered. Since the base is broken, it is not possible to determine whether it represents a form comparable to the preceding specimen.

A fragment of a conical antler point (# 106) found at 39WW3 in Feature 8, has been burned black. Both the tip and the basal section are missing, though a portion of the socket in the base can be seen. It is obviously not possible to determine the particular kind of conical point represented. The fragment is 44 mm in length.

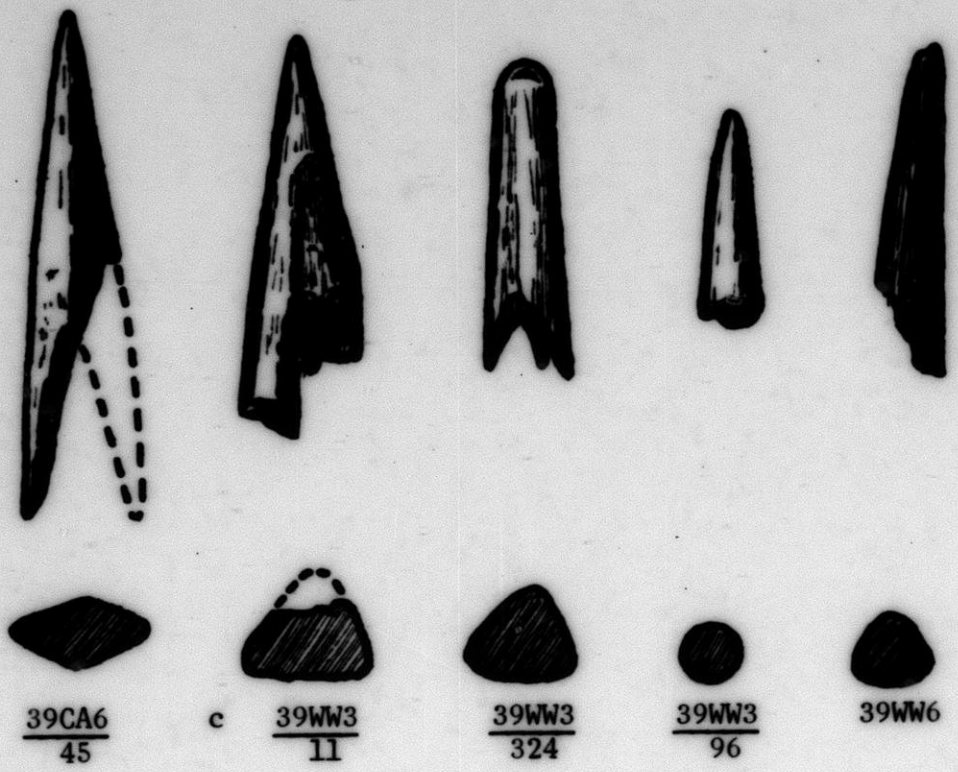



Figure 91. Various forms of Conical Antler Points.

## Multi-barbed, Conical Antler Point

At 39WW3 (# 324 from Feature 8) a conical antler point, 39 mm in length, was found. The basal area is notched to form three sharp barbs, 8 mm in length and 7 mm in maximum width. A small perforation in the socket continues a few millimeters into the base of the implement. The sides of the point are somewhat flattened to give a subtriangular section and the tip is bluntly rounded rather than sharp.

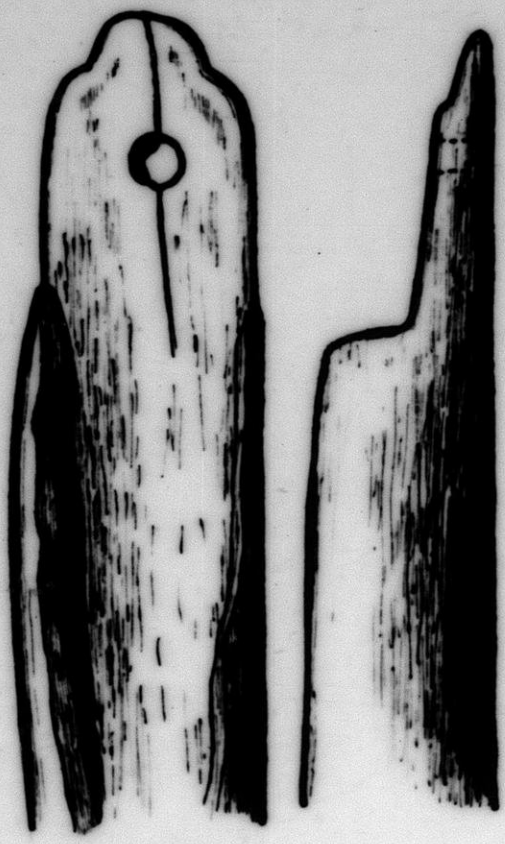
A somewhat similar point in the Bamble Collection from 39CA6 is notched at the base to provide four barbs 5 mm in length. The hollow in the base is somewhat larger, having a total depth of 16 mm. The specimen is round in cross section and has a maximum length of 44 mm.

A second specimen from 39CA6 in the Bamble Collection with four basal barbs is 61 mm in maximum length with barbs that are 5 mm long and a basal socket 11 mm deep.

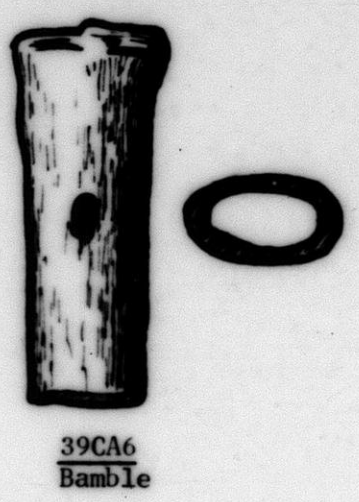
The implement type may be compared to the slightly larger point (78 mm in length) having three barbs that was found at the Humphrey site in Nebraska, a component of the Dismal River culture (Gunnerson, 1960: 199).

## Antler Effigies

From 39WW3 (# 439, from Feature 15, Cache pit 5) a carved section of antler, 52 mm in length, resembling a phallus was recovered. The base contains a conical socket about 12 mm in depth resembling that of the conical antler points but this area is clearly fragmentary. Another section of antler from this site (# 414 from Feature 17) also comprises a small fragment, 29 mm in length, with a bulbous swelling at one end that may represent a similar object.

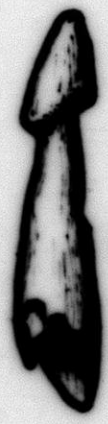


39CA6
Bamble

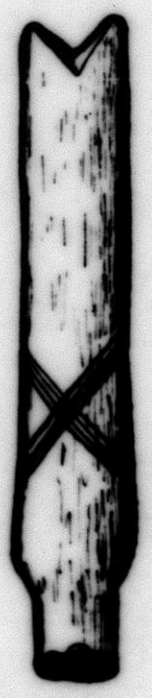


39CA6
Bamble

39CA6
Bamble



39WW3
439



39CA6
Bamble

Figure 92. Antler Effigy and Miscellaneous Bone Tools from the Bamble Collection.

## Antler Sections

From both 39CA6 and 39WW3 a number of large sections of antler were recovered. It is difficult to determine whether these sections were designed and utilized as tools in their present condition or whether they comprise the raw material from which it was intended that tools would be manufactured. We have segregated under the above heading those large examples that perhaps comprise tools in their own right while the smaller pieces that more clearly served as raw material or waste rejectage in the manufacture of tools are considered in connection with the discussion of bone working techniques.

39CA6 produced two large antler sections that could have served as picks or digging tools. One specimen (# 1 found on the surface) consists of a section of the beam of an elk antler with one tine attached. An attempt was made to chop through the beam, a portion of this chopped groove remaining on the specimen. However, it apparently broke unevenly leaving a portion of this groove intact. This sector is roughly worn and shows no further workmanship. The remainder of the beam is roughly broken off above the tine and only the latter shows polish and smoothing which may be the result of use. The length of the specimen is 45.5 cm. A second specimen from this site (# 131 from Feature 4) consists of a long, single beam still attached to the pedicle and below the pedicle a portion of the skull which has been chopped away and not smoothed in any fashion. Although the tip of the antler had been broken off, the fractured section has been smoothed by extensive use. The specimen is probably an antelope, and its length is 458 mm.

From 39WW3, two large, heavy sections of elk antler also suggest that they have been used in their present condition. One example (# 451 from Cache 9 in Feature 15) is 28.3 cm in length. The butt end of the beam, 42 mm in diameter, has been broken off squarely and shows no further modification. The tip had been broken off at a point where the width tapers to 29 mm and at this point the diagonal bevel shows extensive wear and polish as though from continued use. A second section, of comparable dimensions so far as diameter is concerned, bears rough breaks at both ends. The fragment 21 cm in length, shows wear and polish at the end of narrow diameter comparable to the first specimen. This specimen (# 252) was recovered from Cache 1 of Feature 15.

## Other Worked Bone

As in most archaeological collections, this assemblage contains a number of items difficult to classify. In part they represent bones modified as a result of human activity but perhaps not brought to the stage of completed tools. The objects to be described in this section, however, can not be equated with any degree of certainty to finished tool types. Despite this, such forms do require careful study since, with further knowledge, they may provide additional insights to activities carried on at the sites.

Cut bison horn cores. Both 39WW3 and 39CA6 produced a few bison horn cores that had been trimmed from the skull immediately at the point of juncture of horn core and skull or to allow a small portion of the frontal bone to remain with the horn core. The trimming exhibits a series of facets that suggest the use of a sharp metal tool to accomplish the action. No

further modification, such as smoothing of the chopped edge, is to be seen on the specimens. The provenience and length of the specimens are as follows:

| Specimen # | Site | Location | Max. Length (mm) |
|---|---|---|---|
| 132 | 39CA6 | Fea. 2, Cache 2 | 171 |
| 132 | 39CA6 | Fea. 2, Cache 2 | 172 |
| 132 | 39CA6 | Fea. 2, Cache 2 | 158 |
| 469 | 39WW3 | Surface | 128 |
| 487 | 39WW3 | Feature 8 | 140 |

The final specimen in this series (# 487) is split longitudinally and the greater portion of the horn core is missing. This is the only specimen in the group which is clearly from a large, mature bison and comparable in size to the ones used in the manufacture of a bison skull hoe. For this particular one, we may suggest that the trimming and removal of the one horn core could have been a preliminary step in the manufacture of a bison skull hoe, this being the portion of the skull that was discarded. Support for this interpretation may be seen in the fact that its provenience in Feature 8 coincides with the location where most of the bison skull hoes were found. This explanation, however, can not be used for the smaller horn cores for which no direct comparison with finished artifacts can be made at the site.

Cut bison horn. Sections of the tip of the bison horn were occasionally found at the sites but only rarely do they exhibit indications of intentional modification. Their scarcity, of course, may reflect the fact that they are less resistant to decay than the tougher bone objects. A section of horn from 39WW3 (# 277 from Feature 15, Cache 9) is 73 mm in length, 32 mm in max-

imum diameter, and appears to have been smoothly ground at its base. A straighter and more eroded specimen from 39CA6 (# 42 from Feature 3, Cache 3) is 75 mm in length and 21 mm in maximum diameter. It appears to have been roughly chopped to sever the tip of the horn.

Figure 92 illustrates various exotic forms from the Bamble Collection recovered at 39CA6.

## SHELL IMPLEMENTS

### Shell Beads

Shell beads whose size and thickness suggest they were manufactured from a marine conch shell were found in two shape categories at 39WW3. One variety is a large, massive bead of a barrel-shaped form. Two examples of this form were found, one on the surface and the other associated with Feature 3 (specimen # 12). They are 31 and 27 mm in length with a maximum diameter of 17 and 16 mm respectively. The maximum diameter is at the midpoint of the specimens, the beads tapering to 13 and 11 mm at the flattened extremities. They are perforated longitudinally, the diameter of the perforation being 4-5 and 3 mm in size.

A second form of shell bead, confined to one example found on the surface of 39WW3, is clearly manufactured from the columella of the inner part of a marine conch for the specimen has a U-shaped cross section derived from this sector. It is 24 mm in maximum length and 18 mm in width and bears a double biconical perforation at each end.

39WW3
1B

39WW3
1B

Figure 93. Shell Beads.

## Shell Scrapers

None of the three sites described in this report contained sufficient quantities of freshwater clam shells to suggest that these formed an important element in the diet. Occasionally they appear to have been brought back to the site and occasionally they are found with the margin of the shell worn smooth as though through use as a scraper. These would appear to occur with such a proportionately greater frequency at 39WW10 to make it desirable to give an indication of the ration between worked and unworked specimens.

| | 39WW3 | 39WW10 | 39CA6 |
|---|---|---|---|
| Worked shell scrapers and fragments of shell scrapers . . . . . | - | 10 | 3 |
| Unworked shells and shell fragments . . | 4 | 7 | 11 |

The figures tallied above may be misleading since a shell scraper can only be so identified when a portion of the worn and smoothed edge of the shell is preserved. This edge could readily decompose and be removed by breakage. However, all of the fragments of "unworked" shells from 39WW10 are quite small pieces of shell while from both 39WW3 and 39CA6 the shells and shell fragments comprise comparatively large sections of the clams. This, combined with the much smaller total sample derived from the work at 39WW10, would seem to clearly support the suggestion of a much greater use of the shell as a tool at 39WW10. As a "scraper" it may well have served a variety of uses including, perhaps, the shaping and smoothing of pottery vessels.

No marked preference seems to have been indicated for either the left valve (6 examples) or the right valve (4 examples), where this could be determined. The wear facet on the margin of the shell appears to be gen-

erally centrally placed and to show a gentle, convex curvature. One specimen bears two wear facets, the sector toward the anterior end being straight and parallel to the long axis of the shell which joins a diagonal wear facet at the posterior end. Both moderately large shells (c. 95 mm in length) and small shells (c. 70 mm in length) were used for this purpose.

## Shell Implement (?)

At 39WW3, a small, subrectangular section of freshwater clam shell was found in Cache pit 8 of Feature 8. The section of shell has dimensions of 44 x 19 x 4 mm. The section is from the ventral margin of the shell and one end is rounded and appears to have been worn smooth through use. The fragile nature of the shell, however, makes the identification of the worn end exceedingly tentative.

## CHIPPED STONE IMPLEMENTS

### ARROW POINTS

Side-notched triangular. The most common shape in the group is a triangular form with a straight-sided expansion from tip to base, the latter being either straight or slightly concave. The notches are inserted at a right angle to the long axis of the point and placed at a position which is one-fifth to one-sixth of the total length in most instances. The points are delicately and precisely flaked by a pressure retouch. This, combined with the wide range of colorful materials from which the points were made, results in an extremely attractive assemblage of specimens from an aesthetic point of view.

The side-notched group could be subdivided into a rather large number of varieties on the basis of minor variations in form. Although the line of the side most commonly continues in the same direction below the notch, in some the area below the notch is straight, slightly convex or contracting. Fine serrations also appear on the sides of the blade of some points. The use of these attributes, together with the variability in basal form which is surely of equal significance, would result in a classification of considerable complexity with a quite low frequency in each category. It seems more reasonable to assume we are dealing, for purposes of cultural comparisons, with a single side-notched category that is somewhat variable in minor attributes.

In the tables given below, measurements are given only when that particular dimension (length or width) is intact. Measurements are rounded to the nearest millimeter. The relative frequency at the three sites is given following the presentation of the other arrow point forms.

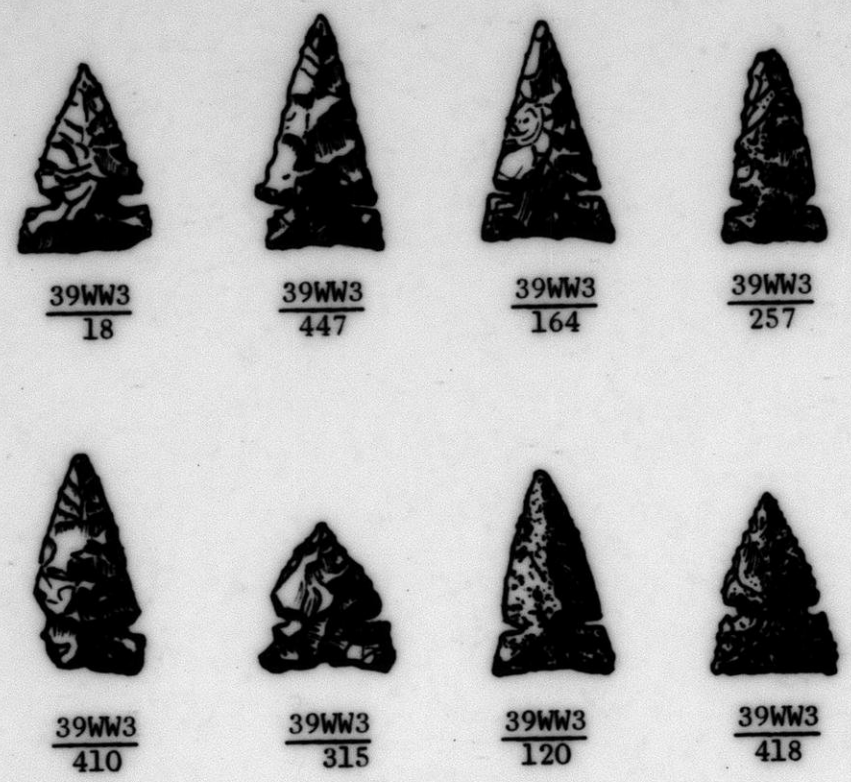



Figure 94. Side-notched Triangular Points.

## Table 53. Maximum Length - Side-Notched Points

| Mm | 39WW3 | 39WW10 | 39CA6 | Total |
|---|---|---|---|---|
| 14 | 1 | - | - | 1 |
| 15 | - | - | - | - |
| 16 | 1 | - | - | 1 |
| 17 | - | - | - | - |
| 18 | - | - | 1 | 1 |
| 19 | 1 | - | 1 | 2 |
| 20 | 1 | - | 1 | 2 |
| 21 | 1 | - | 2 | 3 |
| 22 | 2 | 1 | 1 | 4 |
| 23 | 4 | - | 1 | 5 |
| 24 | 1 | - | 1 | 2 |
| 25 | 1 | - | 1 | 2 |
| 26 | 1 | - | - | 1 |
| 27 | 3 | - | - | 3 |
| 28 | 2 | - | - | 2 |
| 29 | 2 | - | - | 2 |
| Total | 21 | 1 | 9 | 31 |
| Mean Length | 23.6 | 22 | 21.4 | 23.7 |

Table 54. Maximum Width - Side-Notched Points

| Mm | 39WW3 | 39WW10 | 39CA6 | Total |
|---|---|---|---|---|
| 11 | 1 | - | - | 1 |
| 12 | 1 | 1 | 1 | 3 |
| 13 | - | - | 1 | 1 |
| 14 | 2 | - | 3 | 5 |
| 15 | 9 | - | 1 | 10 |
| 16 | 6 | 1 | - | 7 |
| 17 | 4 | 1 | 2 | 7 |
| 18 | 2 | - | - | 2 |
| 19 | 1 | - | - | 1 |
| Total | 26 | 3 | 8 | 37 |
| Mean Width | 15.2 | 15.0 | 14.5 | 15.2 |

Table 55. Maximum Thickness - Side-Notched Points

| Mm | 39WW3 | 39WW10 | 39CA6 | Total |
|---|---|---|---|---|
| 2 | 2 | - | 2 | 4 |
| 3 | 32 | 3 | 10 | 45 |
| 4 | 5 | - | 2 | 7 |
| 5 | 1 | 1 | - | 2 |
| Total | 40 | 4 | 14 | 58 |
| Mean Thickness | 3.1 | 3.5 | 3.0 | 3.1 |

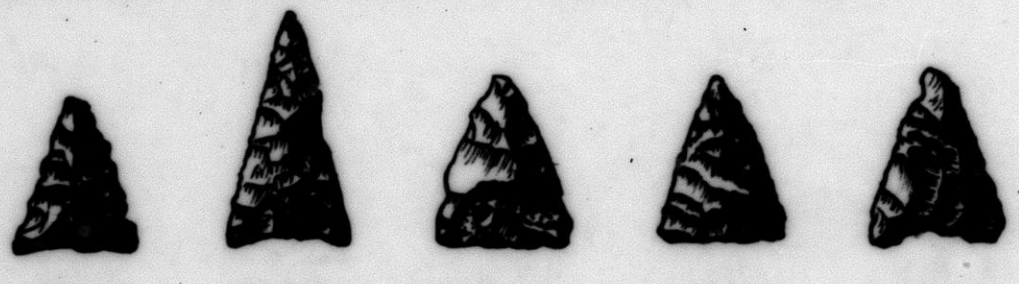
Table 56. Association of Length and Width - Side-Notched Points (all sites)

| LENGTH (mm) | WIDTH (mm) 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| 14 | 1 | - | - | - | - | - | - | - | - | 1 |
| 15 | - | - | - | - | - | - | - | - | - | - |
| 16 | - | - | - | - | 1 | - | - | - | - | 1 |
| 17 | - | - | - | - | - | - | - | - | - | - |
| 18 | - | - | 1 | - | - | - | - | - | - | 1 |
| 19 | - | - | - | - | - | - | 1 | - | - | 1 |
| 20 | - | - | - | - | - | - | 1 | - | - | 1 |
| 21 | - | - | - | - | 1 | - | 1 | - | - | 2 |
| 22 | - | 2 | - | - | 1 | 1 | - | - | - | 4 |
| 23 | - | - | 1 | 1 | - | 1 | - | 1 | 1 | 5 |
| 24 | - | - | - | - | 2 | - | - | - | - | 2 |
| 25 | - | 1 | - | - | - | - | - | - | - | 1 |
| 26 | - | - | - | - | 1 | - | - | - | - | 1 |
| 27 | - | - | - | - | - | 2 | 1 | - | - | 3 |
| 28 | - | - | - | - | - | - | - | - | - | - |
| 29 | - | - | - | - | 1 | - | - | - | - | 1 |
| Total | 1 | 3 | 2 | 1 | 7 | 4 | 4 | 1 | 1 | 24 |

Table 57. Association of Length and Weight - Side-Notched Points
(All sites - weight rounded to nearest tenth of a gram)

| LENGTH (mm) | Weight in Grams .4 | .5 | .6 | .7 | .8 | .9 | 1.0 | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | 1 | - | - | - | - | - | - | - | - | - | - | - |
| 15 | - | - | - | - | - | - | - | - | - | - | - | - |
| 16 | - | - | 1 | - | - | - | - | - | - | - | - | - |
| 17-18 | - | - | - | - | - | - | - | - | - | - | - | - |
| 19 | - | - | - | - | - | 1 | - | - | - | - | - | - |
| 20 | - | - | - | - | - | - | - | - | - | - | - | 1 |
| 21 | - | - | - | - | - | 1 | - | - | - | - | - | 1 |
| 22 | - | - | - | 1 | 1 | - | 1 | - | 1 | - | - | - |
| 23 | - | - | - | - | - | 1 | - | 2 | - | - | - | - |
| 24 | - | - | - | 1 | - | 1 | 1 | - | - | - | - | - |
| 25 | - | - | - | - | - | 1 | - | - | - | - | - | - |
| 26 | - | - | - | - | - | 1 | - | - | - | - | - | - |
| 27 | - | - | - | - | - | 1 | - | - | 1 | 1 | - | - |
| 28 | - | - | - | - | - | - | - | - | - | - | - | - |
| 29 | - | - | - | - | - | - | - | - | 1 | - | - | - |
| Total | 1 | - | 1 | 2 | 1 | 7 | 2 | 2 | 3 | 1 | 1 | 2 |

Simple triangular. While this form could be regarded as comparable to the side-notched point, though lacking the notches, this would be an over-simplification of the situation. The simple triangular group embraces a far broader range so far as size, proportions and workmanship is concerned. The group is limited to those points which are fashioned from a thin, delicate flake. They vary so far as the extent of secondary pressure retouch is concerned from those carefully finished points with delicate flaking on both faces to specimens having one or both faces comprising large primary flake scars and only the edges modified by a pressure retouch. The retention of such large primary flake scars is extremely rare in the side-notched group for those specimens tend to be more carefully finished. A broader range in proportions is also found in the simple triangular group where both long slender forms and broad varieties approaching the shape of an equalateral triangle are to be seen. This range in proportion as well as in size is best seen in an inspection of the tables which follow. We have also tabulated the relative frequency of straight, convex and concave blade outlines and straight, convex and concave bases. The long, slender point with slight concave blade would appear to be a variant not adapted, perhaps because of excessive fragility, to use with side notches.



39WW3/18 39WW3/23 39WW3/185 39WW3/412 39WW3/125

Figure 95. Simple Triangular Points.

Table 58. Maximum Length - Simple Triangular Points

| Mm | 39WW3 | 39WW10 | 39CA6 | Total |
|---|---|---|---|---|
| 14 | 1 | - | - | 1 |
| 15 | 2 | - | - | 2 |
| 16 | 1 | - | - | 1 |
| 17 | - | - | 1 | 1 |
| 18 | 1 | - | - | 1 |
| 19 | 4 | - | 2 | 6 |
| 20 | 4 | 1 | 1 | 6 |
| 21 | 5 | 1 | - | 6 |
| 22 | 9 | - | 2 | 11 |
| 23 | 8 | - | 1 | 9 |
| 24 | 2 | - | - | 2 |
| 25 | 4 | - | - | 4 |
| 26 | 4 | - | 2 | 6 |
| 27 | 4 | - | 2 | 6 |
| 28 | 3 | - | - | 3 |
| 29 | 2 | - | 1 | 3 |
| 30 | 4 | - | - | 4 |
| 31 | 1 | - | 1 | 2 |
| 32 | - | - | 3 | 3 |
| 34 | 1 | - | 1 | 2 |
| 35 | - | 1 | - | 1 |
| Total | 60 | 3 | 17 | 80 |
| Mean Length | 23.6 | 25.3 | 25.7 | 24.1 |

Table 59. Maximum Width - Simple Triangular Points

| Mm | 39WW3 | 39WW10 | 39CA6 | Total |
|---|---|---|---|---|
| 10 | 1 | - | - | 1 |
| 11 | 2 | - | - | 2 |
| 12 | - | - | 4 | 4 |
| 13 | 4 | 1 | 1 | 6 |
| 14 | 12 | 3 | 1 | 16 |
| 15 | 18 | 2 | 7 | 27 |
| 16 | 16 | - | 2 | 18 |
| 17 | 12 | 1 | 6 | 19 |
| 18 | 8 | - | 3 | 11 |
| 19 | 13 | - | - | 13 |
| 20 | 3 | 1 | - | 4 |
| 21 | 2 | - | - | 2 |
| 24 | - | - | 1 | 1 |
| Total | 91 | 8 | 25 | 124 |
| Mean Width | 16.3 | 15.2 | 15.7 | 16.0 |

Table 60. Maximum Thickness - Simple Triangular Points

| Mm | 39WW3 | 39WW10 | 39CA6 | Total |
|---|---|---|---|---|
| 2 | 17 | 1 | 2 | 20 |
| 3 | 59 | 3 | 13 | 75 |
| 4 | 39 | 5 | 7 | 51 |
| 5 | 11 | - | 2 | 13 |
| 6 | 2 | - | - | 2 |
| Total | 128 | 9 | 24 | 161 |
| Mean Thickness | 3.4 | 3.4 | 3.4 | 3.4 |

Table 61. Association of Length and Width - Simple Triangular Points (all sites)

| LENGTH (mm) | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 24 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | - | - | - | - | - | 1 | - | - | - | - | - | - | - | 1 |
| 15 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | 1 |
| 16 | - | 1 | - | - | - | - | - | - | - | - | - | - | - | 1 |
| 17 | - | - | - | - | - | - | - | 1 | - | - | - | - | - | 1 |
| 18 | - | - | - | - | 1 | - | - | - | - | - | - | - | - | 1 |
| 19 | - | 1 | 1 | 1 | 2 | 2 | - | - | - | - | - | - | - | 7 |
| 20 | - | - | - | 2 | - | 3 | 1 | - | - | - | - | - | - | 6 |
| 21 | - | - | - | - | 2 | 1 | 3 | - | - | - | - | - | - | 6 |
| 22 | - | - | - | - | - | 1 | 2 | 1 | 2 | 1 | - | - | - | 7 |
| 23 | - | - | - | - | - | 3 | - | 1 | - | 1 | 1 | - | - | 6 |
| 24 | - | - | - | - | - | - | - | 1 | - | - | - | - | - | 1 |
| 25 | - | - | - | - | 1 | - | - | - | 1 | - | - | - | - | 2 |
| 26 | - | - | - | - | - | 1 | 1 | 2 | - | - | - | - | - | 4 |
| 27 | - | - | - | - | 1 | 2 | - | 1 | - | - | - | - | - | 4 |
| 28 | - | - | - | - | - | - | 1 | - | - | 1 | - | 1 | - | 3 |
| 29 | - | - | - | - | - | 2 | - | - | - | - | - | - | - | 2 |
| 30 | - | - | - | - | - | 2 | - | 1 | - | - | - | - | - | 3 |
| 31 | - | - | - | - | 2 | - | - | - | - | - | - | - | - | 2 |
| 32 | - | - | - | - | - | - | - | - | 1 | - | - | - | - | 1 |
| 33 | - | - | 1 | - | - | - | - | - | - | - | - | - | - | 1 |
| 34 | - | - | - | - | - | - | - | - | - | - | - | - | 1 | 1 |
| 35 | - | - | - | - | - | 1 | - | - | - | - | - | - | - | 1 |
| Total | 1 | 2 | 2 | 3 | 9 | 19 | 8 | 8 | 4 | 3 | 1 | 1 | 1 | 62 |

Table 62. Length and Weight of Simple Triangular Points
(All sites - weight rounded to nearest tenth of a gram)

| LENGTH (mm) | Weight in Grams .4 | .5 | .6 | .7 | .8 | .9 | 1.0 | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.1 | 2.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 15 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 16 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 17 | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| 18 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 19 | - | 2 | 2 | - | - | - | 1 | 1 | - | - | - | - | - | - | - | - | - | - |
| 20 | - | 1 | 1 | - | 1 | 1 | - | 1 | - | - | - | - | - | - | 1 | - | - | - |
| 21 | - | - | 1 | - | - | 4 | 1 | - | - | - | - | - | - | - | - | - | - | - |
| 22 | - | - | - | 1 | - | 1 | 1 | 1 | - | 1 | - | - | - | - | - | - | - | - |
| 23 | - | - | - | - | - | 1 | - | - | - | - | 3 | - | - | - | 1 | - | 1 | - |
| 24 | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - |
| 25 | - | - | - | - | 2 | - | - | - | - | - | - | - | - | 1 | - | - | - | - |
| 26 | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - |
| 27 | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | 1 | - | - | - |
| 28 | - | - | - | - | - | - | - | 1 | - | - | - | - | - | 1 | - | - | - | 1 |
| 29 | - | - | - | - | - | - | - | - | - | 1 | - | 1 | - | - | - | - | - | - |
| 30 | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | 1 | - | - |
| 31 | - | - | - | - | - | - | 1 | - | - | - | - | - | 1 | - | - | - | - | - |
| 32 | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - |
| 33 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 34 | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - |
| 35 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - |
| Total | 2 | 4 | 4 | 1 | 3 | 9 | 4 | 7 | 1 | 2 | 4 | 1 | 1 | 2 | 3 | 2 | 1 | 1 |

Heavy triangular points. We have placed in a separate group, a series of much thicker, more substantial triangular points. They are manufactured from larger and thicker flakes with a pressure retouch on both faces being required to thin the flake and bring it to the required form. While such points grade subtly from the simple triangular point, they approach in appearance a bifacial knife form. Their short length and distinct base, however, indicates a function as a projectile point. Although extensive pressure retouch may be present, an appearance of crudity in comparison to the two previous categories is still suggested.

39WW3/37 39WW3/32 39WW3/429 39WW3/207

39WW3/17 39WW3/174 39WW3/298

Figure 96. Heavy Triangular Points.

Table 63. Maximum Length - Heavy Triangular Points

| Mm | 39WW3 | 39CA6 | Total | (Weight - Gms.) |
|---|---|---|---|---|
| 28 | 1 | - | 1 | 4.2 |
| 29 | 1 | - | 1 | - |
| 30 | - | 1 | 1 | 3.7 |
| 31 | - | 1 | 1 | 5.5 |
| 32 | 1 | - | 1 | 5.0 |
| 33 | 1 | 2 | 3 | 3.4; 4.5; 5.0 |
| 34 | - | 1 | 1 | 2.7 |
| 35 | - | 1 | 1 | - |
| 36 | 1 | - | 1 | - |
| 42 | 1 | - | 1 | 6.2 |
| 43 | 1 | - | 1 | 6.4 |
| 46 | - | 1 | 1 | - |
| Total | 7 | 7 | 14 | |
| Mean Length | 34.7 | 34.6 | 34.6 | |

Table 64. Maximum Width - Heavy Triangular Points

| Mm | 39WW3 | 39WW10 | 39CA6 | Total |
|---|---|---|---|---|
| 15 | - | - | 1 | 1 |
| 20 | 2 | - | 1 | 3 |
| 21 | - | - | 1 | 1 |
| 23 | 3 | - | 2 | 5 |
| 24 | - | 1 | 1 | 2 |
| 25 | 1 | - | 1 | 2 |
| 27 | 1 | - | - | 1 |
| 28 | 1 | - | - | 1 |
| 29 | - | - | 1 | 1 |
| Total | 8 | 1 | 8 | 17 |
| Mean Width | 23.6 | 24 | 22.6 | 23.1 |

Table 65. Maximum Thickness - Heavy Triangular Points

| Mm | 39WW3 | 39WW10 | 39CA6 | Total |
|---|---|---|---|---|
| 5 | 2 | - | 2 | 4 |
| 6 | 1 | - | 3 | 4 |
| 7 | 4 | 1 | 1 | 6 |
| 8 | 2 | - | 2 | 4 |
| 10 | 1 | - | - | 1 |
| Total | 10 | 1 | 8 | 19 |
| Mean Thickness | 7.0 | 7.0 | 6.3 | 6.7 |

Table 66. Relative Frequency of Arrow Points

| | 39WW3 | 39WW10 | 39CA6 |
|---|---|---|---|
| Side-notched triangular points | 43 | 4 | 14 |
| Base straight | 15 | 2 | 2 |
| Base concave | 21 | 2 | 9 |
| Base convex | 1 | - | 1 |
| Simple Triangular points | 128 | 8 | 25 |
| Convex blade | 53 | 6 | 21 |
| Straight blade | 63 | 3 | 3 |
| Concave blade | 4 | - | - |
| Asymmetrical blade | 6 | - | 2 |
| Convex base | 10 | 1 | 8 |
| Straight base | 81 | 6 | 8 |
| Concave base | 37 | 2 | 11 |
| Heavy Triangular points | 10 | 1 | 10 |
| Convex blade | 4 | 0 | 6 |
| Straight blade | 6 | 1 | 0 |
| Asymmetrical blade | - | - | 3 |
| Convex base | 3 | - | 5 |
| Straight base | 6 | 1 | 3 |
| Concave base | 1 | - | 1 |
| Fragments of tip of small projectile points | 28 | 6 | 11 |

Unclassified projectile points. Included in this group are a number of large projectile points which are clearly deviant from the typical forms at the site. While these points may have been picked up by the occupants of the sites from earlier habitation areas, in most instances they were found in situations that clearly indicate their association with the complexes under analysis. In view of their variability, each is described individually.

39WW3: # 429. This large projectile point, found in Feature 15, made of brown chalcedony, has side notches which differentiate a bulbous stem. The base appears to have been ground to smooth the edges but extensive wear and polish on the edges of the blade suggest that much of this smoothing may be the result of extended handling. In fact, the smooth polish in the notches suggests it might have been suspended and worn as an ornament. The wear, therefore, does support the suggestion of its comprising an heirloom, charm, or simple curiosity but no longer a functional implement. The point has maximum dimensions of 79 x 29 x 8 mm.

39WW10: # 2. A somewhat similar bulbous stem is found on a projectile point from 39WW10 which was recovered in Cache 2 of Feature 1. It is associated, however, with a much broader and shorter blade. The blade and stem are sharp, lacking the smoothing and polishing of the preceding specimen. It is manufactured from a grey flint. The dimensions are 51 x 35 x 7 mm.

39WW10: # 1. Another large point from this site was found on the surface. Made of brown chalcedony, shallow notches at the side form a flaring stem which is combined with a markedly concave base. Like the preceding two points, the workmanship is excellent but in this instance comprising much more extensive pressure flaking. The tip of this point is missing but the maximum width is 27 mm and the thickness is 5 mm.

39CA6: # 95. Of a different character is a large side-notched point from 39CA6 which was found in Feature 7. Although this skilfully fashioned point of brown chalcedony is essentially similar to the small points common at the sites, its substantially greater dimensions place it in a separate category. The maximum width at the base is 35 mm and the thickness is 5 mm. A somewhat comparable point noted in the Bamble Collection from 39CA6 was also manufactured from brown chalcedony and possessed side notches and a concave base. This point was 64 mm long, had a maximum width of 31 mm and a thickness of 5 mm.

39WW3: # 244. This point, from Feature 8 and Cache pit 4, is a small lanceolate form, delicately flaked from brown chalcedony. Its dimensions were 30 x 11 x 4 mm.

39WW3: # 47. Although this specimen, found in Feature 5 is a side-notched point the sides of the blade are markedly convex and the area below the notches is small and pointed at the margins. The specimen is made of grey flint and has dimensions of 37 x 16 x 3 mm.

Three small projectile points from 39WW3 were not classified because of uncertainty in the shape concepts represented. Two small triangular points (# 244 from Feature 8, Cache pit 4; 452 from Feature 11) had a single notch on one side and may represent either unfinished forms or perhaps have a notch formed by an accidental break. The remaining specimen (# 406 from Feature 17) is also a notched point but the shape of the area below the notch is uncertain.

39CA6: # 32. The largest projectile point (perhaps a knife ?) was found in Feature 15, Cache 1. Made from reddish-brown quartzite, the blade is long, narrow and straight-sided. Below shallow notches a somewhat bulbous stem contracts to a straight base. No grinding or smoothing is found on

this specimen. The maximum length is 97 mm; the maximum width is 33 mm; and the maximum thickness is 32 mm.

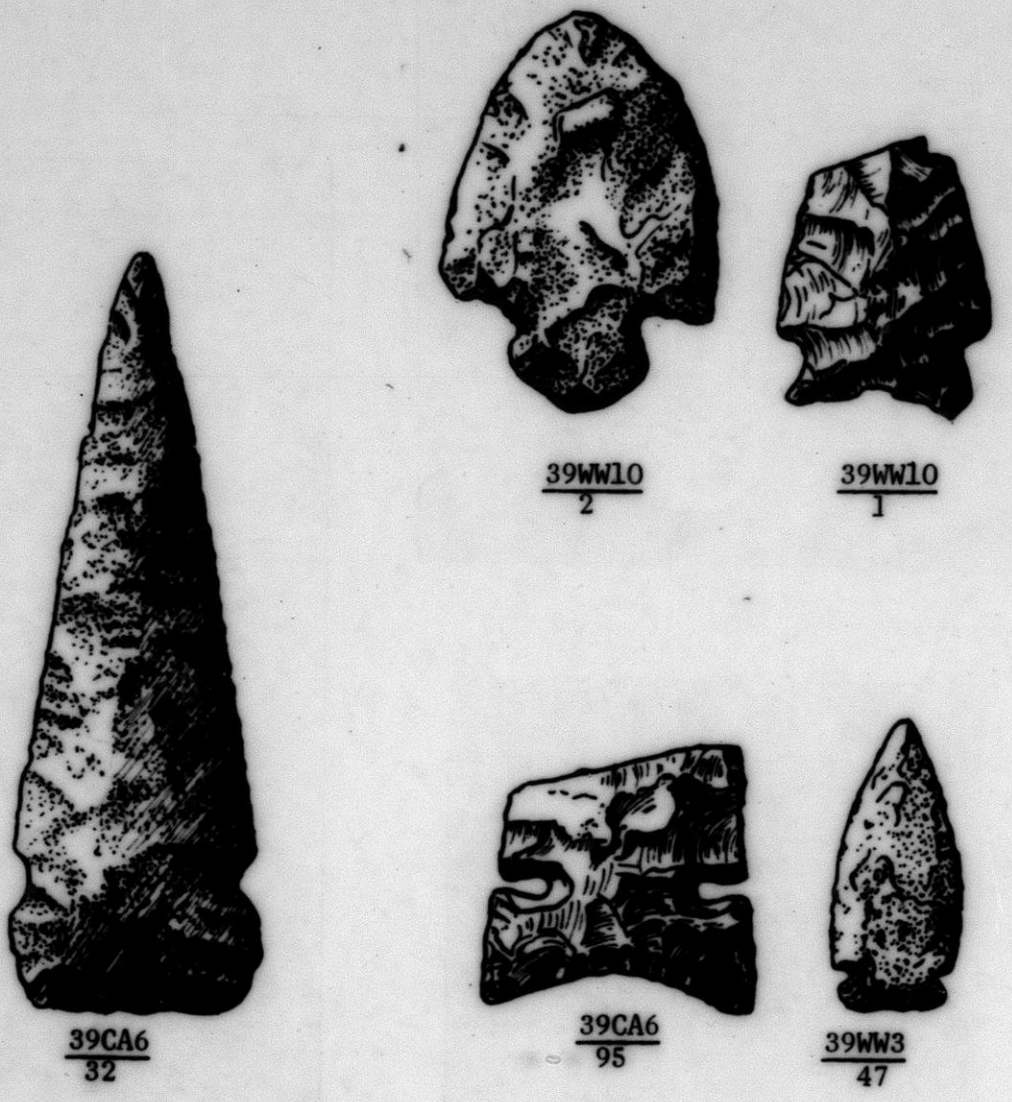



Figure 97. Unclassified Projectile Points.

## End Scrapers

The very considerable abundance of end scrapers at the various sites suggests that a precise analysis would be of use in revealing developmental trends within the cultural tradition or differences between village units. To facilitate comparison with other reports, it was first thought the classification used by Donald J. Lehmer (1954) for sites near Pierre, South Dakota could be used without modification. This classification seemed to provide reasonable sorting categories for the Mobridge material and had been demonstrated by Lehmer to reflect differences between components of his Pierre sites. The application of Lehmer's categories to the Mobridge material did not appear to satisfactorily reveal trends. In view of this it seemed desirable to modify the classification to take into consideration some attributes that might have been more important in the body of data with which we are here concerned. The distribution as a result of the modification in the classification seemed somewhat more satisfactory so far as revealing trends and differences were concerned but was not completely satisfying. Even grossly simplified classifications, based upon single attributes--size and the degree of modification of the dorsal surface--did not seem to be particularly useful in showing clear trends. The failure to discover such trends need not imply that they do not exist in the body of material being considered. Our approach may not have been a satisfactory one. Since the modified Lehmer classification appeared to be the most satisfactory one of those applied, we have retained this classification. Since it was not completely satisfactory, the groups are presented simply as numbered varieties. Aside from the difficulty of providing appropriate names for the slight variations that are involved, the failure to discovered significant historical

trends of change make it inappropriate to suggest their elevation to the status of named types.

Although we have retained the one classification for use in the report, it still may be of some interest to provide the data by which the results of the two classifications may be compared. This information is given in Table 67. The grouping into early, middle and late units so far as 39WW3 is concerned, was based in large part on the analysis of bone implements. A comparison of the distribution of the bone implement types previously described according to features suggest that some clear trends of change were present. The early group consisted of a combination of Features 1, 2, 3, 4, 5 and 18; the middle group consisted of a combination of Features 6, 7, 9, 11, 12, 13 and 16; and the late group consisted of a combination of Features 8, 10, 14, 15 and 17. When these groups are combined and the bone implements tabulated (see Table 67 for an example of the trends disclosed), some implement types show systematic patterns of change. Notched bone hoes predominate in the early units, with trimmed hoes gradually increasing in importance. Bone knife handles are absent in the earliest units, but become increasingly more important. Some awl types also show a similar pattern of change. 39WW10 is placed on the "early" end of the continuum of change on the basis of the absence of trade goods in this material. Operating under the assumption that such a grouping of components represents a valid sequence in time for the units being considered, a means of testing the adequacy of the end scraper classification is provided. A satisfactory classification should reveal similarly consistent trends of increasing or decreasing popularity in terms of the same grouping of excavation units. The fact that this is not revealed, as can be seen from Table 67, is our basis for evaluating the resultant classifications as

possibly unsatisfactory. Confirmation in the validity of a classification is considered to be found in concomittant trends in materials that are mutually independent. Thus as in Table 67, the classification of knife handle, or awl, is in no way dependent upon the classification of the scapula hoes.

Table 67. Trends of Changing Artifact Frequency for 39WW3 and 39WW10 as revealed by Grouped Excavation Units

| | 39WW10 | 39WW3 Early | 39WW3 Middle | 39WW3 Late |
|---|---|---|---|---|
| Simple Scapula hoe | 1 | 2 | 2 | 4 |
| Notched scapula hoe | 15 | 12 | 18 | 73 |
| Trimmed scapula hoe | - | - | 3 | 45 |
| Knife handle | - | - | 6 | 22 |
| Rib-edge awl | 9 | 18 | 14 | 33 |
| Cannon-bone awl | - | - | - | 2 |
| Split cannon-bone awl | 2 | 5 | 2 | 2 |
| Quartered metapodial awl | 7 | 3 | 1 | 3 |
| Splinter awl | 1 | - | 1 | 6 |
| Ulna awl | - | - | 1 | - |
| Flat split-rib awl | - | - | - | 2 |

Table 68. A Comparison of the Results in Classification of End Scrapers Using Varying Criteria for Categories.

| Lehmer Classification | 39WW10 | 39WW3 Early | 39WW3 Middle | 39WW3 Late | 39WW10 | 39WW3 Early | 39WW3 Middle | 39WW3 Late |
|---|---|---|---|---|---|---|---|---|
| 1 | 11 | 56 | 10 | 66 | 19% | 53% | 30% | 44% |
| 2 | 2 | 16 | 6 | 22 | 3% | 15% | 18% | 15% |
| 3 | 9 | 5 | 5 | 15 | 16% | 5% | 15% | 10% |
| 4 | 13 | 15 | 4 | 20 | 22% | 14% | 12% | 13% |
| 5 | 23 | 14 | 8 | 28 | 40% | 13% | 24% | 19% |
| | 58 | 106 | 33 | 151 | | | | |
| Revised Classification | | | | | | | | |
| 1 | 18 | 36 | 6 | 37 | 33% | 34% | 19% | 25% |
| 2 | 1 | 11 | 5 | 13 | 2% | 10% | 16% | 9% |
| 3 | - | 28 | 9 | 45 | - | 26% | 28% | 31% |
| 4 | 22 | 21 | 4 | 30 | 41% | 20% | 13% | 21% |
| 5 | 13 | 11 | 7 | 21 | 24% | 10% | 22% | 14% |
| | 54 | 107 | 32 | 146 | | | | |
| Small scrapers (26 mm -) | 21 | 48 | 17 | 59 | 38% | 48% | 55% | 47% |
| Large scrapers (27 mm -) | 34 | 53 | 14 | 67 | 62% | 52% | 45% | 53% |
| Dorsal face retouched | 16 | 74 | 16 | 93 | 27% | 69% | 49% | 68% |
| Dorsal face rough | 42 | 33 | 17 | 43 | 73% | 31% | 51% | 32% |

## Revised Classification of End Scrapers

Variety 1. This scraper category most closely parallels that suggested by Lehmer in his Group 1 (Lehmer, 1954: 58) scraper classification for the Dodd site. The form was earlier described by Hurt (1951) for the Swanson site as Type 1A and for the Spotted Bear Site (1954) as Type IIB. These scrapers are generally plano-convex, symmetrically triangular in outline, with a triangular cross section formed by the longitudinal ridge left as a result of pressure flaking along both sides of the implements. With but a few exceptions, the length along the longitudinal ridge exceeds the greatest width which usually

appears at the working edge. The working edge tends to be straight to moderately convex with the ends curving shaping back toward the tang. Measurement of the angle formed by the intersection of the working edge with the plane side revealed a range between 55-80 degrees with a mean of 68 degrees. The plane face is most often formed by a single flake scar but some specimens have two or three large flake scars with pressure retouching at the tang to facilitate hafting. The convex surface bears even pressure flaking over the entire surface except in some instances where the nodule surface conforms to the desired shape of the finished implement. Materials used seem to include all locally found stones (primarily river deposited gravel) having the property of conchoidal fracture: these include flint, chert, quartzite, jasper, chalcedony and petrified wood.

Table 69. Length, Width, Thickness, Chipped Stone End Scraper Variety 1, Compared by Site.

| | 39WW3 (N 79) | 39WW10 (N 19) | 39CA6 (N 31) |
|---|---|---|---|
| Length: Range in mm | 17-57 | 21-43 | 19-50 |
| Mean in mm | 28.1 | 28.9 | 34.8 |
| Width: Range in mm | 14-26 | 17-26 | 12-34 |
| Mean in mm | 21.3 | 20.5 | 26.6 |
| Thickness: Range in mm | 4-12 | 6-12 | 4-12 |
| Mean in mm | 7.5 | 8 | 9.7 |
| Mean length-width index | 71 | 75.4 | 79.3 |

39WW3
13

39WW3
201

39WW3
4

Figure 98. Chipped Stone End Scrapers - Variety 1.

Variety 2. Again described by Lehmer (1954: 58), this end scraper category is similar to Variety 1 except that (holding the scraper with the convex face toward the viewer and working edge up) the working edge slants to the left or to the right and, quoting Lehmer, "throws more than half of the cutting edge to one side or the other of the long axis. Intersection of the long side and the cutting edge tends to be a sharp corner." Material and flaking technique are identical to Variety 1.

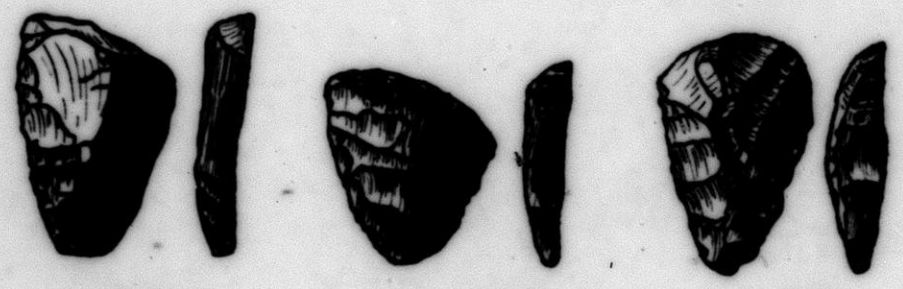
Table 70. Length, Width, Thickness, Chipped Stone End Scrapers Variety 2, Compared by Site.

| Left Slant | 39WW3 (N 14) | 39WW10 (N 3) | 39CA6 (N 9) |
|---|---|---|---|
| Length: Range in mm | 19-33 | 22-37 | 19-35 |
| Mean in mm | 25 | 28.3 | 22.2 |
| Width: Range in mm | 18-25 | 16-20 | 14-25 |
| Mean in mm | 20.7 | 18.7 | 21.6 |
| Thickness: Range in mm | 5-15* | 5-8 | 6-9 |
| Mean in mm | 7.2 | 6.7 | 7.2 |
| Mean length-width index | 82.5 | 64 | 97 |
| **Right Slant** | **39WW3 (N 16)** | **39WW10 (N 1)** | **39CA6 (N 6)** |
| Length: Range in mm | 19-31 | 24 | 22-27 |
| Mean in mm | 24.1 | 24 | 24.7 |
| Width: Range in mm | 14-24 | 17 | 17-24 |
| Mean in mm | 20 | 17 | 20.7 |
| Thickness: Range in mm | 4-8 | 5 | 5.7 |
| Mean in mm | 6.3 | 5 | 6.2 |
| Mean length-width index | 83 | 70.8 | 83.8 |

*A single specimen raised the upper limits of this range from 9 to 15 mm.

(Table 70 continued)

| Variety 2 Combined | 39WW3 (N 30) | 39WW10 (N 4) | 39CA6 (N 15) |
|---|---|---|---|
| Length: Range in mm | 19-33 | 22-37 | 21-35 |
| Mean in mm | 25 | 27.5 | 24.8 |
| Width: Range in mm | 14-25 | 16-20 | 17-25 |
| Mean in mm | 20.3 | 18 | 21.7 |
| Thickness: Range in mm | 4-15 | 5-8 | 5-9 |
| Mean in mm | 6.8 | 6.3 | 6.8 |
| Mean length-width index | 82.5 | 65.5 | 91.4 |



39WW3/105 39WW3/207 39WW3/56

Figure 99. Chipped Stone End Scrapers - Variety 2.

Variety 3. These end scrapers bear an even greater similarity to Variety 1 than do those of Variety 2. General descriptions for both categories are identical except that in Variety 3 the plane surface does not comprise a single primary flake scar but rather is formed by multiple primary or secondary flake scars. The flake scars on the plane surface tend to be larger than those appearing on the convex surface. It has not yet been determined whether or not the lack of information pertinent to this category in Plains' reports indicates its inclusion in other reported types or indicates its uniqueness in the Mobridge area. Hurt, however, mentioned bi-convex cross sections for his Type 4, avoid scrapers (1951), which are flaked on both sides. No comparable specimens were recovered from the Spiry site (39WW10).

Table 71. Length, Width, Thickness, Chipped Stone End Scrapers, Variety 3, Compared by Site.

| | 39WW3 (N 81) | 39CA6 (N 14) |
|---|---|---|
| Length: Range in mm | 18-46 | 22-47 |
| Mean in mm | 28.5 | 32.7 |
| Width: Range in mm | 16-31 | 17-31 |
| Mean in mm | 21.9 | 22.9 |
| Thickness: Range in mm | 5-15 | 5-10 |
| Mean in mm | 7.7 | 7.3 |
| Mean length-width index | 76.5 | 70 |

39WW3
37

39CA6
31

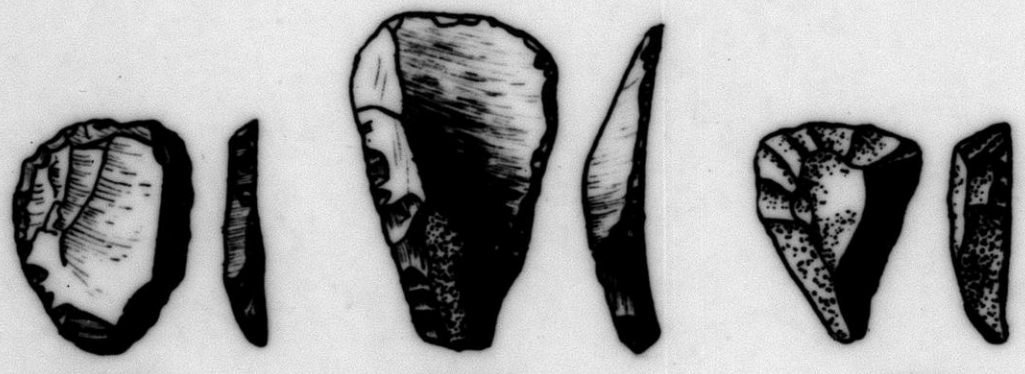
Figure 100. Chipped Stone End Scrapers - Variety 3.

Variety 4. Basically, these end scrapers appear identical to Variety 1 scrapers with the dorsal side truncated. The general triangular outline is present but the cross section is trapezoidal rather than triangular. Apparently, a flat flake with nearly parallel planes was selected and shaped around the perimeter only. The ventral face most often shows only a single flake scar whereas the dorsal face may bear two or more flake scars. The flake is oriented so that the thickest part is at the working edge and tapers to a thin edge at the tang. The shape of the working edge is similar to that of Variety 1. Tabulation of the working edge-plane angles revealed a range of 50-85 degrees with a mean of 74.5 degrees. But in contrast to Variety 1, approximately 50 percent ranged around 80 degrees with 65 percent of the specimens falling above the mean. The range of material used again follows Variety 1 very closely.

The Variety 4 scraper category for the Mobridge area scrapers is identical with Group 4 established by Lehmer (1954: 58). End scrapers made from a triangular flake with beveled sides and a trapezoidal cross section were also described by Hurt (1954).

Table 72. Length, Width, Thickness, Chipped Stone End Scrapers Variety 4, Compared by Site.

| | 39WW3 (N 64) | 39WW10 (N 15) | 39CA6 (N 23) |
|---|---|---|---|
| Length: Range in mm | 19-50 | 23-42 | 19-44 |
| Mean in mm | 29.3 | 28.6 | 27.5 |
| Width: Range in mm | 15-31 | 18-28 | 16-30 |
| Mean in mm | 21.9 | 22.8 | 22.1 |
| Thickness: Range in mm | 3-12 | 4-8 | 4-10 |
| Mean in mm | 6.9 | 6.5 | 6.3 |
| Mean length-width index | 74.9 | 80 | 80.2 |



39CA6/45 39WW10/25 39CA6/46

Figure 101. Chipped Stone End Scrapers - Variety 4.

Variety 5. The general outline, cross-section, shape of cutting edge and material used in the preceding descriptions also apply to Variety 5 of the end scrapers. Review of the accompanying tables reveal no distinct separating criteria for Variety 5 scrapers from Varieties 1 through 4 on the basis of size. The only diagnostic trait for Variety 5 end scrapers is the general lack of pressure flaking except along the working edges. The plane surface is most often formed by a single flake scar while the dorsal surface bears two or more flake scars. A few specimens bear a minimal amount of pressure retouching along one or both sides to make the implement conform to the roughly triangular outline typical of most of the scrapers found. This variety is described by Lehmer (1954: 58) as Group 5 in his report on the Dodd site. The Scalp Creek site yielded similar scrapers (Type 1A) described as being made from unifaced, slender flakes with triangular cross section and with flaking only at the cutting edge; Type 1B was similar except for some retouching at the sides (Hurt, 1952).

Table 73. Length, Width, Thickness, Chipped Stone End Scrapers Variety 5, Compared by Site.

| | 39WW3 (N 41) | 39WW10 (N 15) | 39CA6 (N 24) |
|---|---|---|---|
| Length: Range in mm | 16-44 | 22-52 | 17-56 |
| Mean in mm | 29.9 | 31.3 | 28.7 |
| Width: Range in mm | 13-34 | 15-23 | 14-25 |
| Mean in mm | 22.6 | 19.5 | 20.4 |
| Thickness: Range in mm | 4-10 | 5-10 | 4-12 |
| Mean in mm | 7 | 7.8 | 7.2 |
| Mean length-width index | 77.5 | 62.5 | 77.4 |

39WW10
13

39WW10
4

39WW10
5

Figure 102. Chipped Stone End Scrapers - Variety 5.

## Planoconvex Side Scrapers

This category is represented by only 5 side scrapers from the Bamble site (39CA6) and one from the Spiry-Eklo site (39WW3). They are comparatively large, roughly triangular, plano-convex scrapers that are pressure flaked on the two long sides and, in two instances, along the third side as well. The length of these implements tends to considerably exceed the width and the thickness is comparable to the general side scraper category. The implements appear to have been first roughed out by percussion flake with pressure retouching forming the edges. The plane face is formed by a single flake scar and is generally quite flat. Most of the perimeter could be considered a working edge. The angle formed by the working edge and the plane surface is quite shallow in four specimens. The material used was Tongue River orthoquartzite (four specimens) and chalcedony (two specimens). A distinctive attribute of the group is the blunt point formed by the two retouched edges which may well be an aspect of importance in the use of the implement.

Table 74. Planoconvex Side Scrapers.

| | 39CA6 (N 5) | 39WW3 (N 1) |
|---|---|---|
| Length: Range in mm | 45-83 | 45 |
| Mean in mm | 62 | |
| Width: Range in mm | 24-40 | 41 |
| Mean in mm | 23.6 | |
| Thickness: Range in mm | 5-12 | 6 |
| Mean in mm | 8.2 | |

One additional specimen (# 34 from 39CA6 found in Cache 6 of Feature 1) is tentatively placed in this category but not included in the above tabulation because of its deviation in size and form. The specimen is a large,

massive side scraper manufactured from grey Tongue River orthoquartzite. The convex surface has had its primary flake scars nearly completely obliterated by extensive retouching. The form deviates from others classed in this group in the absence of a pointed end where the two retouched long edges converge. However both long edges are carefully retouched for use as a scraper and the ends are also retouched though not as steeply beveled as the sides. The specimen is also deviant in its considerably greater dimensions, these being 100 by 44 by 20 mm.

39CA6/82 39CA6/34 39CA6/6

39CA6/6 39CA6/2 39WW3/207 39CA6/98

Figure 103. Planoconvex Side Scrapers.

## Unclassified End Scrapers

Tabulated under the various features from the sites will also be found a series of end scrapers designated "unclassified". In part these represent fragments where only a portion of the scraper is present, the fragment being not sufficiently large to permit precise classification. In all instances the fragments represent a portion of the working end of the scraper since a portion of the butt end of the scraper does not readily permit a functional identification. It was felt essential to consistently identify the fragments from a functional point of view, however, so that the proportion of such tools in the total assemblage could be fixed with reasonable precision.

The category, however, also includes some relatively large scrapers that are crudely made and frequently bear a thick keel suggesting that they have been manufactured from a very thick flake or core. All such specimens, however, do have a plane surface (formed by a single flake scar or several large primary flakes) and steeply retouched end comparable to the regular end scraper group. Except for deviant size (44-64 mm in length; 28-35 mm in width; and 12-16 mm in thickness), such specimens could be included in a Variety 5 group. Included also is an oval specimen (46 x 31 x 16 mm) bearing a steep dorsal ridge and retouched around its circumference. A chalcedony scraper from 39CA6 (# 66 from Feature 1, 6 inches below floor level) could be classified as Variety 2 with a left slant but the working end is extensively ground over the fine pressure retouch so that this margin is smooth and rounded.

## Side Scrapers

This category consists of comparatively large, irregular flakes that bear steep pressure retouching, comparable in form to the working edge of an end scraper, on one edge of the flake. While the retouched edge is most commonly straight, it was in some instances convex. The size and shape of the specimens are extremely variable but they tend to be roughly planoconvex in cross section. Tongue River orthoquartzite is most commonly found as a material but chert, petrified wood, chalcedony, plate chalcedony, silicified sediments and jasper was also used.

Table 75. Chipped Stone Side Scrapers.

| | 39WW3 (N 4) | 39WW10 (N 13) | 39CA6 (N 9) |
|---|---|---|---|
| Length: Range in mm | 44-62 | 33-84 | 32-71 |
| Mean in mm | 49.7 | 51.4 | 46.9 |
| Width: Range in mm | 22-43 | 26-62 | 19-46 |
| Mean in mm | 33.5 | 39.0 | 31.4 |
| Thickness: Range in mm | 5-8 | 8-13 | 4-16 |
| Mean in mm | 6.7 | 9.5 | 8.7 |

Figure 104 a. Chipped Stone Side Scrapers.

## Retouched Parallel-sided Flakes

A special form of the retouched flake category consists of a generally parallel-sided flake with a delicate retouch along one side. The retouched edge was most commonly straight was also found in a slightly convex form and the retouch at times extended around the end of the flake as well.

Table 76. Retouched Parallel-sided Flakes.

| | 39WW3 (N 5) | 39WW10 (N 6) | 39CA6 (N 6) |
|---|---|---|---|
| Length: Range in mm | 26-44 | 26-37 | 27-36 |
| Mean in mm | 37.4 | 31.3 | 31.3 |
| Width: Range in mm | 14-19 | 11-15 | 12-14 |
| Mean in mm | 16.2 | 13.3 | 13.0 |
| Thickness: Range in mm | 3-6 | 3-5 | 2-5 |
| Mean in mm | 4.4 | 4.3 | 4.0 |

39WW3/47 39WW3/47 39CA6/22 39CA6/6 39CA6/37

Figure 104 b. Retouched Parallel-sided Flakes.

## Retouched Flakes

We have sorted and placed in a separate category those comparatively thin, irregular flakes that bear a unifacial pressure retouch on one or more edges. Unlike the side scrapers, this retouched edge is comparatively delicate and could not withstand the hard usage a normal scraper edge implies. With the exception of the absence of plate chalcedony, the same types of material were used as for the side scrapers. The retouched edge may be straight, convex or concave and varies in length from short segments to comparatively long edges.

Table 77. Retouched Flakes.

| | 39WW3 (N 23) | 39WW10 (N 40) | 39CA6 (N 40) |
|---|---|---|---|
| Length: Range in mm | 20-40 | 20-63 | 15-53 |
| Mean in mm | 31.4 | 37.1 | 32.5 |
| Width: Range in mm | 13-36 | 15-48 | 12-38 |
| Mean in mm | 21.5 | 25.7 | 23.1 |
| Thickness: Range in mm | 3-10 | 3-15 | 2-14 |
| Mean in mm | 5.3 | 7.3 | 5.8 |

## KNIVES

The varieties of knives found in the Mobridge sites are markedly similar to those found in other Missouri Valley sites. An attempt has been made to use categories that would facilitate comparison.

Badlands knife. J. T. Hughes (1949: 270) used the term 'Badland knife' to designate knives made of thin, natural plates of chalcedony which are unshaped except on one edge or opposite edges. Wedel (1955: 109) cites this name in his description of specimens from sites in the Mobridge area. It is suggested that this name be accepted for the form which should be equated with the 'Group 5' knives of Lehmer (1954: 57, 104).

While the cutting edge is normally confined to one side of the specimen, it may include a side and an end or, more rarely, be found on two edges. It may consist of a short straight section or be markedly convex in form. Because of the absence of a finished outline, it is not possible to determine to what extent the smaller knives are fragments of larger specimens. It is of interest to note that about 15% of the specimens from all sites are not manufactured of the natural plates of chalcedony but rather from similar sections of other material--either petrified wood, flint or in one case of a schist.

This use of a diversity of material supports an interpretation that we are dealing with a specialized knife form, not one strictly conditioned by the nature of the raw material. It should, in any event, be noted that the tabular plates of chalcedony are reduced to thin, bifacial knives particularly in the case of the knife designated the Dodd knife. Perhaps the lack of adequate supplies of the plate chalcedony led to the use of other materials.

The sturdy, bifacial cutting edge produced on the implement is well adapted for a saw-like cutting action. In some examples it was noted that extensive use had markedly dulled the edges. Perhaps, as has been suggested in connection with the discussion of bone working techniques, such implements served in a primary capacity in cutting sections and splinters of bone.

Table 78. Badlands Knives.

| | 39WW3 | 39WW10 | 39CA6 |
|---|---|---|---|
| Badlands knife | 48 | 6 | 24 |
| Length: Range in mm | 26-114 | 40-83 | 29-92 |
| Mean in mm | 56.9 | 63.5 | 52.4 |
| Width: Range in mm | 15-70 | 24-68 | 16-62 |
| Mean in mm | 33.4 | 43.0 | 37.2 |
| Thickness: Range in mm | 4-12 | 5-12 | 6-13 |
| Mean in mm | 8.3 | 9.3 | 9.2 |

39WW3/252

39CA6/31

39CA6/71

Figure 105. Badlands Knives

Dodd knife. One of the distinctive knife forms described by Lehmer (1954: 57) which he designates 'Group 1' was characteristic of the assemblage at the Dodd site (39ST30). We have therefore designated the form by the name of this site.

The Dodd knife is a slender implement which has been bifacially retouched. On some of the specimens manufactured from plate chalcedony a portion of the original surface of the plate is retained along the central axis. General aspects of shape are difficult to characterize since an asymmetry in the long axis is frequently present. Some specimens, however, have generally parallel sides or possess a uniform degree of curvature on both sides. The ends of the implements are also extremely variable and in particular a large number of the specimens bear a straight fracture on one or both ends. Whether this latter attribute reflects a secondary break or is characteristic of the form is not known. Other ends are pointed, symmetrically or irregularly rounded and squared.

A few of the very slender specimens in this group resemble in their size a drill shaft but since they appear to grade in size from the more characteristic Dodd knife they have been placed with this group.

In view of the uncertainty as to what constitutes a complete knife, an averaging of the length of a series which includes fragments would not appear meaningful. The largest specimen is one from 39WW10 where one knife tapers from a diagonal break to a pointed tip, the length being 86 mm. A small series from 39WW3 with worked ends ranges between 46 and 77 mm in length and one from 39CA6 ranges between 38 and 69 mm. Since they may be more diagnostic of the form, width and thickness are tabulated individually.

39WW3
47

39WW10
45

39WW10
53

39WW10
22

39WW3
355

Figure 106. Dodd Knives.

Table 79. Variation in Width - Dodd Knives.

| Mm | 39WW3 | 39WW10 | 39CA6 | Total |
|---|---|---|---|---|
| 6 | - | - | 1 | 1 |
| 8 | - | - | 1 | 1 |
| 13 | 3 | - | - | 3 |
| 14 | 1 | - | - | 1 |
| 15 | 2 | 2 | 1 | 5 |
| 16 | 3 | - | 2 | 5 |
| 17 | 2 | - | 3 | 5 |
| 18 | 3 | - | - | 3 |
| 19 | 4 | - | - | 4 |
| 20 | 2 | - | - | 2 |
| 21 | 3 | 1 | - | 4 |
| 22 | 2 | - | 2 | 4 |
| 23 | 1 | - | 1 | 2 |
| 24 | - | 1 | - | 1 |
| 25 | 2 | - | 1 | 3 |
| 26 | 5 | 1 | 1 | 7 |
| 27 | - | - | 1 | 1 |
| 28 | 1 | 2 | 1 | 4 |
| 29 | 2 | - | - | 2 |
| 30 | - | 1 | - | 1 |
| 32 | 1 | - | - | 1 |
| 33 | - | - | 1 | 1 |
| Total | 37 | 8 | 16 | 61 |
| Mean Width | 20.6 | 23.4 | 19.9 | 20.8 |

Table 80. Variation in Thickness - Dodd Knives.

| Mm | 39WW3 | 39WW10 | 39CA6 | Total |
|---|---|---|---|---|
| 4 | 3 | - | - | 3 |
| 5 | 6 | - | 1 | 7 |
| 6 | 8 | 1 | 5 | 14 |
| 7 | 13 | - | 7 | 20 |
| 8 | 5 | 4 | 3 | 12 |
| 9 | 1 | - | - | 1 |
| 10 | - | 1 | - | 1 |
| 11 | 1 | 1 | - | 2 |
| 13 | - | 1 | - | 1 |
| Total | 37 | 8 | 16 | 61 |
| Mean Thickness | 6.5 | 9.0 | 6.7 | 6.9 |

Broad, bifacial knives. While the Dodd knife, described above, is a distinctive form which should be readily recognizable at other sites the remaining group of major numerical importance can not be so characterized. Essentially the category may be comparable to Group 2 as described by Lehmer (1954: 57) for the Dodd site but we are unable to segregate fragments of Lehmer's Group 3 knives from the Dodd site ("large symmetrical leaf-shaped blades") nor to differentiate his Group 6 knives from the Phillips Ranch site ("long, narrow, leaf-shaped blades," ibid. p. 104). Our category of broad, bifacial blades is a residual one from which the knives of distinctive form, so far as our perception is concerned, have been abstracted.

The category is diverse so far as form and workmanship is concerned. The characterization of form is difficult since nearly all of the specimens

are fragmentary. Included are asymmetrical knives that resemble the Dodd knife except for their greater width and thickness. Broad asymmetrical forms, generally ovate and lanceolate in contours, are also present. Other blade sections show a straight-sided expansion. In workmanship, careful finish with a pressure retouch as well as rough workmanship by percussion flaking with pressure retouch confined to the edges may be seen.

In the measurements, we have tabulated width and thickness so that comparisons with the Dodd knives may be made. However, in many of the fragments clear evidence for a continued expansion in width is to be observed so that the lower portion of the range in width is largely illusory so far as the actual width of the knives is concerned. So far as length is concerned, it seems probable that only the smaller specimens are present in unbroken condition. A single knife at 39WW3 is 78 mm in length; at 39WW10 the range is between 47 and 87 mm; and at 39CA6 between 65 and 94 mm.

39WW3
1B

39WW10
51

39CA6
18

39CA6
109

Figure 107. Broad, Bifacial Knives.

Table 81. Variation in Width - Broad, Bifacial Knives.

| Mm | 39WW3 | 39WW10 | 39CA6 | Total |
|---|---|---|---|---|
| 29-31 | 1 | 3 | 1 | 5 |
| 32-34 | 2 | 2 | 1 | 5 |
| 35-37 | - | 3 | 4 | 7 |
| 38-40 | 1 | 1 | 2 | 4 |
| 41-43 | 3 | 3 | 3 | 9 |
| 44-46 | 2 | - | 4 | 6 |
| 47-49 | - | 2 | - | 2 |
| 50-52 | - | 3 | - | 3 |
| 59-61 | - | - | 1 | 1 |
| 65-67 | 1 | - | - | 1 |
| 68-70 | - | 1 | - | 1 |
| Mean Width | 41.6 | 40.9 | 42.3 | |

Table 82. Variation in Thickness - Broad, Bifacial Knives.

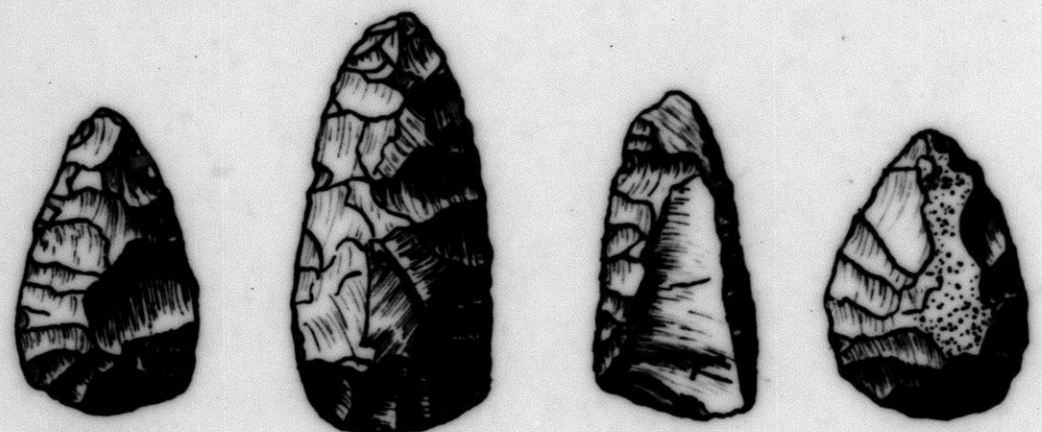
| Mm | 39WW3 | 39WW10 | 39CA6 | Total |
|---|---|---|---|---|
| 7 | 1 | 2 | 1 | 4 |
| 8 | 1 | 3 | 2 | 6 |
| 9 | - | 3 | 3 | 6 |
| 10 | - | 3 | 1 | 4 |
| 11 | - | 1 | 3 | 4 |
| 12 | 3 | 1 | 4 | 8 |
| 13 | 2 | 1 | 2 | 5 |
| 14 | - | 2 | 2 | 4 |
| 15 | 1 | 1 | - | 2 |
| 16 | - | - | - | 0 |
| 17 | 1 | 1 | - | 2 |
| 18 | 1 | - | - | 1 |
| Total | 10 | 18 | 18 | 46 |
| Mean Width | 12.7 | 10.6 | 10.8 | 11.3 |

Small, bifacial knives. A difficult group to classify, because of the intendency to merge with other categories is represented by a series of small, pointed, bifacial implements. Our grouping is essentially comparable to the Group 4 knives established for the Dodd site by Lehmer (1954: 57) but we have excluded those comparatively thin forms with symmetrical, triangular outline for which a projectile point function is indicated (see, Heavy Triangular Points). The remaining specimens tend to be somewhat thicker, or have a slight asymmetry in the sides which would be more in keeping with a knife.

Table 83. Small, Bifacial Knives.

| | 39WW3 (N 19) | 39WW10 (N 1) |
|---|---|---|
| Length: Range in mm | 32-52 | 52 |
| Mean in mm | 38.5 | |
| Width: Range in mm | 20-31 | 30 |
| Mean in mm | 24.4 | |
| Thickness: Range in mm | 6-13 | 8 |
| Mean in mm | 8.9 | |

In the shape categories that are represented, small forms with a distinct base are dominant (15 examples) though a smaller group (4 examples) represent ovate and ovate-acuminate shapes where the rounded base gently merges with the form as a whole.



39WW3/202 39WW3/174 39WW3/4 39WW3/428

Figure 108. Small, Bifacial Knives.

Beveled knives. A small series of knives approach the form of the Harahey knife (Baerreis and Freeman, 1959: 101-2), one of the distinctive knife forms of the southern Plains area which has been variously designated "four-edged knives", "diamond-shaped knives", and "diamond-beveled knives." Lehmer (1954: 153) has included this implement type in the group of traits of the Central Plains tradition which carry over into the Coalescent sites of the northern Plains in late times.

We have listed the knife forms from 39WW3 and 39WW10 simply as beveled knives since they deviate from the classic shapes of the Harahey type which has a steep bevel, straight sides, and an alternation in the bevel in progressing from one edge to the adjacent edge. The closest approximation to this form was an unbroken knife found on the surface of 39WW10. This knife, 85 mm in length, 30 mm in width and 12 mm in thickness, had the maximum length at the midpoint between the two pointed ends. One side, however, had an essentially biconvex section rather than the pronounced alternate bevel. Another unbroken specimen from this site (# 49 from the house fill of feature 1) combines a pointed end formed by straight sides with an opposite end having more convex sides. Only one of the straight edges has a marked bevel. This specimen is 75 mm in length, 31 mm in width and 10 mm in thickness. The tips of three specimens from 39WW3 are also placed in this category, but with the alternate bevel being sharp and distinct on only one of the group.

Although obviously not of the Harahey type, also tabulated as a beveled knife is a small triangular form (specimen # 20 from Feature 2 of 39WW3) with dimensions of 49 x 24 x 6 mm. Each edge is sharply beveled, one being on the opposite face from the other two. This specimen is manufactured from a grey flint while the preceding forms are characteristically made from tongue River orthoquartzite.

39WW3
279

Figure 109. Beveled Knives.

## Gravers

One of the distinctive, though not common forms of chipped stone implements recovered is represented by a few implements we have classed as gravers. While the pointed tips of these implements are somewhat larger and sturder than the classic form of graver associated with Paleo-Indian horizons, it would still seem to be the appropriate implement category in which to place them. They do consist of flakes having one plane surface with pressure retouching confined to the opposite face on which a pointed tip is developed. This projecting point is thus also planoconvex in section as is the case with the classic graver.

One specimen of this category found at 39WW3 (# 12 from Feature 3) is a planoconvex flake (35 x 14 x 5 mm) with one surface completely retouched by pressure flaking. One end is narrowed to produce a pointed tip 10 mm in length. The material is a translucent brown and white (M).

Three specimens of this category were found at 39WW10. One broad flake (43 x 33 x 7 mm) was found in Feature 1 (# 3). It too is planoconvex and one end is steeply retouched from both margins to produce the point. It is manufactured from a pinkish quartzite (B). A second specimen from this same feature (# 5) is a small (29 x 14 x 8 mm) planoconvex flake of translucent chalcedony. Here again one end is pressure retouched from both edges on the single face to produce a pointed tip. The third specimen from this site (# 14 from Feature 2) is a less satisfactory example of the class. It too is a unifacially worked tool, in this case of grey chert (A) with a retouch from both edges to produce the pointed end but one which is somewhat blunter than the other examples.

The specimens described above appear to be quite similar to the gravers described by Wedel (1936: 49-51) from the Leary site, Nebraska. The late temporal placement of these specimens also is of interest.

One additional specimen remains to be described under this heading although from the point of view of total form it represents a quite different concept. The specimen (# 92 found in Feature 4 of 39CA6) is a small (26 x 12 x 3.5 mm) planoconvex implement manufactured from brown chalcedony. The plane surface is formed by a single flake scar while the convex surface is carefully retouched by a pressure technique. The specimen tapers uniformly from a slightly irregular broad end to a pointed end, thus resembling a graver except for the uniform taper from point to butt end.

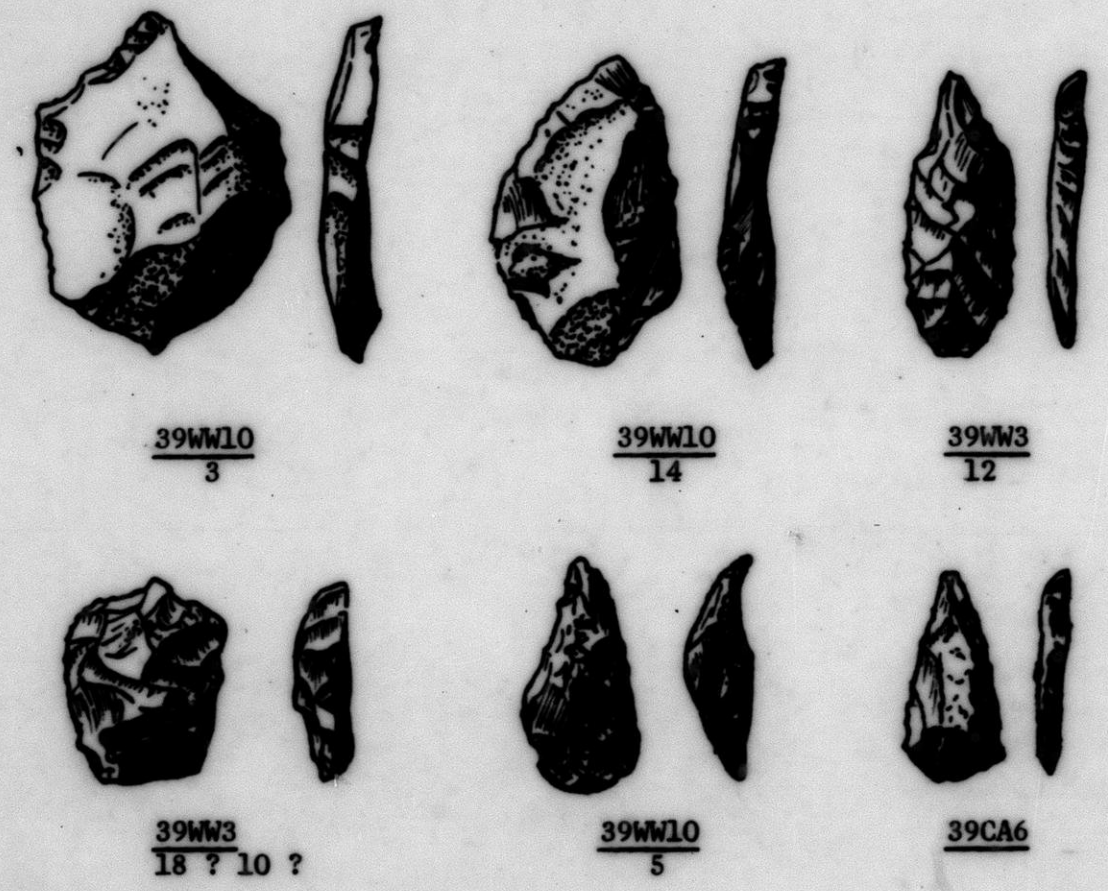



Figure 110. Chipped Stone Gravers.

## Strike-a-light (?)

A large series of flakes show battering on one or more margins which appear to be produced by battering against a hard object. This battered margin may have either a basic, unifacial retouch comparable to the steep edge retouch of a scraper or, in some instances, may appear on a bifacially retouched edge. A generally small size and irregular shape are characteristic of the group. The specimens were examined carefully and considered from the possibility of gun flints being represented by some of the objects since it is clear that these would have been used in the latter stages of the occupation of 39WW3 and 39CA6. However, only a single specimen from 39CA6 would appear to fall in this category.

Although we have not noted the presence of comparable specimens in other archaeological reports dealing with the Plains, we have given the name "strike-a-lights" to the group. Ritchie (1958: 40; 64) has illustrated strike-a-lights from New York sites but the pronounced subtriangular shapes suggest a distinct concept from that involved in the South Dakota specimens.

Table 84. Strike-a-lights.

| | 39WW3 (N 39) | 39WW10 (N 9) | 39CA6 (N 8) |
|---|---|---|---|
| Length: Range in mm | 21-58 | 23-35 | 27-45 |
| Mean in mm | 32.5 | 28.9 | 37.0 |
| Width: Range in mm | 16-38 | 18-30 | 20-36 |
| Mean in mm | 23.4 | 23.4 | 24.0 |
| Thickness: Range in mm | 5-15 | 6-13 | 7-17 |
| Mean in mm | 9.4 | 8.4 | 11.3 |

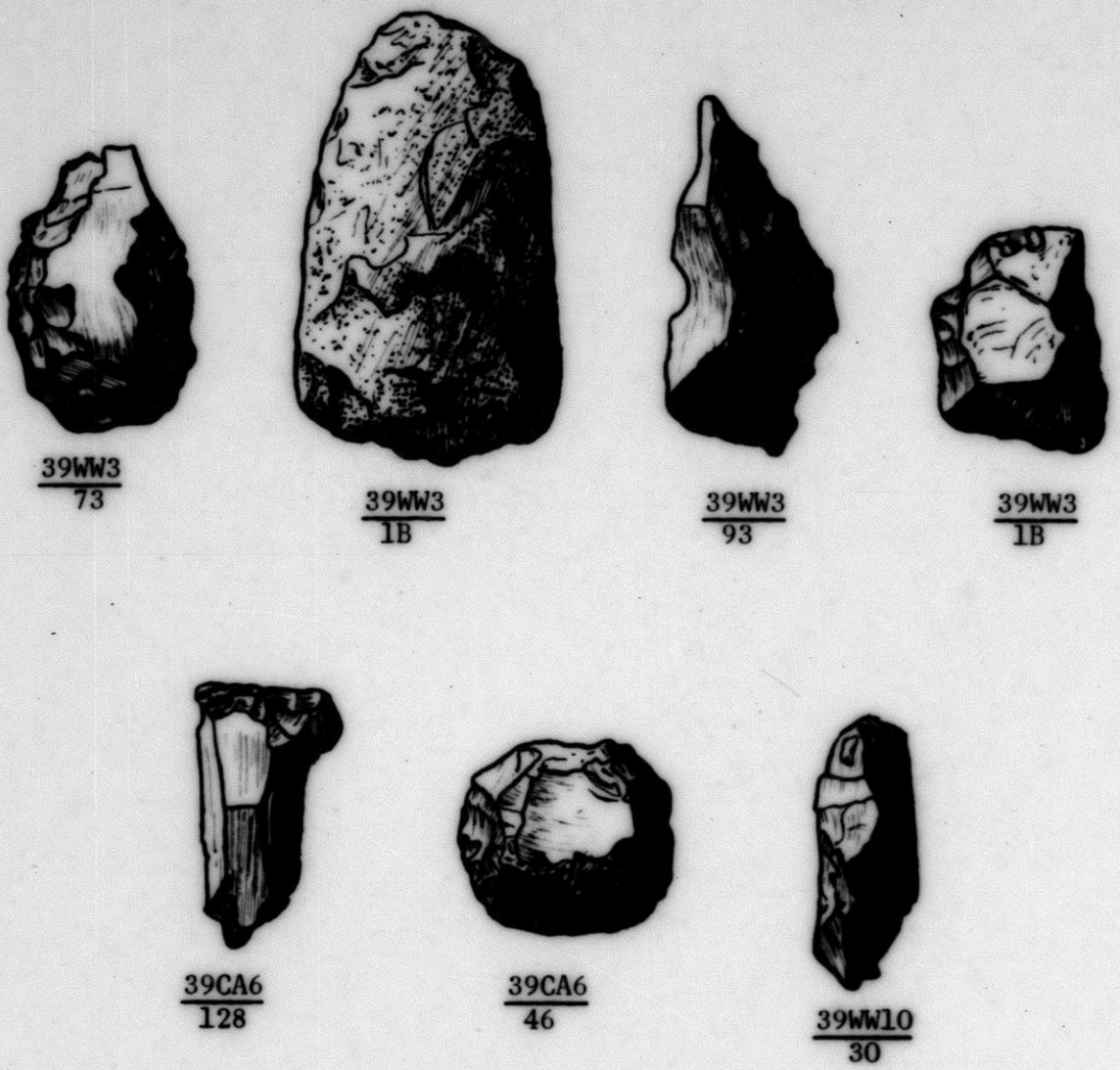



Figure 111. Strike-a-lights. No. 39CA6/46 is probably a gun flint.

## Gun Flint (?)

A single specimen from 39CA6 (# 46 found in Level 1 of Feature 7) appears to be a gun flint. Manufactured of a translucent grey flint or chalcedony, it resembles an end scraper in the extent of the retouching present on the three sides of the nearly square outline. Only a very moderate amount of wear from percussion is present on the one edge suggesting that it had not been extensively used. The dimensions of the specimen are 28 x 25 x 9 mm.

## Chipped Stone Drills

As a category, chipped stone drills are not abundant at the site. There is perhaps a tendency (as in specimen # 32 described below) for some drills to merge with projectile point forms which may perhaps account for the low frequency.

39WW3: # 37. This slender, needle-like form, carefully manufactured from translucent brown chalcedony, was found in a cache pit, Feature 4. Its cross section is biconvex with the maximum width (12 mm) occurring near the midpoint. It tapers to a sharp point at one end with the opposite end being more bluntly rounded. The maximum length is 78 mm and the maximum thickness is 7 mm.

39WW3: # 32. This specimen found in Feature 1 is also of brown chalcedony but more nearly resembles a long, straight-sided projectile point with a straight base. Its substantial thickness (4 mm) proportional to its width (12 mm) suggests a drill but uncertainty in classification arises through the absence of the tip of the implement. The length of the fragment is 28 mm.

39WW3: # 4. A possible drill fragment is represented by a retouched flake of petrified wood found in Feature 1. A bifacial edge retouch has produced a

blunt tip of which the extreme end appears to be missing. The dimensions of the specimen are 42 x 21 x 6 mm. The specimen appears to be similar to the Group 3 drills which Lehmer (1954: 55) has described for the Dodd site.

39WW10: # 4. A fragment consisting of the basal portion of a drill manufactured from a grey chalcedony was found in Feature 1, Cache 1. The drill shaft is biconvex in section and has a maximum width of 9 mm and a thickness of 5 mm at the point where it has been broken. The basal area is generally bulbous in appearance with the base proper being of irregular outline as a result of several fractures. Since pressure retouching is uniformly found on both faces, these fractures may represent recent breaks. The implement fragment is 32 x 19 mm in dimensions.

39WW3/4 39WW3/412 39WW10/4 39WW3/37

Figure 112. Chipped Stone Drills.

## Choppers

We have classified as choppers a series of generally heavy, bifacially flaked implements. A few clearly match the criteria commonly used in segregating this category but many are fragmentary rendering classification difficult. In effect, then, the group comprises a residual category for rough implements shaped by percussion techniques. Unbroken specimens are circular or slightly elliptical in outline with one example being ovate. Except for a single specimen manufactured from a grey shale, Tongue River orthoquartzite is uniformly used in the production of the tools. In the table which follows, only unbroken specimens were used to provide the range in length and width. All specimens were tabulated to indicate the variation in thickness.

Table 85. Choppers.

| | 39WW3 (N 4) | 39WW10 (N 9) | 39CA6 (N 6) |
|---|---|---|---|
| Length: Range in mm | 99 | 92-115 | 91 |
| Width: Range in mm | 74 | 89-92 | 72 |
| Thickness: Range in mm | 13-28 | 17-46 | 16-27 |
| Mean in mm | 20 | 25.2 | 18.8 |

## Abraders

We have restricted the term abraders to those pieces of sandstone or clinker bearing flat or rounded facets produced through use in smoothing or sharpening bone or wooden implements. This category includes all such utilized stones except those bearing grooves, these being tabulated as 'grooved abraders.'

The size and shape of the specimens are probably largely determined by the size of the blocks of raw material as well as by the extent of wear and use. Pieces of clinker range from small faceted lumps 33 x 27 x 20 mm up to larger specimens with dimensions of 117 x 109 x 45 mm to give the extremes in range. The sandstone abraders show a greater variation in that there are large, flat slabs (169 x 117 x 29 mm represents one of the larger specimens) as well as smaller blocks with dimensions comparable to the clinker type. So far as the sandstone specimens are concerned, two forms of utilization may be indicated. The larger, flat slabs may well have been stationary pieces upon which bone implements were rubbed. The smaller pieces were probably held in the hand and used as an abrasive which would appear to be the manner in which the clinkers were used.

The frequency of these forms is as follows.

Table 86. Abraders.

| | 39WW3 | 39WW10 | 39CA6 |
|---|---|---|---|
| Abrader, sandstone . . . . . | 24 | 3 | 32 |
| Abrader, clinker . . . . . | 64 | 10 | 40 |

## Grooved Abrader

Specimens placed in the grooved abrader category, whether of sandstone or clinker, are essentially similar to the preceding group of simple abraders. They possess in addition, however, a series of grooves varying in width from 4 to 12 mm and either U-shaped or V-shaped in cross section. Their similarity is to be seen in their possession of flat or concave worn facets, similar to the abrader category, and in a comparable broad range in shape and size. In contrast to those implements segregated as shaft smoothers, the grooves are variable in size and direction of orientation. Frequently a groove will extend only a portion of the distance across a face of the sandstone or clinker and be markedly concave in longitudinal section. Some specimens do bear grooves that could, on occasion, have served as a shaft smoother but this did not appear to be the primary function of the grooved abraders.

The frequency of the grooved abraders is as follows.

Table 87. Grooved Abraders.

| | 39WW3 | 39WW10 | 39CA6 |
|---|---|---|---|
| Grooved abrader, sandstone | 10 | 1 | 6 |
| Grooved abrader, clinker | 33 | 7 | 31 |

## Shaft Smoother

We have segregated as "shaft smoothers" those grooved abraders of sandstone having a parallel-sided, U-shaped groove which runs the length of the piece of sandstone. Normally this appears on only one face although one specimen from 39WW3 bears three such grooves on different faces of the specimen and two specimens from 39CA6 also bear a shallow groove on the opposite face from the major one.

There appears to have been some effort to produce a smoothed, loaf-shaped form for the implements. Although some of these may be broken specimens, the range in length of 29 to 58 mm, indicates a generally small size. Maximum width ranges between 20 and 44 mm, and maximum thickness 10 to 27 mm.

Table 88. Shaft Smoothers.

| | 39WW3 | 39WW10 | 39CA6 |
|---|---|---|---|
| Shaft smoothers, sandstone | 10 | 1 | 3 |

## Grooved Mauls

The grooved mauls may be divided on the basis of the character of the groove into two categories, full-grooved and three-quarter-grooved. The latter group, designated by analogy with axe forms, has a groove which is not continuous around the entire circumference of the implement but at one point rises to the surface where an area 15-17 mm in width has the same conformation as the remainder of the surface.

Only four mauls were of the three-quarter-grooved variety (39WW3 # 91, # 125 and # 213 and 39CA6 # 61), all being small to moderate size compared to the large massive forms found in the full-grooved category. One specimen (39WW3, # 125) has one end which is flattened and slightly concave in the center of the striking face in contrast to the normal convexity of this region. This feature is shared with another small specimen (39WW3, #114) which also has one striking end that is slightly concave. This specimen is carefully ground over the entire surface in contrast to the normal form which is only roughly pecked into shape. Unfortunately it is not possible to determine whether this maul is also of the three-quarter-grooved variety since several large flakes were broken off the side through use and these remove a portion of the area bearing the groove.

The full-grooved mauls are variable in shape, some being circular in cross section while others are elliptical. This variability may be due largely to variation in form of the cobbles from which the mauls were originally manufactured. The mauls are commonly manufactured from granites though other forms of igneous rocks were also utilized.

39 CA 6
61

39 WW 3
114

39 WW 3
213

39 WW 3
256

FIGURE 113. Grooved Stone Mauls.

Table 89. Grooved Stone Mauls.

Three-quarter-grooved Mauls

| # | Site | Location | Length | Diameter | Groove Width | Groove Depth |
|---|---|---|---|---|---|---|
| 96 | 39WW3 | Fea. 10 | 121 | 84-115 | 26 | 4 |
| 125 | 39WW3 | Fea. 8, house floor | 85 | 82-87 | 25 | 6 |
| 213 | 39WW3 | Fea. 8, Cache 7 | 115 | 77-94 | 22 | 3 |
| 61 | 39CA6 | Fea. 2, house floor | 76 | 47-48 | 16 | 3 |

Full-grooved Mauls

| # | Site | Location | Length | Diameter | Groove Width | Groove Depth |
|---|---|---|---|---|---|---|
| 114 | 39WW3 | Fea. 8, house fill | 69 | 64 | 16 | 4 |
| 256 | 39WW3 | Fea. 15, house floor | 168 | 109-138 | 30 | 9 |
| 502 | 39WW3 | Fea. 15, house floor | 146 | 101-129 | 34 | 11 |
| 47 | 39WW3 | Fea. 5 | (fragment) | | 26 | 4 |
| 126 | 39WW3 | Fea. 8, Cache 1 | 140 | 104-144 | 35 | 6 |
| 296 | 39WW3 | Fea. 15, Cache 9 | (fragment) | | 33 | 11 |
| 405 | 39WW3 | Fea. 17 | 139 | 123 | 34 | 7 |
| 414 | 39WW3 | Fea. 17, Str. 2 | (fragment) | | 26 | 6 |
| 353 | 39WW3 | Fea. 17, Str. 2 | (fragment) | | 23 | 3 |
| 10 | 39WW10 | Fea. 1, Cache 6 | 127 | 116-129 | 40 | 9 |
| 8 | 39CA6 | Fea. 7, Str. 6 | 135 | 121-123 | 33 | 4 |
| 31 | 39CA6 | Fea. 1, 6 inches below floor | 118 | 81-91 | 27 | 6 |
| 31 | 39CA6 | same | (fragment) | | 28 | 4 |
| 83 | 39CA6 | Fea. 3, house floor | 110 | 106-125 | 26 | 4 |
| 90 | 39CA6 | Fea. 4, level 3 | (fragment) | | 24 | 6 |

Worth of separate description is the specimen found with the burial at 39CA6 in Feature 4. This specimen, which should perhaps more properly be called a grooved war club rather than a maul for it shows no signs of the battered ends characteristic of the maul, is manufactured from white quartzite. The surface has been smoothed and then well polished and is symmetrically rounded at both ends with the groove dividing it into two almost equal halves. The groove is 18 mm wide and 7 mm deep and represents a variant of the three-quarter-grooved variety. The groove continues around the circumference to a point where it reaches a circular depression 18 mm in diameter, the edges of the circular area being flush with the surface of the club. The length of the specimen is 85 mm and the diameter ranges between 66 and 73 mm.

## Hammerstones

Stones showing marks of usage in hammering or pecking were extremely abundant at the sites. The materials seem largely derived from local gravel deposits and include quartzites, granites and other igneous rocks, and more rarely limestone and chert. Slightly more than 50% of the hammerstones are of quartzitic material, clearly the most popular of those used. The specimens are also variable in terms of size and shape. Flattened pebbles of ovate or circular outline are most common, the marks of abrasion appearing on the ends of the ovate forms. Pebbles of irregular shape, or more rarely of spherical forms, were also used. We have grouped the hammerstones into three rough size categories, based upon the largest dimension of the pebble.

Table 90. Hammerstones.

| | 39WW3 | 39WW10 | 39CA6 |
|---|---|---|---|
| Small (50 mm and below) . . . . . | 25 | 1 | 17 |
| Medium (51-100 mm) . . . . . | 87 | 11 | 55 |
| Large (101 mm and above) . . . . . | 9 | - | 3 |

## Pitted Hammerstones

Less common are those hammerstones having a shallow pit, 10-20 mm in diameter and 1-2 mm deep, picked in each flattened face in addition to the usage marks found on the circumference of the specimens. Although a comparable range of materials was used, the pebbles are more uniformly circular or oval in outline. The use of the same size groupings as in the preceding category gives the following distribution.

Table 91. Pitted Hammerstones.

| | 39WW3 | 39WW10 | 39CA6 |
|---|---|---|---|
| Small (50 mm and below) . . . . . | - | - | - |
| Medium (51-100 mm) . . . . . | 12 | - | 11 |
| Large (101 mm and above) . . . . . | - | - | - |

## Polishing Stones

A limited series of small, flattened, river-worn pebbles suggest that they have been used as polishing stones. One or both faces of the pebbles bear a slight to moderate polish and in one instance a high gloss. Their function may have been similar to those pebbles commonly found in the Southwest which were used to smooth the surface of pottery vessels. Since pottery vessels from 39WW10 commonly have a smoothed rather than a stamped surface, their association with this unit is understandable. It is possible that at 39CA6 (or at 39WW3) some vessels were roughly smoothed prior to the stamped surface treatment.

Table 92. Polishing Stones.

| Specimen # | Site | Location | Length | Width | Thickness (mm) |
|---|---|---|---|---|---|
| 49 | 39WW10 | Feature 1, house fill | 119 | 60 | 37 |
| 51 | 39WW10 | Feature 2, Str. 2 | 46 | 36 | 17 |
| 15 | 39CA6 | Feature 4, Str. 4 | 39 | 34 | 19 |
| 43 | 39CA6 | Feature 1, house fill | 53 | 46 | 13 |
| 240 | 39WW3 | Feature 15, Cache 2 | 147 | 48 | 45 |

## Grinding Stones

It will be recalled in the description of the features at site 39CA6, associated with the house floors of some of the structures excavated were shallow grinding basins. The grinding stones associated with these basins were not recovered at this site but at 39WW3 14 possible grinding stones and at 39WW10 two possible grinding stones were recovered. These specimens may be designated as "possible" grinding stones since they do not bear extensive wear facets although some wear suggestive of such use is present. Only a limited amount of pecking to modify the shape of the natural, water-worn pebbles can be seen and in most instances this is difficult to differentiate from modifications resulting from the use of a hammer stone.

The grinding stones were made from quartzites, granites and sandstones. Shapes varied from subrectangular to nearly circular in outline. They ranged in length from 77 to 135 mm. (Mean length 109.2 mm); in width from 64 to 99 mm (mean width 80.9 mm); and from 43 to 71 mm in thickness (mean thickness 50.9 mm).

## Grooved Axes

The limited number of grooved stone axes recovered at the sites as well as their potential importance in comparative studies, indicates the desirability of presenting brief individual descriptions of the specimens. At the same time, some characteristics of the group as a whole are presented here as an introduction to the small series. The specimens represent three distinct types. One is a proportionately heavy and broad full-grooved of a form that would clearly be at home in a Woodland context. It is of interest to note that these specimens are all severely battered and fractured on the butt end as though they had been used as a maul and that the cutting edge is also so battered and worn that they could no longer serve effectively as a cutting tool. No attempt has been made to resharpen the cutting edge. Their condition suggests that they have been used extensively for some other purpose than their original function as an axe, perhaps simply as a maul. If this is indeed the case, it raises the interesting question as to whether the full-grooved axes are either heirlooms or surface finds made by the inhabitants of the sites which have been converted to a different use. The second type of axe is one which we would be tempted to designate a grooved celt were it not for the inherent conflict in meaning in the conventional usage of the terms axe and celt in archaeological literature. This category has the proportionately longer and slender shape of the petaloid celt but is provided with a full groove which encircles the implement about two-thirds of its length from the cutting edge. In this category, a sharp cutting edge is retained and signs of battering from usage as a maul or hammer are lacking. The third axe type, represented by one specimen from 39WW10, consists of a small three-quarter grooved form which shows only slight edge

battering compared to the first variety previously described.

39CA6: # 66. A fully-grooved axe of diorite, bluish-grey in color, found in Feature 1, six inches below the floor of the house. The groove is 22 mm wide and 4 mm deep. The bit is jagged and fractured and in sectors, bluntly worn through use. This wear is slightly more extensive on one face than on the other. The butt end (poll) is also battered and worn as though through use as a hammer. The length of the specimen is 142 mm, the maximum width 105 mm and the maximum thickness 57 mm.

39CA6: # 88. A fragment of a groove axe made of diorite found in level 4 of Feature 4 (3-4 feet in depth). The surface, while irregular, is well polished. Only a portion of the groove remains on the fragment. The cutting edge was chipped and battered prior to the longitudinal break which led to the specimen being discarded.

39WW3: # 198. A fully-grooved axe of black diorite found on the floor of the house, Feature 15, eight feet from the north edge of the house. The axe was broken into several pieces when recovered, the breaks and some pieces that spalled off seem to be the result of heat. The breaks thus appear to have occurred at the time the house was destroyed. The surface of the axe, while irregular, bears a considerable polish. The bit is fractured and worn through use to a dull, rounded end. The butt end is fractured as though through use as a hammer. The groove is 32 mm wide and 7-14 mm deep. The specimen is 186 mm in maximum length, 110 mm in maximum width and 64 mm in maximum thickness.

39WW3: 1B. This axe, having the general shape characteristics of a petaloid celt, has a full groove 32 mm wide and 6 mm deep located about one-third of the total length from the butt end of the implement. The specimen

was found on the surface about midway between the occupation areas of 39WW3 and 39WW10 so that it can not with certainty be assigned, on the basis of provenience, to either of the two sites. The implement is manufactured from a finely mottled green and black stone, the surface being symmetrical and smoothed. The area adjacent to the bit is most extensively smoothed while the remainder retains the traces of the pecking which produced the original shape. The butt end of the implement is squared at a right angle to the long axis. The maximum length of the implement is 201 mm; the maximum width 78 mm; and the maximum thickness 43 mm. In cross section the axe has the form of a flattened oval. It should be noted that while a few slight nicks appear on the blade, this implement has not been battered and broken as have those previously described.

The placement of the axe form just described in some position within the occupation of 39WW3 is suggested by the presence of a similar ground and polished celt of greenish-black diorite in the Bamble Collection which had been found at 39CA6. The groove on this specimen, varying in depth from 2 mm on the faces to 7 mm at the edges, was similarly placed about two-thirds of the distance from the cutting edge. The implement appeared to have been broken and then repaired. The cutting edge tapered to a sharp edge and bore only a few necks.

39WW10: 6. A small axe bearing a three-quarter groove was found in Cache Pit 5 of Feature 1. The material is a mottled green and black stone of fine texture and while the surface is smoothed, it does not bear a high gloss. The groove is 19-23 mm in width and 3-6 mm in depth, and is placed about two-thirds of the distance from the blade and extends around all but one slightly flattened edge. While the cutting edge is slightly battered

and blunted, these usage marks are not as extensive as on the black full-grooved specimens previously described. Similarly, although the rounded butt end bears some abrasion as the result of use subsequent to the original shaping this does not appear to have markedly altered the shape of this region and no large fractures are present. The implement is 127 mm in maximum length, 64 mm in maximum width and 35 mm in maximum thickness. The groove appears to have been placed slightly on a diagonal rather than directly at a right angle to the long axis of the implement.

39WW3
198

39WW3
1B

39CA6
66

39WW10
6

Figure 114. Grooved Stone Axes (approx. ½ scale).

## Grooved Chopper (?)

One specimen (# 41, found in Feature 3 of 39WW3) which does not lend itself to ready categorization has the appearance of being a chopper but with a pecked groove around the center. It seems to have been made from a cobble of black diorite. One face has been produced by rough flaking and a rough edge formed at one end by very bold primary flaking. Around the center of the specimen, deeply indented at the sides but poorly defined at both faces, is a pecked groove. The implement is 127 mm in maximum length, 96 mm in maximum width and 52 mm in maximum thickness.

## Catlinite

We have described as a group both finished objects of catlinite and scraps of raw material. Aside from the potential untility of the material as a horizon marker, the presence of unworked or unfinished catlinite is obviously of some importance in indicating whether catlinite specimens were obtained by trade or barter in finished form or whether specimens were manufactured locally from blocks of raw material. The specimens described below indicate clearly that at least some objects, the pipes specifically, were manufactured in the local village since a number were broken before completion and then discarded. The quantity of scrap recovered in the excavations (all was saved), would not appear to be represented in sufficient quantity to suggest that the Spiry-Eklo site was a major center for pipe production for surrounding villages although it is possible that the limited sampling at the site could have missed the major workshop areas. A careful study of the relative frequency of catlinite at the various Missouri valley sites is needed to illuminate the means by which this material was distributed in the Plains area.

## Catlinite Pipes

Catlinite was most commonly used for the manufacture of pipes. Indeed, pipes were not found made of any other material. All of the pipes that are sufficiently intact to indicate the original form, with one possible exception, conform to a variety (Type VIIIA) described by W. R. Hurt (1957: 35) as typical of the historic Arikara. Brief individual descriptions of the specimens are given below.

39WW3: # 102. A pipe found in the fill of a house (Feature 8) near the floor level. The specimen is 92 mm in maximum length and 40 mm in maximum height. The stem is square, expanding in width and height to the point where a wooden stem would be inserted. At this position, a vertical flange is present on the top of the stem which bears a single large perforation, an adjacent smaller perforation, and then a drilled small indentation on both sides that does not extend completely through the flange. The pipe bowl is angular, having a point of maximum expansion near the midpoint of the bowl. The stem projects beyond the bowl, is thinned at the sides and diagonally beveled at the top.

39WW3: # 125. Another pipe of similar form was found on the floor of Feature 8. Though the stem is also square in section, the sides are more rounded and the bowl is bulbous in form rather than angular. The stem projection, similarly thinned at the sides, is diagonally bevelled at the bottom rather than the top. The vertical flange on top of the stem bears only a single perforation. The pipe is 88 mm in maximum length and 39 mm in maximum height.

39WW3: # 425. A fragmentary pipe found below the floor level of Feature 8. The pipe, broken through the bowl, permits the measurement of maximum height as 29 mm. The sides of the pipe bowl are nearly vertical, showing only a slight expansion. The stem is square and proportionately short compared to the two preceding specimens. The top of the stem bears a rectangular, vertical flange with a single perforation.

39WW3: # 281. A fragmentary pipe with bowl missing, found in an ash bed east of the house, Feature 15. The stem is square, expanding in dimensions to the point where a wooden stem is inserted. The end of the stem bears on the top a vertical flange with a single perforation. The stem projection is bluntly rounded and slightly curved at the base. The pipe has a maximum length of 53 mm.

39WW3: # 415. A fragmentary pipe, broken at the bowl, found in level 2 of Feature 17. The stem is square and expands in dimensions to its end. The top of the stem at this point bears a vertical flange with two perforations.

39WW3: # 28. This small pipe, found in level 2 of Feature 2, may be a reworked form similar to the preceding specimens. The bowl is very short and evidently trimmed down, perhaps following breaking, the present maximum height of the pipe being 18 mm. As the maximum length of the pipe (46 mm) indicates, the stem is short and its end appears to be more freshly cut than the remainder of the specimen. The surface is worn and polished through use and bears a finely incised decoration of superimposed parallel lines. A hole is worn in the top of the stem near the bowl. The stem projection is relatively thick and blunt and beveled slightly at the bottom.

39WW3: # 139. This fragment of a catlinite pipe, found in the south bank of Feature 13, is 42 mm in length and appears to be a portion of the top of the stem and bowl of a pipe similar to the ones describing above. The base of a stem flange is present but this has been broken off. Cuts and scratches resulting from the initial shaping of the specimen suggest clearly that the object was broken in the course of manufacture and then discarded. Some scratching and reworking of the broken fractures also can be seen but the purpose of this further modification is not clear.

39WW3: # 331. A pipe fragment found in level 1 of Feature 17. It consists of a section of the bowl and a section of the stem projection beyond the bowl. A continued bevel from the stem projection to the base below the bowl suggests a slightly different shape variation from the preceding specimens but it is also possible that this specimen represents a broken, unfinished pipe. The bowl is bulbous in outline and has a maximum height of at least 46 mm.

39CA6: # 127. This pipe was found in Feature 4, associated with the burial found in this feature. The rectangular stem increases in size to the point where the wooden stem is inserted. A short vertical flange at this point bears a single perforation. The bowl expands slightly in diameter but is relatively straight sided. The stem projection is narrow and expands in height above the level of the stem behind the bowl. A worn hole is present in the base of the pipe below the bowl. The pipe is 105 mm in maximum length and 43 mm in maximum height.

39CA6: # 119. Feature 4, in level 3, also produced a section of a rectangular stem of a pipe, 22 mm in length, which appears to have been cut from a finished pipe.

Fragments. Small fragments of the bowl of catlinite pipes were found at 39WW3 on the house floor of Feature 8 (# 174) and at various locations at 39CA6 (# 113 - Feature 2, Cache pit 2; # 56 - Feature 6, Level 1). A fragment of a rectangular stem was found on the surface of site 39CA6 and a fragment of a bluntly rounded stem projection was found at 39WW3 on the surface.

## Catlinite Plaques

We have grouped under this term a series of flat, rectangular objects, carefully finished and usually marked on one but not both sides. The differentiation of the two sides suggests the possibility of their being dice for the common gambling game which was so widely distributed among the American Indians (Culin, 1907: 44-225). The absence of sets of similar objects, however, seems to argue against this interpretation. It is to be expected that an occasional single die might be lost, but it would seem likely that the find of a set would have been made, perhaps in a grave, at one of the sites in this area. G. B. Grinnell (1923: I, 334) in describing this game among the Cheyenne indicates that a "lucky stone" could be included in the basket which "made the counters turn over." Perhaps this was the function of the catlinite objects. They are not unique to the sites under consideration, but have been recovered from others in the region (Wedel, 1955: 112).

39WW3: # 415. A small, subrectangular plaque found in Feature 17, level 2. The sides are slightly convex and the corners rounded. A hole, about 4 mm in diameter is bored in one face to a depth of about 2 mm. The specimen is 23 mm long, 16 mm wide and 4 mm thick.

39WW3: # 380. This plaque, also found in Feature 17 but in level 4, has been contrast slightly concave sides. One surface bears a deeply incised X, the lines extending diagonally from each corner. The dimensions of the speci-

men are 38 x 16 x 4 mm.

39WW3: # 1B. This plaque, found on the surface, is deviant in form that it is planoconvex in cross section. The flat face bears a few random scratches. Also subrectangular in outline, the dimensions of the specimen are 32 x 12 x 4 mm.

39CA6: Bamble collection. Although our excavations did not produce similar objects from this site, one specimen of subrectangular form was included in the Bamble collection. The sides are slightly convex and one face bears an X formed by lines running diagonally from the corners. The dimensions of the specimen are 46 x 36 x 5 mm.

## Catlinite Scrap

This category simply comprises those pieces of catlinite representing broken but unfinished objects or pieces of raw material discarded in the course of making a specimen. One such broken object (39WW3: # 105) is a fragment bearing a deep cut mark across its length that looks as though it may be a portion of the stem projection of a pipe which was not completely severed from the original block and broke in the process of forming the pipe. This specimen was found in Feature 8 in the fill above the house. Four additional specimens of uncertain character were also found at 39WW3. These are: # 96 from Feature 10; # 453 from Feature 11; # 53 from Feature 14; and, # 350 from Feature 17, level 3.

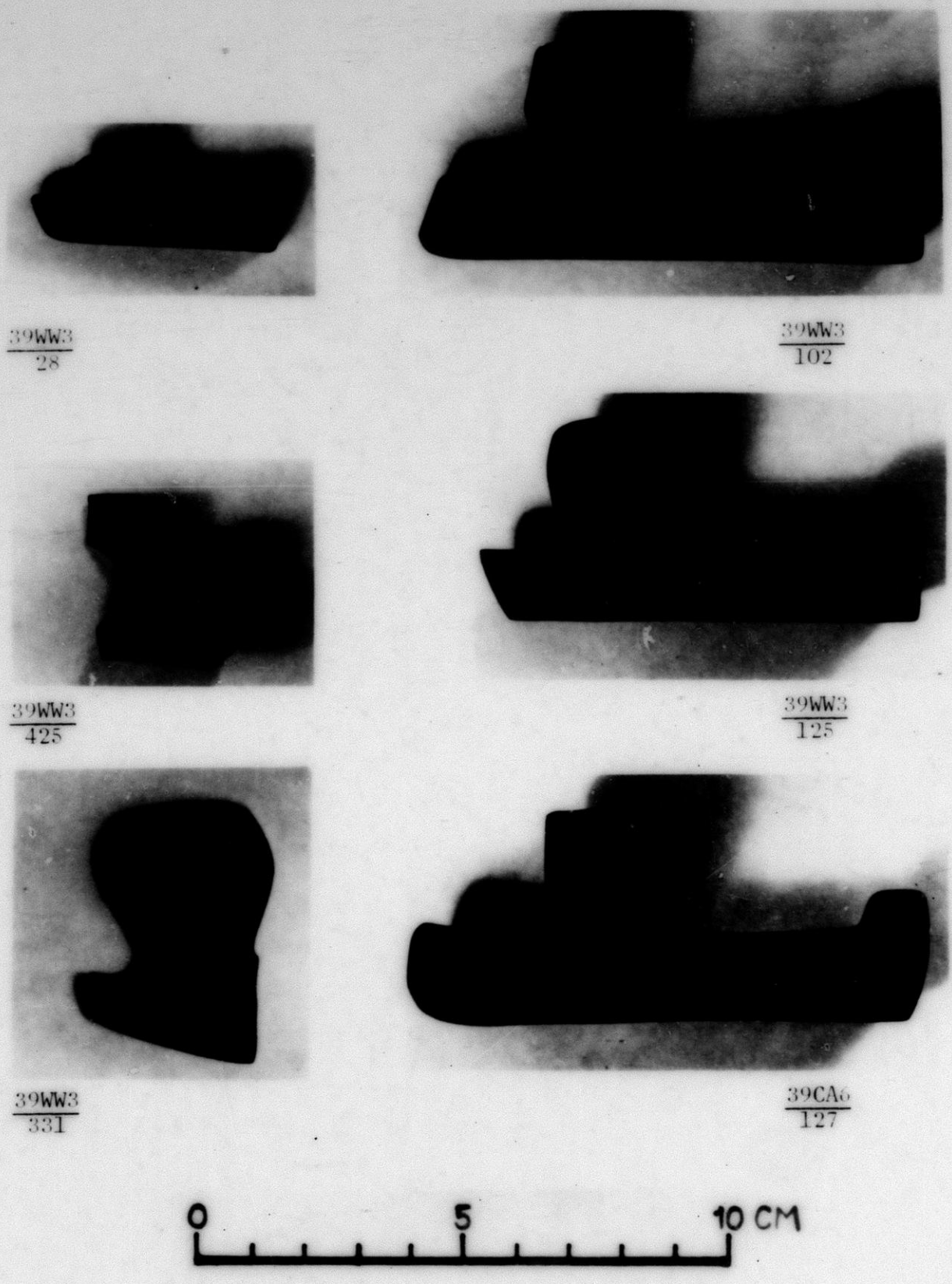



Figure 115. Catlinite Pipes.

## Lead Ball

The Bamble Collection from 39CA6 contains a lead ball found at a depth of four feet in the midden at the western extremity of the site. The ball was 8 mm in diameter and bore three flat facets.

Indications of hunting making use of the rifle are not limited to this single instance in which a lead ball was found since occasionally the animal bones found in the refuse material bore scars indicating that the animals had been shot by a projectile from a rifle.

## Glass Beads

Of all the items found at the sites which were the consequences of trade with Europeans, one of the most valuable to the archaeologist is the glass bead. Not only do they comprise concrete evidence of trade, as do the scraps of iron and brass, but since they are to be found in a wide variety of sizes, shapes, and colors, their point of origin and frequently the time of manufacture or use as trade objects can be determined. The glass beads from 39WW3 and 39CA6 were sent to Mr. Glenn Black of the University of Indiana in November, 1956 and to Mr. Kenneth E. Kidd of The Royal Ontario Museum, Toronto, Canada in February, 1957. In both instances no information on context or other data suggestive of the time of occupation of the sites were provided, nor did they have access to each others appraisal of the material. The illuminating comments concerning this material as well as the tentative dates quoted below are from their letters of 1956 and 1957 respectively. It should be noted that although several years have elapsed during which new data have appeared, they have not had an opportunity to revise their statements. Further, the dates (particularly the very specific dates provided by Kenneth

E. Kidd) are presented in a much more specific and emphatic manner, without the scholarly qualifications of his letter where he regarded them as on the order of informed guesses.

In earlier sections of this report we have discussed some of the evidence which suggests a long span of occupation for the sites. It is possible, therefore, that beads could have been acquired by trade over a considerable time span. To stress what limited data we have on provenience, the beads are discussed in terms of the excavation units with which they were associated.

39WW3: # 86. Two glass beads were found in Level 1 of the NW ¼ of square 128R1 of Feature 11. Both are manufactured from a somewhat opaque white glass and are 20-21 mm in diameter. They are nearly spherical, their maximum dimensions measured along the axis of the perforation being 18-20 mm. Such beads are manufactured by a "wire-wound" technique. Glenn Black describes this as indicating". . . that the shape was derived by winding molten glass on a revolving spindle of "wire". These beads are sometimes referred to as "porcelains". This is, of course, not correct - they are glass. This misstatement of fact may arise from the fact that the French often referred to all beads as "porcelains" (Black, 1956, as are other quotations from Black in this section). Further information on the "wire-wound" beads is provided by Black in the report by Waldo R. Wedel (1955: 152) on the Mobridge area. Kenneth E. Kidd (1957, as are other quotations from Kidd in this section) states that his ". . . data indicate that both the large and small milk white wire-wounds came into fashion about the middle of the eighteenth century." These, he indicates, appear on various sites dating between 1718-1779.

39WW3: # 84. The largest series of beads, 20 in all, were associated with Burial 4 which was located in the NE ¼ of square 127R1 of Feature 11.

It is possible that the beads of # 86 were also originally associated with this burial but removed from their original position by rodent action.

Nine of the beads of this lot are wire-wound beads similar to those of # 86 though with considerable variation in size and with a range in color from "milk white" to a clear opalescent variant. The measurements of the dimensions of the beads follows (diameter - maximum diameter at a right angle to the perforation; thickness - maximum diameter measured parallel to the perforation):

| Diameter | Thickness | Diameter | Thickness |
|---|---|---|---|
| 21 | 21 | 12 | 12 |
| 15 | 12 | 12 | 12 |
| 15 | 12 | 12 | 11 |
| 13 | 10 | 11 | 10 |
| 13 | 10 | | |

These beads, according to the dates assigned by Kidd, cover the span from 1718-1779.

Eight of the beads are faceted and range in color through blue (5), amber (2), and white (1). Each has eight facets, the point of junction between the faces being gently rounded rather than sharp. They range in maximum diameter between 9 and 14 mm. Glenn Black states that "the faceted beads were formed while the glass was hot. This is in sharp distinction to later faceted beads which were molded or cut." One bead of the category of a dark amber color had largely disintegrated. Black felt it was of the same character and age as the other faceted beads. "The disintegration of the bead is no doubt due to its surface condition when it was buried. It may also have been of a different color than the other faceted beads and the mineral added for color may have speeded its deterioration." Kenneth E. Kidd states that there are records of these beads from 1681 to 1779.

A single bead in the lot is a flat form with a maximum diameter of 16 mm and a thickness of 5 mm. While manufactured from a clear, yellow glass the outer surface has oxidized to a white, shell-like appearance. This type, Kidd states, has been found on a site dated 1675-1700.

Another unique bead in this lot was a striped specimen having a wavy red band (3 lines) with a fine blue line in its center, on an opaque white groundmass. This bead is 12.5 mm in length and 8 mm in maximum diameter. Glenn Black describes the process of manufacture of such beads as follows: "The striped beads were drawn into their small size from a "blob" of glass of large size upon which the stripe had been placed in exactly the same manner as striped stick candy is made. As a matter of fact, the making of beads of these types and the making of hard candy (when it was still made by hand) are duplicate operations." Kenneth E. Kidd indicates the white with blue on red striped bead has been found on a site dating 1680-1740.

A final unique bead in this lot is a small, white opaque bead, 9 mm in diameter and 7 mm in thickness. This type much more nearly resembles a porcelain than the white, wire-wound variety previously discussed, and is probably not made by a wire-winding technique. According to Kidd, the variety is found on various sites from 1650-1779.

39WW3: 85. Further excavations in Feature 11 produced one additional bead of the large wire-wound variety, milk white in color. While this bead was discovered in the NW ¼ of square 127R5 at level 2, it is possible that this bead (like # 86) was also associated with Burial 4. The bead had a diameter of 13 mm, and a thickness of 12 mm.

39WW3: 147. Excavation of rodent burrows near Burial 1 in Feature 3 in the SW ¼ of square 52R5 produced one bead. It is of the same type as the

last bead discussed in group # 84. The bead is 8 mm in diameter and 6 mm in thickness. As previously noted, Kidd has found the variety on sites dating between 1650-1779.

39WW3: 298. A fragmentary bead found in Feature 11 when excavating to supplement the pottery sample has the shape characteristics of the striped beads described in conjunction with lot # 84 from this same feature. However, it is a plain white bead which lacks the multicolor aspect. This bead is 7 mm in maximum diameter. Its length could not be ascertained.

39WW3: 1B. Three glass beads were found on the surface of 39WW3. Two are wire-wound beads of the very abundant category previously described in connection with lots # 84 and # 86. They are 12 and 10 mm in diameter and 10 and 9 mm in thickness.

The remaining surface finding introduces a new type. It is a black bead with meandering inlaid lines of white, the type being designated by Kidd as "Roman". This bead is 11 mm in diameter and 6.5 mm in thickness. Kidd states that these beads appear to be somewhat earlier than the others and have been reported from sites which usually date from 1650 down to 1743.

39CA6. Our excavations unfortunately did not produce any beads at 39CA6 though a substantial number from this site were available in the Bamble collection. Mr. Tom Bamble permitted us to borrow a representative sample of these beads which were sent to Mr. Black and Mr. Kidd along with the materials from our own excavations. The same types were represented and obviously a similar age assigned to them. The only deviation was in a single large bead of clear green glass which Black thought was as old as the others, though with less certainty.

Summary. So far as the collection as a whole is concerned, Glenn Black regarded the entire series as of the same general type and time period. ". . . they belong in the period 1690 to 1750 and the chances favor the earlier end of this time span. All of them are of Venetian type and were probably traded through the French." Kenneth E. Kidd suggested: "The preponderance of evidence suggests that both your sites may be mid- or late-eighteenth century; the presence of the Roman beads may be due either to a carry-over from earlier times, either in Indian hands or from traders, or indicative of an early occupation." Unfortunately the Roman beads fall all in the category of surface or disturbed finds so that the possibility of their representing an earlier occupation can not be tested.

## Brass

The most numerous item directly indicative of European contact at the sites consists of specimens and scraps of brass. Although some of these objects, because of their weight and reddish color, appeared to be of copper rather than brass this suggestion was not confirmed when tested. A large series of the specimens, selected to cover the full range in variation, was examined by Professor David J. Mack of the Department of Mining and Metallurgy, University of Wisconsin. Professor Mack's report indicated that all of our fragments were of European-made brass. Those specimens which can be placed in specific functional categories are described in detail below. Following this, a tabulation is given of the provenience of the brass scraps because of their obvious utility in marking a contact horizon. It may be stated at this point, that no brass, glass or iron was found at 39WW10.

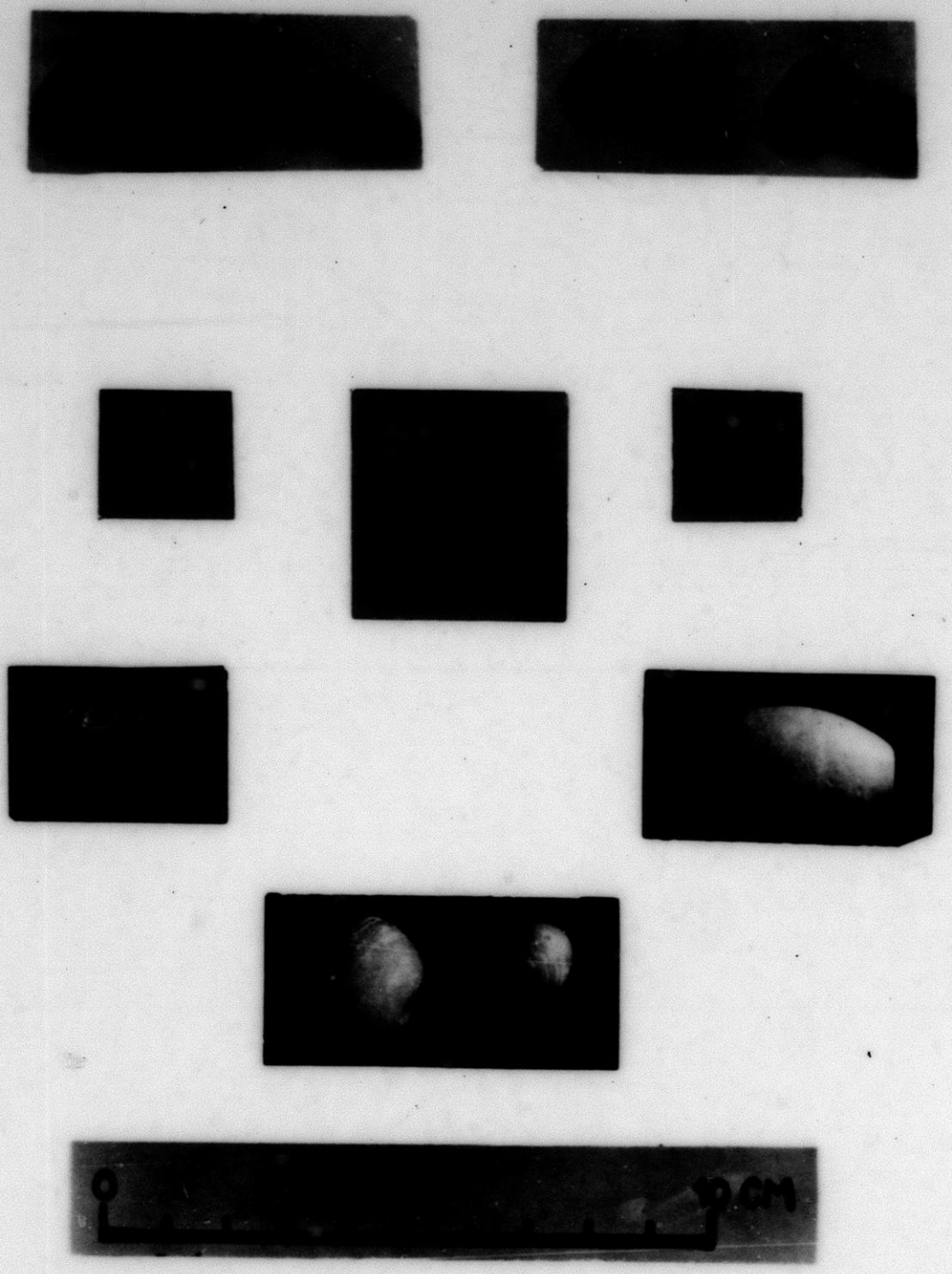
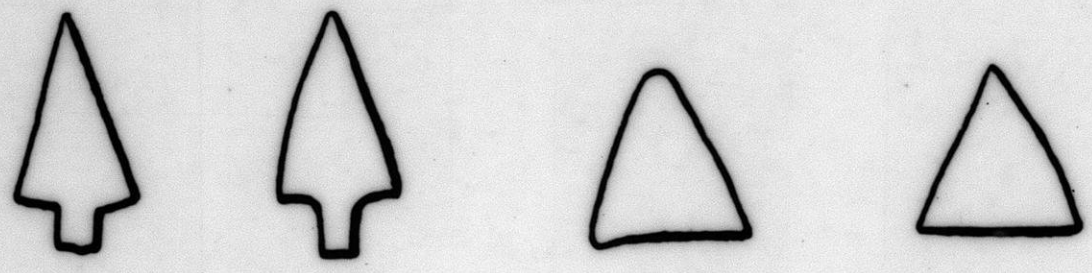



Figure 116. Glass Beads.

## Projectile Points

Small, triangular projectile points with a square tang were found on the surface and in the plow zone of Feature 17 (# 322). Similar points were included in the Bamble Collection from 39CA6 but were not recovered in our excavations. The two tanged points from 39WW3 are 30 and 31 mm in maximum length and 15 mm in maximum width. The tang is 6 and 7 mm in length and 5 mm in width.

At 39WW3, Cache pit # 5 of Feature 8 yielded two brass triangles which may have been projectile points (Hurt, 1957: 35-6) although the apex of one is rounded rather than sharp. Both specimens are 21 by 20 mm in maximum dimensions.

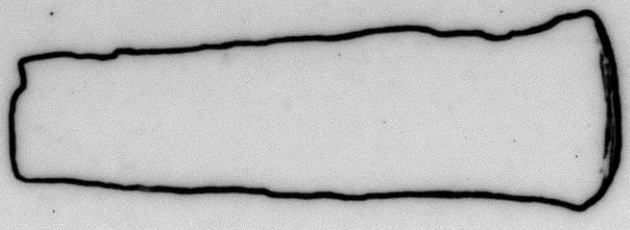


No number | 39WW3/322 | 39WW3/418 | 39WW3/418

Figure 117. Brass Projectile Points and Triangles.

## Celt (?)

Cache pit # 5 of Feature 8 of 39WW3 also contained a small, celt-like object of hammered brass. One end is flaring and splayed out like a celt, this end being sharpened to a cutting edge. The specimen (# 250) is 78 mm in length, 25 mm in width, and only 1 mm in maximum thickness.



39WW3
250

Figure 118. Brass Celt.

## Fishhook (?)

Cache pit # 4 of Feature 8 (39WW3) produced a small object cut from sheet brass which is shaped like a barbless fishhook. It is 27 mm in maximum length and only 1 mm in thickness.

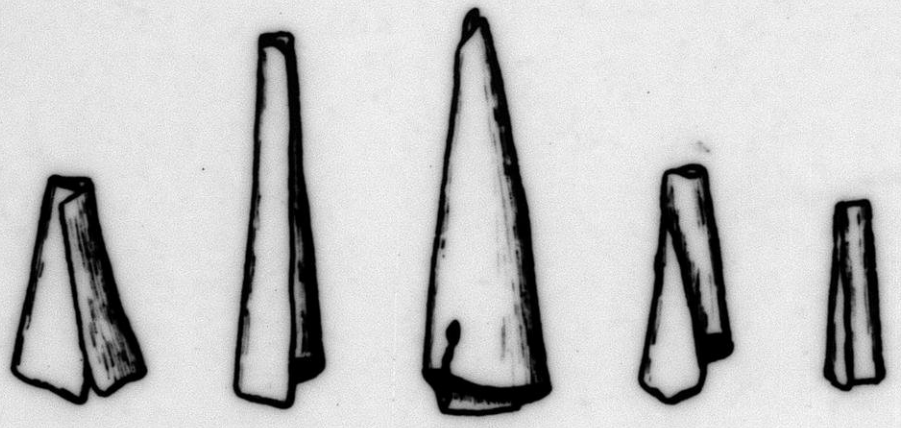
39WW3
187

Figure 119. Brass Fishhook (?).

## Table 93. Tinklers or Dangles

These specimens are of conical shape and formed by rolling a thin sheet of brass. The provenience and size range of the specimens located are as follows:

| | # | Location | Length | Max. Diam. (mm) |
|---|---|---|---|---|
| 39WW3 | 1B | Surface | 29 | 10 |
| | 1B | Surface | 35 | 9 |
| | 1B | Surface | 53 | 13 |
| | 106 | Fea. 8, 6 inches above floor | 48 | 12 |
| | 125 | Fea. 8, house floor | 30 | 12 |
| | 371 | Fea. 17, Pit # 2. | 25 | 9 |
| | 418 | Fea. 8, Cache # 5 | 24 | 8 |
| 39CA6 | Bamble Collection - 14 specimens | | 18-49 | 7-18 |
| | 17 | Fea. 4, level 5 | 33 | 8 |
| | 45 | Fea. 7, level 2 | 21 | 10 |
| | 45 | Fea. 7, level 2 | 25 | 11 |
| | 119 | Fea. 4, level 3 | 27 | 8 |



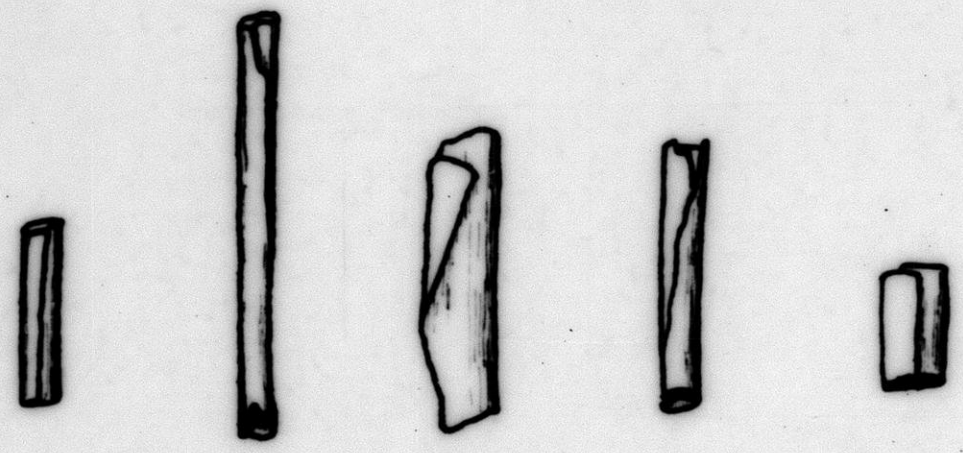
39WW3 1B | 39WW3 106 | 39WW3 1B | 39WW3 125 | No Number

Figure 120. Tinklers or Dangles.

## Table 94. Tubular Beads

The beads are manufactured from rectangular sheets of brass which have been bent to form a simple tube. The provenience and size range of the tubes are tabulated below.

| | # | Location | Length | Max. Diam. (mm) |
|---|---|---|---|---|
| 39WW3 | 181 | Fea. 8, house fill | 9 | 5 |
| | 250 | Fea. 8, Cache # 5 | 15 | 6 |
| | 257 | Fea. 15, surface level | 54 | 4 |
| | 258 | Fea. 8, Cache # 8 | 38 | 9 |
| | 291 | Fea. 8, house floor | 29 | 6 |
| | 335 | Fea. 8, posthole of house | 34 | 5 |
| | 350 | Fea. 15, floor of house | 23 | 5 |
| | 360 | Fea. 17, pit # 2 | 46 | 6 |
| | 504 | Fea. 18, Str. 1 | 51 | 6 |
| 39CA6 | 45 | Fea. 7, Str. 2 | 71 | 5 |
| | 90 | Fea. 4, Str. 3 | 25 | 5 |
| | 109 | Fea. 4, Cache # 1 | 27 | 7 |
| | 109 | Fea. 4, Cache # 1 | 17 | 4 |
| | Bamble Collection - 16 specimens | | 10-97 | 4-7 |



39WW3/350 39WW3/257 39WW3/258 39WW3/335 39WW3/447

Figure 121. Tubular Brass Beads.

## Fringe Clips

W. R. Wedel (1955: 159) has applied the term "fringe clips" to specimens from the Mobridge area which consist of short tubular brass objects made of small squares or rectangles that were bent tightly around leather fringe thongs. Some specimens from the series under consideration could fit in this category although it is possible that they are simply tubular beads that have been flattened by having been stepped upon. One specimen (39WW3: # 250), however, has been folded in such a manner that only a small portion of the metal is doubled under on each side and thus could not have been used except as a clip.

Table 95. Brass Fringe Clips.

| | # | Location | Length | Max. Diam. (mm) |
|---|---|---|---|---|
| 39WW3 | 181 | Fea. 8, house fill | 22 | 11 |
| | 250 | Fea. 8, Cache # 5 | 31 | 15 |
| | 250 | Fea. 8, Cache # 5 | 39 | 15 |
| | 431 | Fea. 15, Cache # 1 | 22 | 14 |
| | 447 | Fea. 15, Cache # 4 | 15 | 8 |
| 39CA6 | 45 | Fea. 7, Str. 2 | 10 | 5 |

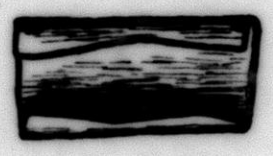


Figure 122. Fringe Clip.

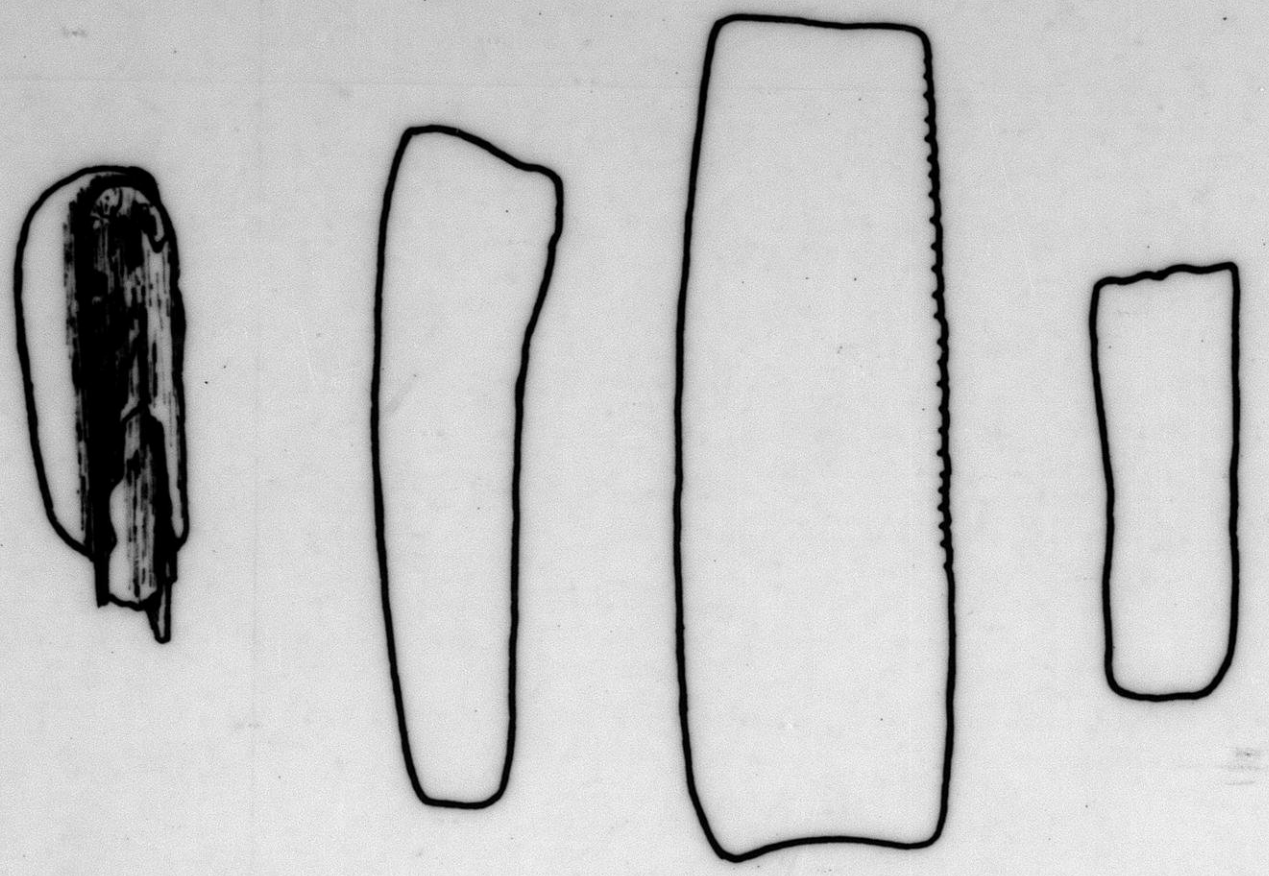
## Knives

Although none were actually found in place, the presence of green corrosion stains on the bone knife handles demonstrated clearly the manner in which some of the brass knife blades were hafted. This, however, was not the only manner. At 39CA6 in a cache at the south end of Feature 5, a brass knife was found with a portion of a wooden handle preserved in contact with the brass. The specimen (# 97) has a brass blade which is generally elliptical in outline with dimensions of 50 x 17 mm and only .5 mm in thickness. It appeared to have been set in a slot near the very end of the wooden handle which was circular in cross section with a diameter of about 13-14 mm.

The remaining knife blades recovered were found at 39WW3. They are quite variable in shape but tend to be relatively narrow strips of brass with one edge sharpened through grinding. A single specimen (# 20) is sharpened on both long edges. The cutting edge is either straight, slightly convex, or slightly concave. An unusual specimen (# 124) is more carefully finished. It is subrectangular in outline with both long edges slightly convex and the ends are straight and slightly concave. About two-thirds of one long edge is sharpened and bears slight notches.

Table 96. Brass Knives.

| | # | Location | Length | Width | Thickness |
|---|---|---|---|---|---|
| 39WW3 | 1B | Surface | 127 | 29 | 1 |
| | 20 | Fea. 2, Str. 1 | 55 | 18 | 1 |
| | 38 | Fea. 9 | 86 | 21 | 1.5 |
| | 106 | Fea. 8, 6 inches above floor | 67 | 21 | .5 |
| | 124 | Fea. 8, house floor | 108 | 35 | 1.5 |
| | 194 | Fea. 14, surface levels | 64 | 16 | .5 |
| | 250 | Fea. 8, Cache # 5 | 39 | 26 | .5 |
| | 327 | Fea. 17, Cache pit | 37 | 15 | 1 |
| 39CA6 | 97 | Fea. 5, cache pit S. end. | 50 | 17 | .5 |

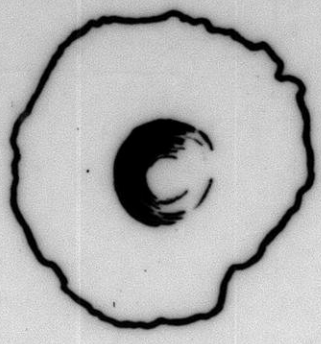


39CA6/97 39WW3/38 39WW3/124 39WW3/20

Figure 123. Brass Knives. Specimen on left found imbedded in portion of wooden handle.

## Disc

A single specimen (# 220, found in Feature 18 of 39WW3) consists of a gently curved disc of brass, 40 mm in diameter, with a slightly depressed area 14 mm in diameter in the center of the convex face. The edges of the disc are broken so that the measurement of diameter is an approximate one. The appearance of the specimen suggests it is a covering over an object of perishable material.



39WW3
220

Figure 124. Brass Disc.

## Awl (?)

The house floor of Feature 8, 39WW3, yielded a tightly rolled sheet of brass which tapered in diameter (# 291). Possibly it was used as an awl or perforating tool since the sheet is rolled too tightly to have been a bead. The pointed end is slightly worn and fractured. The specimen is 48 mm in length and has a maximum diameter of 4 mm.

## Coiled Wire

Pit # 3 in Feature 17 (39WW3) yielded a piece of wire, 2 mm in diameter, that had been rolled into a coil 19 mm in diameter. Traces of textile adhere to the coil. Two sections of straight wire, 45 and 55 mm in length come from the same location. Similar wire coiled in rings (2 to 4 coils), the wire being 1.5 to 3 mm in diameter with the rings ranging between 18-20 mm are in the Bamble Collection from 39CA6. They appear to be similar to the wire used as an ear ornament.

## Rings - Bracelets

The Bamble Collection from 39CA6 also contains brass rings consisting of brass strips bent to a complete circle 19-20 mm in diameter with a width

of 2-7 mm. The collection also contains two brass bracelets. One may be of European manufacture and bears a narrow elevated ridge on the exterior surface. This specimen is 57 x 40 mm in dimensions, the width being 6 mm and the thickness 1.5 mm. The second bracelet is flat and has dimensions of 54 x 40 mm, the strip being 11 mm wide and 2 mm thick.

Table 97. Brass Sheet Fragments

Small scraps of brass, either unworked or discarded, are tabulated below so that their distribution in the sites can be seen.

| | # | Location |
|---|---|---|
| 39WW3 | 96 (2) | Feature 10 |
| | 106 (5) | Feature 8, 6 inches above house floor |
| | 171 (2) | Feature 8, house floor |
| | 174 (1) | Feature 8, house floor |
| | 176 (1) | Feature 8, fill above house floor |
| | 181 (1) | Feature 8, fill above house floor |
| | 431 (1) | Feature 15, Cache # 1 |
| | 201 (1) | Feature 15, Cache # 2 |
| | 233 (71) | Feature 8, 6 inches below floor |
| | 248 (1) | Feature 8, Cache # 5 |
| | 250 (6) | Feature 8, Cache # 5 |
| | 258 (1) | Feature 8, Cache # 8 |
| | 333 (1) | Feature 17, Str. 3 |
| | 367 (1) | Feature 17, pit # 3 |
| | 390 (1) | Feature 17, Str. 1 |
| | 403 (1) | Feature 17, pit # 3 |
| | 406 (2) | Feature 17, ditch |
| | 418 (5) | Feature 8, Cache # 5 |
| | 447 (4) | Feature 15, Cache # 4 |
| 39CA6 | 17 (2) | Feature 4, Str. 5 |
| | 44 (1) | Feature 11, Cache # 1 |
| | 45 (2) | Feature 7, Str. 2 |
| | 46 (2) | Feature 7, Str. 1 |
| | 48 (1) | Feature 1, midden at E. side of house, Str. 4 |
| | 72 (3) | Feature 1, floor |
| | 73 (1) | Feature 5, misc. ditch fill |
| | 86 (1) | Feature 4, Str. 2 |
| | 92 (1) | Feature 4, Str. 2 |
| | 97 (2) | Feature 5, Area C, cache at S end of trench |
| | 129 (1) | Feature 1, floor |
| | 136 (1) | Feature 11 |

## Iron

Iron was much less plentiful than brass and in all instances so heavily oxidized that it is difficult to say much regarding the original form of the specimens. The fragments that are preserved appear to be primarily sections of knife blades, one (39WW3: # 237) comprising a portion of the handle and a section of the blade. One nail-like object was also present, however (39WW3: # 125) and a thin section of rusted iron (or tin) appears to be part of a container (39WW3: # 232). The provenience of the iron specimens is as follows:

Table 98. Iron Artifacts.

| | # | Location | |
|---|---|---|---|
| 39WW3 | 125 | Feature 8, house floor | Nail-like object |
| | 125 | Feature 8, house floor | Flat section of knife blade |
| | 129 | Feature 8, house fill | Section of knife blade |
| | 232 | Feature 18, Str. 1 | Section of iron (or tin) sheet |
| | 237 | Feature 8, Cache # 5 | Section of knife blade |
| 39CA6 | 31 | Feature 1, 6 inches below floor | |
| | 35 | Feature 1, large post hole of house | Knife fragment |
| | 92 | Feature 4, Level 2 | Tabular fragment |
| | 93 | Feature 4, Level 1 | |

## Worked Sherds

Four of the sherds of pottery from 39WW3 (3) and 39CA6 (1) have been ground on the edges, producing a modification in their form. One is naturally reminded of the worked sherds found in Southwestern sites that appear to have been used as smoothing a shaping tools in the manufacture of pottery. Such an explanation fits reasonably well for one sherd of subrectangular outline (# 86 from 39WW3). The edges of this sherd (except for one corner which may be broken) have been ground on the inner or concave face to produce a rounded, beveled edge. The three remaining sherds have a generally circular outline.

The single example from 39CA6 has a straight-sided edge ground to produce a rather smooth curve. The edges of the two remaining specimens are somewhat rounded and not ground around the entire circumference. The fact that the curve is not smooth, even in those areas that are ground, would appear to argue against their use in smoothing the surface of pottery vessels.

Table 99. Worked Sherds.

| Specimen # | Site | Descriptio/Location |
|---|---|---|
| 86 | 39WW3 | Subrectangular; simple stamped exterior; 66 x 59 x 5 mm. Feature 11, NW¼128R1, Str. 1. |
| 85 | 39WW3 | Circular; simple stamped exterior; diam. c. 38 mm, thickness 6 mm. Feature 11, NW¼127R5, Str. 1. |
| 278 | 39WW3 | Circular; smooth exterior; diam. 29-33 mm; thickness 5 mm. Feature 15, fill above house floor. |
| 15 | 39CA6 | Circular; simple stamped exterior; diam. 42 mm; thickness 7 mm. Feature 4, level 4. |

Figure 125. Worked Sherds.

## Pottery

Although excavations at 39WW3, 39WW10 and 39CA6 were in the nature of intensive testing operations, the ceramic sample recovered was of substantial size. The rim sherds alone numbered 676 at 39WW10, 4,529 at 39WW3, and 2,153 at 39CA6. Nearly four body sherds were found to each rim sherd. In the analysis presented here, only the rim sherds are divided into type categories since it is on the basis of this section of the vessel that most types have been established in the archaeological literature on the Plains. Rim profiles of the major ceramic types can be found in Appendix

At the time we made our initial ceramic classification, we had available descriptions of two groups of pottery types, Stanley Ware (Lehmer, 1954) and Talking Crow Ware (Smith, 1951), which seemed to accommodate a substantial portion of the pottery from our two large sites. For both 39WW3 and 39CA6, Lehmer's Stanley Ware from the Dodd site and Smith's Talking Crow Ware from the Talking Crow site, appeared to apply reflect comparable types comprising the major portion of the collection with two important exceptions. The first exception pertained to the rims exhibiting an "S" shape. Although this attribute had previously been used as the basis for the isolation of types by Hurt, Lehmer and Smith, none of these satisfactorily accommodated the S-rims from 39WW3 and 39CA6. In view of this, the S-rims were simply segregated as a group and no attempt was made to assign them to a formal type. The second exception, so far as a major ceramic group at the two sites was concerned, consisted of a group of sherds that seemed to represent a mid-point or transitional form between Talking Crow and Stanley Wares. The difficulty of placing these intermediate forms in either of the two categories led to the establishment of a provisional "Intermediate" category

which we visualized might subsequently be included with either of the two wares should it seem justified. The ceramic material from 39WW10 presented a separate problem for although some of the types discussed could be used in the description of the sherds, the total complex deviated considerably from the standards of 39WW3 and 39CA6.

Subsequent to our initial analysis of the ceramics, Wesley R. Hurt, Jr., (1957) published his description of the material from the Swan Creek Site (39WW7). Le Beau Ware and Akaska Ware as established on the basis of the Swan Creek material would appear to accommodate virtually all of the pottery from our sites. Yet the close similarity of Le Beau Ware, the relevant ceramic group for 39WW3 and 39CA6, to Talking Crow Ware is evident from some of Hurt's comments. Of Le Beau Plain, for example, he states:

> The types classified as Talking Crow Brushed and Stanley Plain appear to form two ends of a series with Le Beau Plain as the intermediate type. Talking Crow Brushed is present in Occupation A (Akaska Focus) while Stanley Plain is associated with the Le Beau Focus (Occupation B, C, D). The development sequence was from Talking Crow Brushed with thin rounded lips, to Le Beau Plain with thickened lips, to Stanley Plain with a braced rim. (Hurt, 1957: 40)

The transitional character of Le Beau Ware is also noted in connection with the general statement on the ware:

> The major difference between Le Beau Ware and Stanley Braced Rim Ware is the lack of the braced rim in the former. This difference is not clear cut, however, for some of the thickened and rolled rims of the Le Beau Ware are transitional to braced rims. (ibid: 37)

It is to be seen in the sections quoted from Hurt's report that he visualizes a developmental sequence in time with Talking Crow Ware as an early variety, Le Beau Ware occupying an intermediary position and Stanley Ware as the final phase in the sequence. It is possible, however, that such an interpretation is largely an outgrowth of the classification scheme used

for the pottery. In view of this possibility, it was felt there might be some merit in presenting our preliminary classification of the ceramic sequence with only some minor modifications to accommodate some of the new data presented in recent reports. Since this is a provisional classification and we recognize that reworking the material in the light of the more recent site reports would be desirable, some justification of this procedure appears called for.

The earliest component excavated in our season's work is clearly 39WW10 and would appear to be a unit of the Akaska Focus like the Payne Site (39WW302; Wilmeth, 1958). Pottery types established for this unit (including both Akaska Ware and Le Beau Ware) fit 39WW10 well, though with markedly different frequencies. Clearly the ceramic assemblage is one stressing broad incised decorations and with a high proportion of S-shaped rims. It would seem to mark an early influx of brushing and of cord-impressed decorations, but these are by no means a dominant portion of the assemblage. The excavation units at 39WW3 and 39CA6 basically reflect a cultural discontinuity with 39WW10. Viewing the situation from our site excavations, it would appear that a new ceramic assemblage was brought into the area (i.e., a "new" variant on some basic Missouri Valley themes). What we have classified as Talking Crow Ware represents the basic ceramic tradition of this new horizon. Accompanying the Talking Crow Ware in all horizons is a substantial element of S-shaped rims which may reflect new or continued influence from northern sites. Our "Intermediate" form may be seen as the result of an interaction between a later addition to the ceramic complex, the Stanley Ware, and the earlier and longer resident Talking Crow Ware. The "Intermediate" form is present in substantial numbers only when Stanley Ware is present. Thus it is not "inter-

mediate" in a temporal sense but rather in a physical sense in that it reflects a blurring of the differences between two separate styles of pottery manufacture and, indeed, a "style" defined large on the basis of the one shape attribute in the ceramic assemblage.

By contrast, Hurt's procedure as we see it, represents the use of a broad Le Beau Ware concept which includes within it not only some of the materials of the Akaska Focus horizon but also our Talking Crow types plus our Intermediate form. Thus by broadening his definition, he may be giving an appearance of cultural evolution and continuity in a situation which is better interpreted as an interplay of stylistic influences. The alternatives must, of course, be resolved by looking beyond the limits of individual site excavations but we are also convinced that a reappraisal of some of the basic classificatory procedures may be needed.

It was mentioned earlier that our own classification should be regarded as provisional. Some of the limitations of the classification so far as 39WW3 and 39CA6 should therefore be indicated. The S-rim category, for example, appears to be far too broad and may well reflect multiple influences in the assemblage. Some sherds bearing a broad incised decoration clearly reflect a continuity from the Akaska Focus horizon. In fact they are Le Beau S-Rim, Incised variant, to use Hurt's terminology. Yet all incised S-Rim sherds do not fit in this category and they do not seem to reflect an evolution from the earlier forms. A minor element involving Nordvold Horizontal Incised, Akaska Stab & Drag and Le Beau Tool Impressed at 39WW3 and 39CA6 may reflect an absorption of some of the earlier Akaska Focus traits. Hurt would appear to be quite correct in stressing the deviation in his Le Beau Cord Impressed from the Talking Crow Cord Impressed (as seen in his separate

classification), perhaps under the stimulus of the greater popularity of cord impressions in northerly regions. What this preliminary view of some of our conclusions would seem to imply then is that the complexity of the local cultural history would not appear to be resolved by either our earlier acceptance of a Talking Crow--Stanley dichotomy, or by the more recently defined Le Beau series. In view of this, and lacking the comparative collections for a broader comparative analysis, it would seem just as wise to retain our provisional classification.

Some general comments on the various pottery types, particularly as to the manner in which their attributes or our use of the types differs from the initial type descriptions, is given in the following section. Tabulation of their frequency and where possible, of the component attributes, is given in connection with the discussion of the individual excavation units.

## 39WW10

The ceramics from 39WW10 may be discussed first since with this material we have modified our initial classification and accepted most of the type categories used by Hurt in the Swan Creek Report. Some modifications in the classification was made, however, and these are the aspects we are most concerned with at this point.

Nordvold Horizontal Incised (Hurt, 1957: 44-5; Wilmeth, 1958: 5)

Type material: 130 rim sherds (18.5% of typed sample from 39WW10).

Paste: (similar to 39WW7 and 39WW302)

Surface finish: Rim and shoulder either polished, smoothed, simple stamped or brushed prior to application of design. Very rarely (6 examples) the brushing was not smoothed prior to the application of the incised decoration.

Partially obliterated brushing can be seen on 35 additional examples. Simple stamping while clearly present on the rim in some examples is more difficult to recognize since it may result from an overall body treatment which has been largely smoothed on the neck to provide a surface for the decoration.

Form: Rims are straight to gently flaring. 47 of the lips are flattened, the remainder being generally rounded. The application of a decoration on the lip frequently gives a slight roll or extrusion to the exterior and more rarely on both interior and exterior to form a T-shaped lip. Strap handles appear on two sherds. Rim thickness ranges between 5-13 mm, average 6.9 mm.

Decoration: Lip: diagonal incised lines or punctations, 99 examples; herringbone incisions, 18 examples; undecorated, 14 examples. Rim: Commonly a series of horizontal incised lines varying from broad (6 mm) to narrow (1 mm) but commonly about 3 mm. 18 examples had a row of punctate impressions or short diagonal incisions above the horizontal lines and immediately below the lip. Handles: horizontal incised lines on one example and punctate impressions on the second example. Shoulders: One large rim had an area of opposed diagonal lines on the shoulder area. On this vessel the horizontal lines were confined to the upper rim area leaving a plain band of equal width below it.

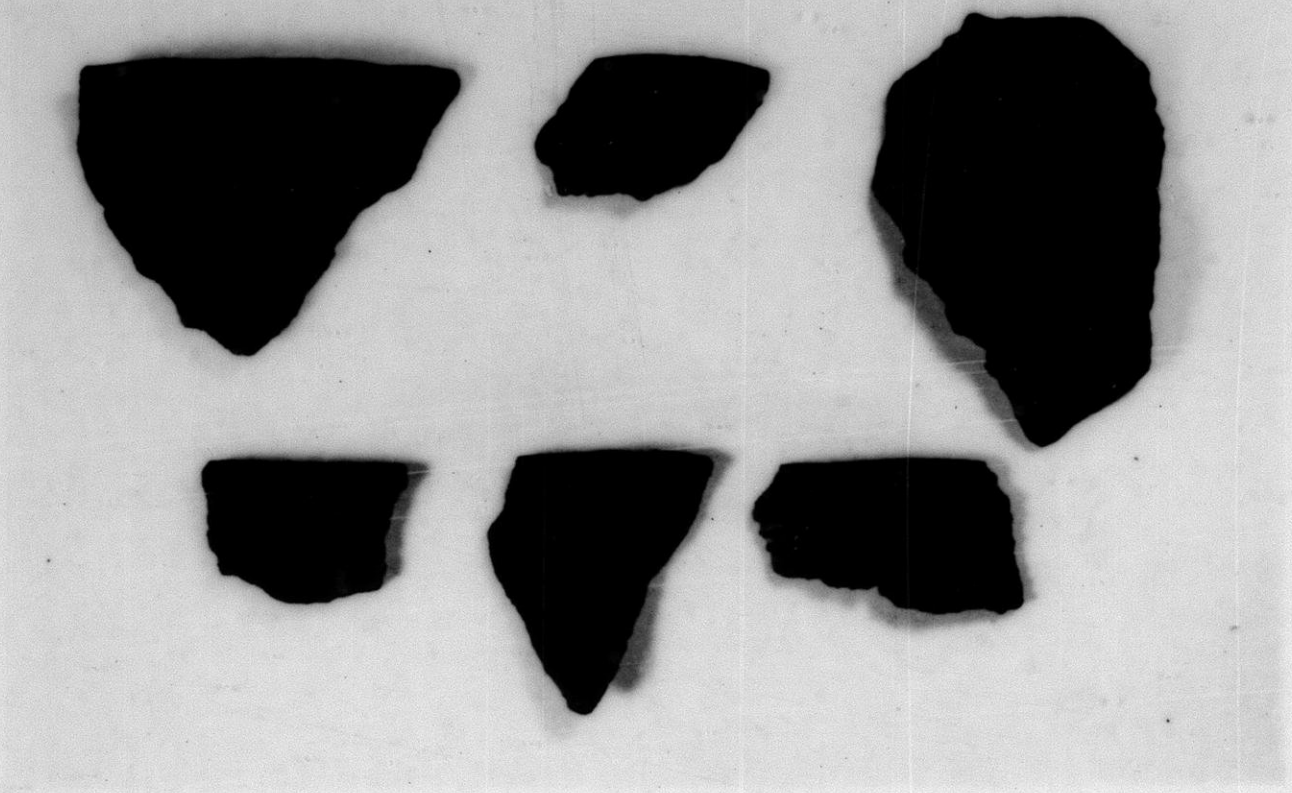


Figure 126. Nordvold Horizontal Incised (½ scale).

Le Beau S-Rim: Incised (Hurt, 1957: 40-41; Wilmeth, 1958: 5-6)

Type Material: 240 rim sherds (38.5% of typed sample from 39WW10).

Paste: (similar to 39WW7 and 39WW302)

Surface finish: Rim area is smoothed prior to decoration but may retain traces of prior simple stamping or brushing. Rim decoration may extend to shoulder but commonly neck zone is smooth or bears traces of brushing or simple stamping. Shoulders are commonly decorated.

Form: Rims are S-shaped but with varying degrees of outward bulging. Thickness ranges between 4 and 9 mm, average 6.0 mm. Lip is commonly rounded but may be slightly flattened. Appendages: Pointed or oval boss produced

by pushing from interior of S-rim, 7 examples. In four instances these are embellished by short incisions contrasting with adjacent zone of horizontal incised lines.

Decoration. Lip: Punctate impressions or diagonal incisions, 80 examples; herringbone pattern, 1 example; remainder are undecorated. Rim: Variety in size of incised lines closely approximates those of Nordvold Horizontal Incised. The following design patterns were noted: (1) Horizontal incised lines, 70 examples; (2) Row of punctate impressions immediately below lip bordered by horizontal incised lines below, 72 examples; (3) Band of diagonally incised lines on upper rim, horizontal incised lines below, 8 examples; (4) Diagonally incised lines bordered above and below by a single horizontal line, 20 examples; (5) Opposed zones of diagonal incisions which may have horizontal lines below, 21 examples; (6) Horizontal line of punctate impressions below lip with opposed zones of incised lines below, 13 examples; (7) Diagonal lines bordered by horizontal line below, 1 example; (8) Incised lines in rainbow pattern, 1 example; (9) Punctate design below lip followed by an incised chevron band below and finally bordered underneath by horizontal lines, 1 example. Shoulder: 8 sherds of sufficient size to indicate an incised design of opposed diagonal lines.

Comments: Pattern and style of decoration on this type merges gradually with Nordvold Horizontal Incised. The relatively slight degree of extrusion of the rim form on some sherds shows a similar tendency for a pattern of transition from one variety to the other. At this site the two types would seem to be closely related, companion forms although the complexity of the decoration on Le Beau S-rim: Incised as well as the differences in lip treatment confirms their independence as types or varieties.

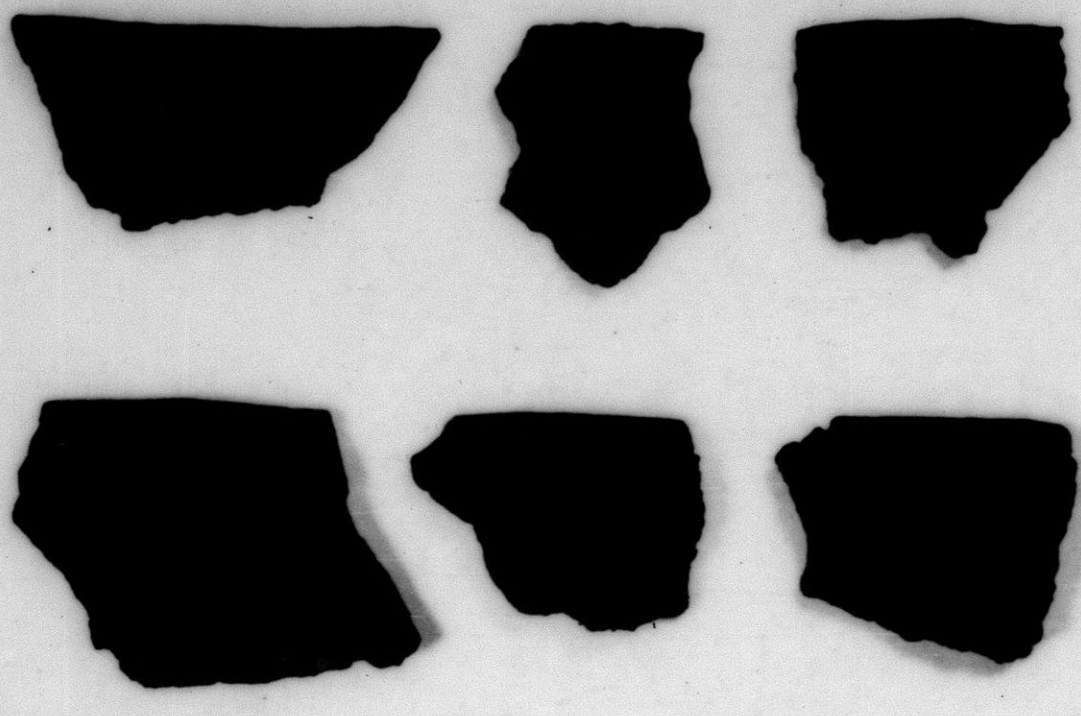


Figure 127. Le Beau S-Rim: Incised (½ scale).

Le Beau S-Rim: Horizontal Cord Impressed (Hurt, 1957: 41; Wilmeth, 1958: 6)

Type Material: 42 rim sherds (6.7% of typed sample from 39WW10).

Paste: Similar to 39WW7 and 39WW302 except that occasional pieces of mica may be noted in some sherds.

Surface finish: Rim area was smoothed prior to application of cord impressions. Traces of simple stamping, nearly obscured by smoothing, are present on a few sherds. Neck is either smoothed or brushed but few of the sherds retain this region so that the relative frequency of the two treatments can not be determined.

Form: Rims are a gently rounded S-shape. Lip is rounded or slightly flattened and in a few instances bulbes to the exterior. Thickness ranges between 5-8 mm, mean 6.5 mm. An area for the attachment of a strap handle remains on one rim.

Decoration: Lip: 7 lips bear a notched or diagonally incised lines; in one instance the punctate impression produces a marked outward bevel; the remaining lips are undecorated. The typical decoration consists of lines of twisted cord impressions, the number varying between five and eight. In 27 examples the lines of horizontal cord impressions are the sole decoration. 15 examples have a line of punctate impressions immediately below the lip below which the horizontal cord impressions are found. A single sherd indicates that a zone of punctate impressions began on the shoulder of the vessel.

Comments: The small size of many of the sherds makes it impossible to determine whether a substantial number also combined a rainbow decoration with the horizontal cord impressions.

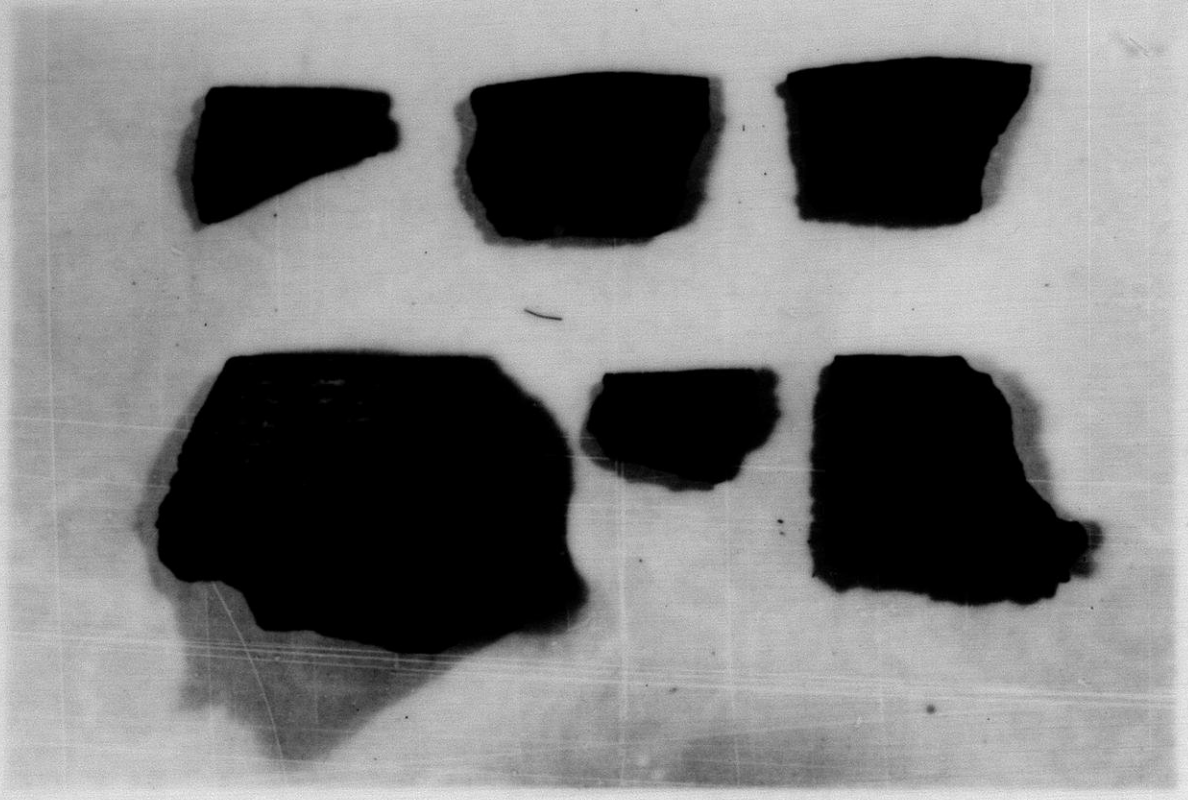


Figure 128. Le Beau S-Rim: Horizontal Cord Impressed (½ scale).

Le Beau S-Rim Rainbow-Cord (Rygh Rainbow Corded). (Hurt, 1957: 42-3; Wilmeth, 1958: 6)

Type Material: 8 rim sherds (1.0% of typed sample from 39WW10).

Paste: Similar to 39WW7 and 39WW302 but with inclusion of fine mica among tempering material.

Surface finish: Surface smoothed prior to application of cord impressions on rim. No instances of brushing or stamping noted but sherds are small in size.

Form: S-shape form varies from gently rounded to markedly bulging. Lip is rounded to slightly flattened and in two instances bulges slightly to exterior. Rims range in thickness between 6 and 9 mm with a mean of 7.4 mm.

Decoration: Lip: Diagonal notches on two lips, the other six being plain. Rim: Two sherds bear a horizontal line of vertical punctate impressions above the cord impressed design. One sherd bears a single line of the stab and jab technique above the cord impressed design. On the remaining sherds the cord impressed design begins immediately adjacent to the lip and includes a rainbow pattern set in a band or horizontal cord impression. The presence of a shoulder or body design could not be determined.

Figure 129. Le Beau S-Rim: Rainbow Cord (Rygh Rainbow Cord) (½ scale).

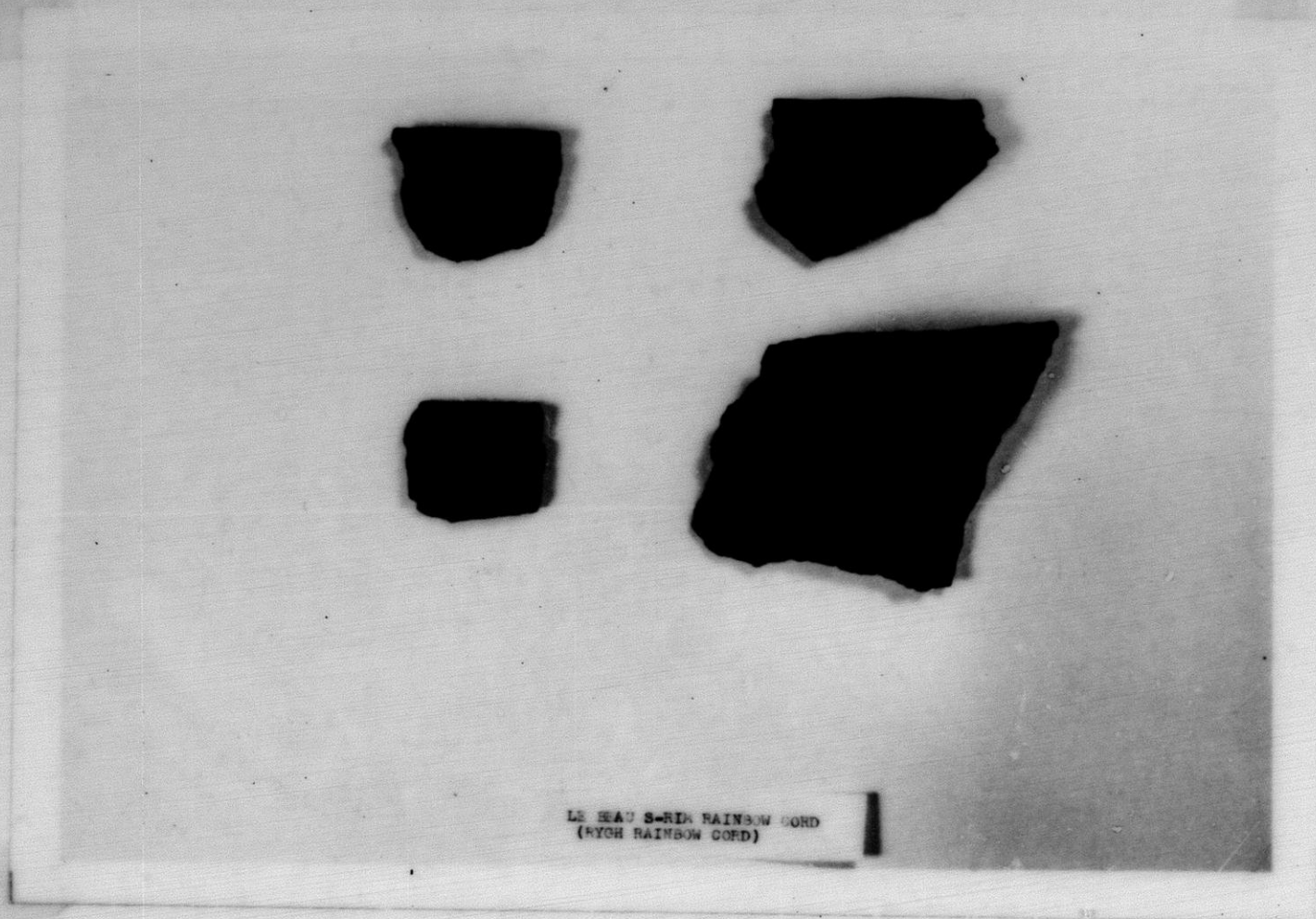



Figure 129. Le Beau S-Rim: Rainbow Cord
(Rygh Rainbow Cord)

Le Beau S-Rim: Miscellaneous Variants. (Hurt, 1957: 43; Wilmeth, 1958: 6)

Type Material: 18 rim sherds (2.9% of typed sample from 39WW10)

Paste: Similar to 39WW7 and 39WW302 and previously described variants.

Form: Lips are gently rounded or flattened and in three instances slightly bulging to exterior. Curvature on S-rim is similar to previously described forms.

Surface finish: Rim is smoothed. 4 specimens have brushing on neck.

Decoration: Lip: Diagonal notched (2 specimens) or punctated (specimen); the remainders are undecorated. Three specimens have cord impressed decoration. Of these, one consists of a band of diagonal lines and the other two bear zones of opposed lines. The collar is plain and undecorated on three specimens, two of which bear traces of simple stamping. The remainder bear punctage designs, four having a single line of punctate impressions and eight having three bands of alternating left and right leaning punctate impressions.

Comments: The few sherds included in this group are comparable to the variants which appear in minor quantities at 39WW302 (14 sherds being S-Rim Plain as compared with 3 at 39WW10) and 39WW7 which has punctated and variant cord impressions.

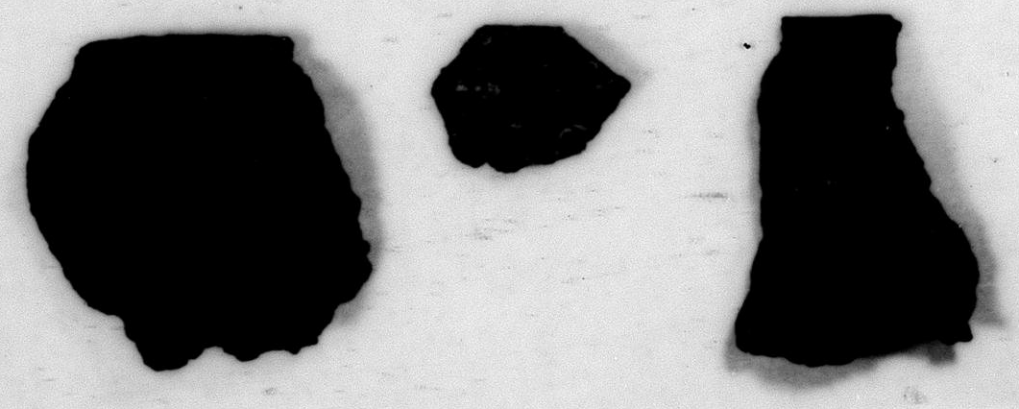


Figure 130. Le Beau S-Rim: Miscellaneous Variants (½ scale).

Le Beau Cord Impressed. (Hurt, 1957: 38-9; Wilmeth, 1958: 7).

Type Material: 22 rim sherds (3.5% of typed sample from 39WW10).

Paste: Generally compact with fine temper giving the impression of being a finer ware than that characteristic of 39WW3 and 39CA6.

Surface finish: Rims were smoothed prior to the application of the cord impressed decoration. In one example a brushed treatment is only partly obliterated prior to the decoration and in a second example where the decoration is confined to the lip, the rim is brushed in a rather delicate treatment.

Form: Rims range from nearly vertical to gently flaring. Lips are rounded and slightly flattened but also include two clear L-shaped forms and nine examples where there is a slight roll to the exterior. Shoulder and body forms are not represented since all sherds are small in size. Rims range in thickness between 5 and 10 mm, average 7.5 mm.

Decoration: In one specimen the cord impressed decoration is confined to the lip where it is executed in herringbone fashion. Other lip decorations combined with horizontal cord impressions on the rim include: (1) herringbone incised and cord impressed pattern (5 examples); (2) diagonal notches and punctations (5 examples); and, (3) parallel cord impressions running longitudinally along the lip (2 examples). 9 lips were undecorated. Rim decoration includes a zone of parallel cord impressions (9 to 23 lines are represented) either closely or broadly spaced (18 examples) and lines of parallel cord impressions placed below a band of punctations set immediately below the lip (3 examples). One sherd bore a strap handle which tapers markedly in width from top to bottom and was decorated with similar horizontal lines of cord impression.

Comments: It is of interest to note that Le Beau Cord Impressed was confined to Feature 1 and the Surface at 39WW10 despite the fact that Feature 2 yielded the larger number of sherds. It is possible, therefore, that Feature 1 witnessed the introduction of this style of decoration in the ceramic assemblage. Only a single sherd in this group would be particularly characteristic of the Talking Crow Cord Impressed pattern in its most usual form (Smith, 1951: 35-6) and this is a thin sherd with a distinct L-shaped lip.

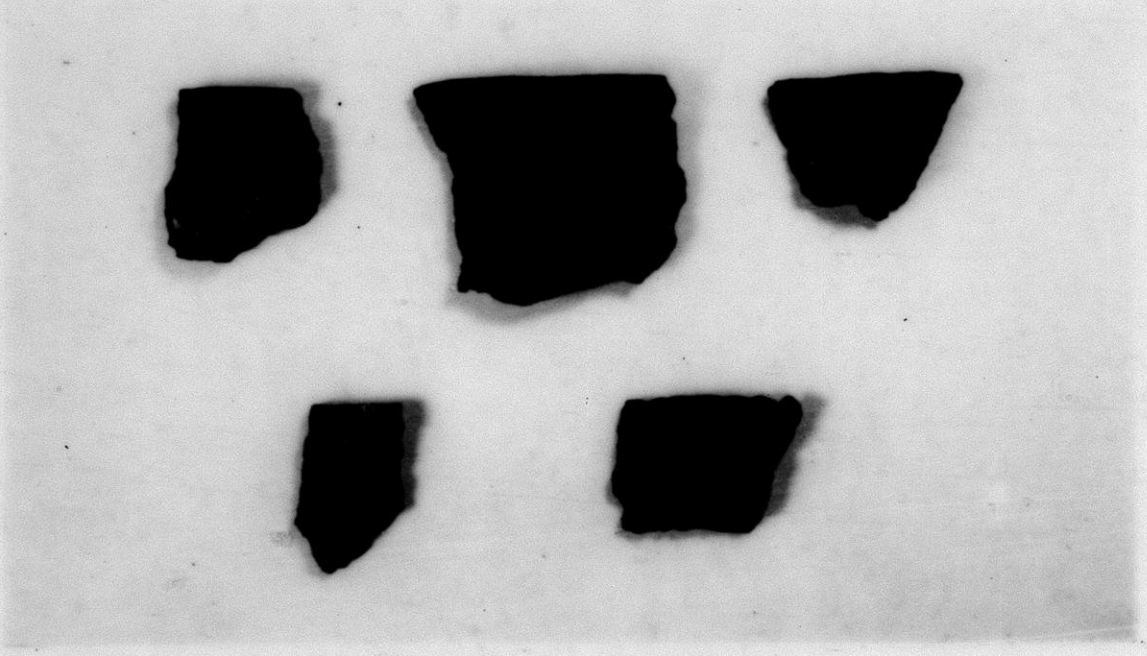


Figure 131. Le Beau Cord Impressed (½ scale).

Le Beau Tool Impressed. (Hurt, 1957: 43; Wilmeth, 1958: 7)

Type Material: 97 rim sherds (15.6% of the typed sample from 39WW10). These sherds doubtless include a substantial number (perhaps a majority ?) that Hurt and Wilmeth would classify as Akaska Tool Impressed. Not having a comparative sample on hand that would permit a similar sorting as to paste

characteristics, the only feature in which the two types differ, we have preferred to lump the group into a single category.

Paste: Similar to other sherds from 39WW10.

Surface finish: Rims are either smoothed (64 examples) or brushed (33 examples). The brushed rims are partially smoothed to eliminate the coarse brushing. The smoothed rims are occasionally polished and at times show traces of partially obliterated simply stamping. The shoulder and body may be simple stamped.

Form: Rims are gently flaring and outcurving. Lips are thin and rounded where lip decoration was applied gently and bulging out on one or both sides where the decoration was forcefully applied. Rims range between 5 and 13 mm in thickness, average 8.7 mm.

Decoration: Lip is always notched or bears bold punctate impressions. Rim is smooth and undecorated except for presence of brushing. In a single instance the shoulder bears an incised decoration of opposed zones of parallel lines. Two other sherds of sufficient size to reveal shoulder bear only simple stamping on the shoulder area.

Comments: As previously noted, these sherds may be either properly classified as Akaska Tool Impressed or Le Beau Tool Impressed. The high frequency of smooth rims suggests that they may be primarily the former.

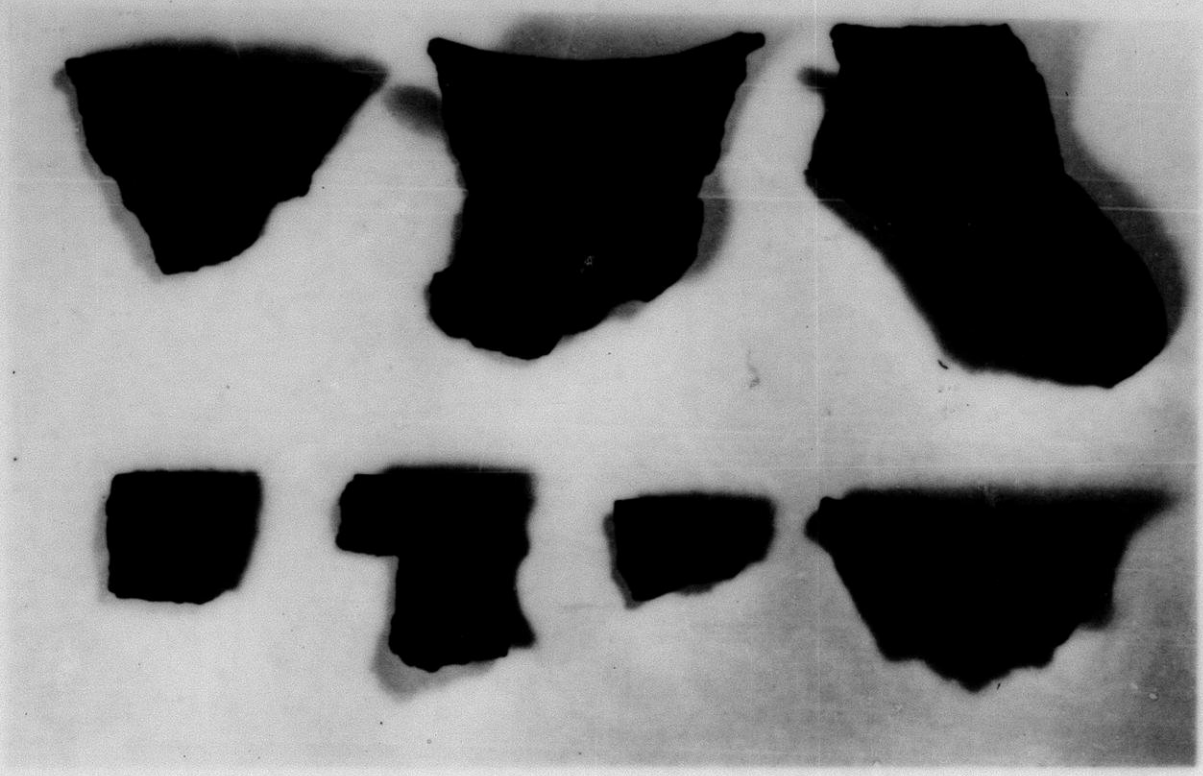


Figure 132. Le Beau Tool Impressed (½ scale).

Steamboat Cord Wrapped Rod (Hurt, 1957: 43-4). Two rim sherds may represent examples of this type. One specimen with a flat and undecorated lip appears to be a portion of a very slight S-rim vessel. The rim bears horizontal impressions of a cord wrapped rod, tightly spaced. The second specimen also has a flat and undecorated rim and may also be an S-rim but not a sufficient amount of the rim is present for a precise determination. A deep bold impression of a cord wrapped rod is spaced about 5 mm below the lip and horizontal to it. The two rims are 6 and 8 mm in thickness.

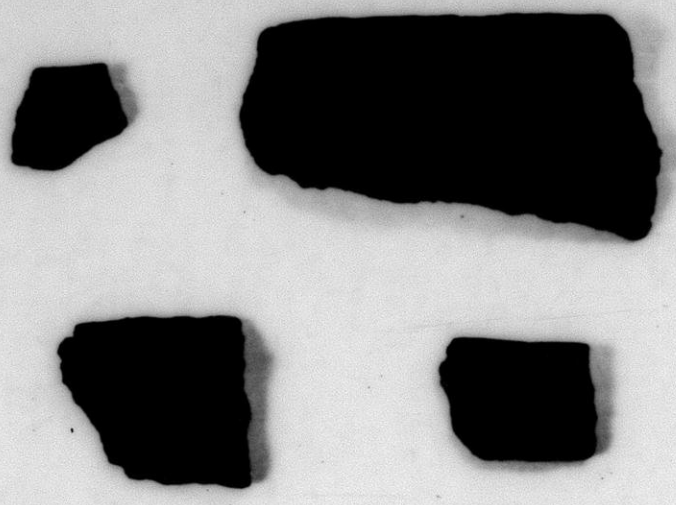


Figure 133. Steamboat Cord Wrapped Rod (½ scale).

Wheeler Ridged Rim. As at the Swan Creek Site (Hurt, 1957: 48) a minority element in the ceramic complex includes Wheeler Ridged Rim (Hurt, 1952: 73-77). Two sherds were found at 39WW10, both being thin-walled (6-7 mm) with a slightly outflaring, straight rim. The lip is flat on one rim and rounded on the other. A diameter at the orifice of about 24 cm is indicated for one specimen, the rim being 45 mm high. Both rims are characterized by simple stamping. As Hurt indicates, this type differs from Akaska Plain only in the absence of neck brushing.

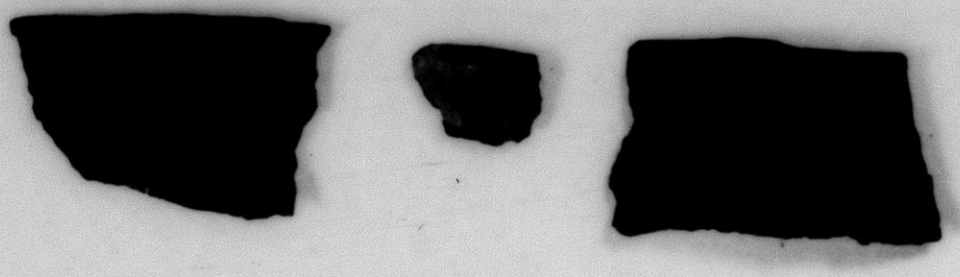


Figure 134. Wheeler Ridged Rim (½ scale).

Akaska Plain. (Hurt, 1957: 46). The 19 sherds from 39WW10 could readily be classed as Talking Crow Brushed but to contrast with the sherds so classified from 39WW3 and 39CA6 we have preferred to use Hurt's Akaska Plain category. The sherds from 39WW10 are generally thin (4 to 9 mm; average 7.0 mm). Lips are flat to slightly rounded and frequently extrude on the exterior to give an L-shaped form (10 examples). The paste is somewhat more compact and with sparser temper. With one exception where there is a slight finger indentation, lips are completely undecorated. The only surface modification is the rather light and delicately applied brushing.

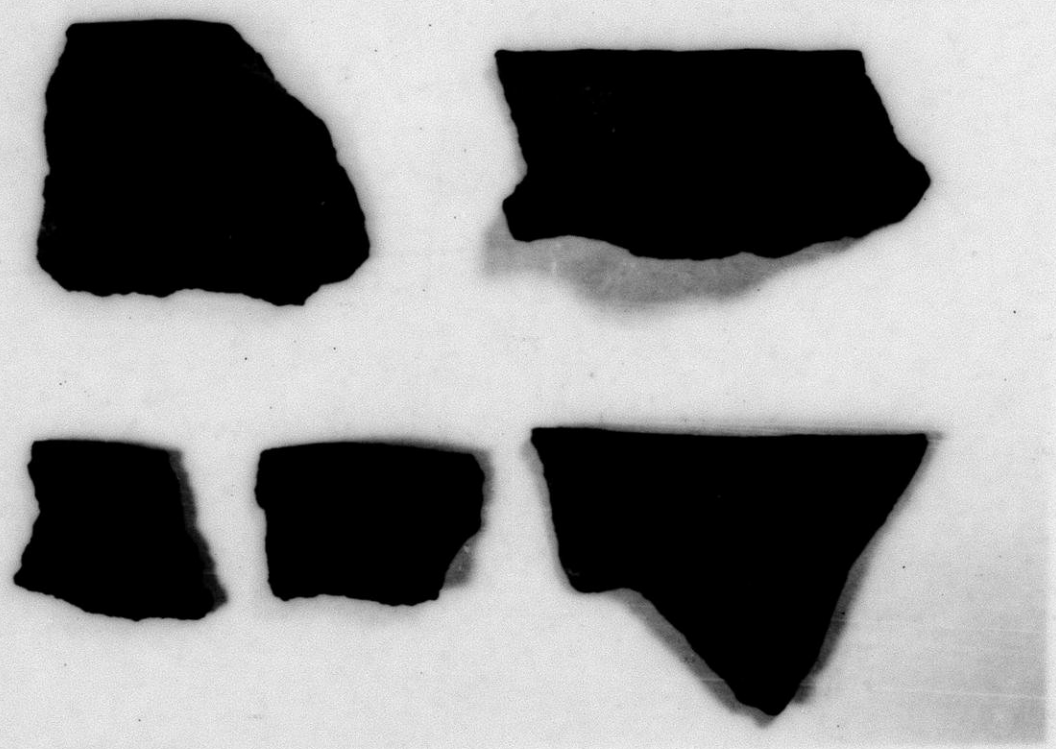


Figure 135. Akaska Plain (½ scale).

Akaska Stab and Drag (Hurt, 1957: 45; Wilmeth, 1958: 7). 24 sherds of this variety were found at 39WW10. Except for differences in the technique of line production, the sherds would otherwise be classed as Le Beau S-Rim (18 examples) or Nordvold Horizontal Incised (6 examples). Rim thickness ranges between 5 and 9 mm, average 5.5 mm.

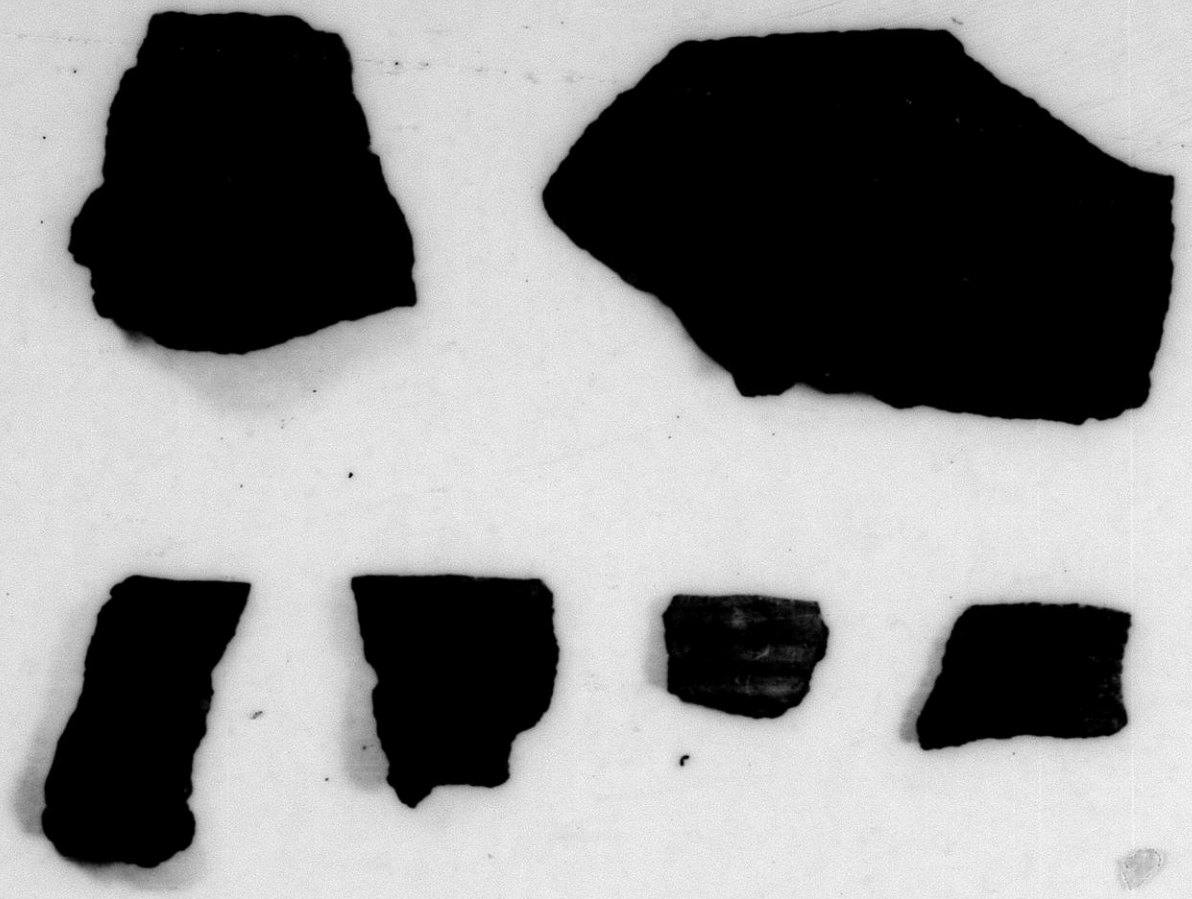


Figure 136. Akaska Stab and Drag (½ scale).

Le Beau Punctate (Hurt, 1957: 40-1; Wilmeth, 1958: 7). 19 sherds of this variety were found at 39WW10.

Lehmer has described this rim form as comprising "flaring rims with the shape of an angular "3" or with a thickening of the rim that forms a type of fillet" (ibid: 40). With the exception of one rim in the second category that

has the appearance of being a delicate Stanley Tool Impressed rim, all of the rims from 39WW10 fall in the first category. It may be more appropriate to describe them as being an angular form of S-rim. The figure 3 shape is derived from the single line of deeply impressed punctates which are placed immediately below the lip. Lips are rounded except for three examples. Two of the latter are flat and one bears a broad encircling line which makes the lip slightly hollow. 11 rims are brushed on the neck and the remainder are smoothed. Rim thickness ranges between 5 and 9 mm, average 6.3 mm.

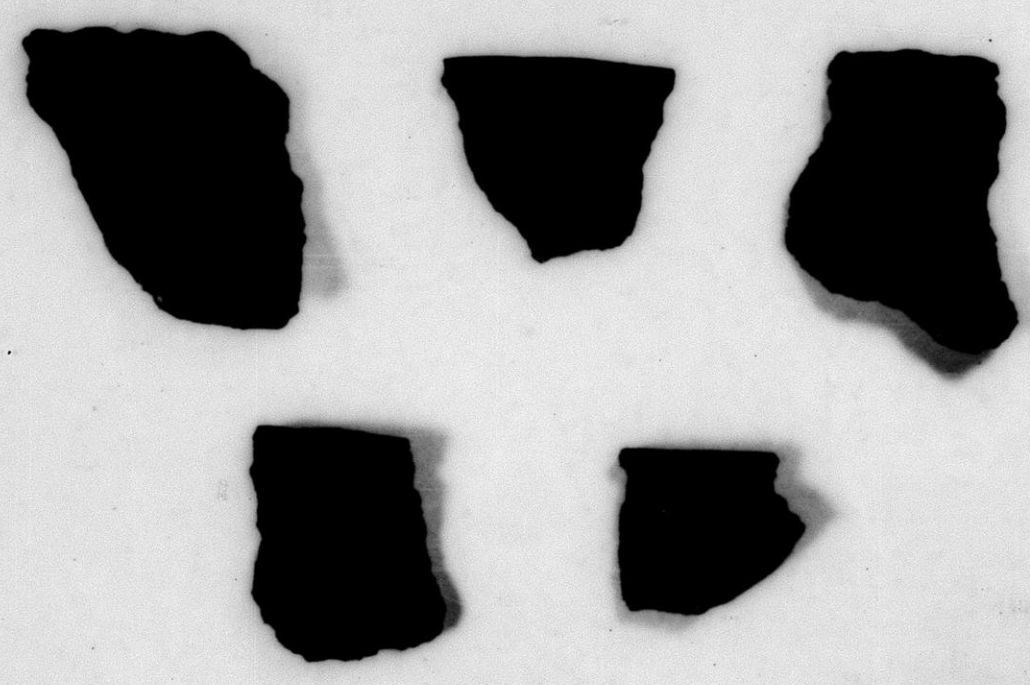


Figure 137. Le Beau Punctate (½ scale).

## 39CA6

To present the characteristics of the ceramics of the late phase, the type material described is primarily that from the Bamble site, 39CA6. Frequences of particular attributes are those of this site. Where significant differences exist between the ceramics of 39CA6 and 39WW3, such differences are given in the comparative remarks toward the close of the pottery description.

Talking Crow Brushed (Smith, 1951: 34-5)

Type material: 503 rim sherds at 39CA6.

Paste: conforms to original type description.

Surface finish: All brushed diagonally from base of neck to lip except one sherd which was brushed horizontally and another which had been smoothed over the brushed treatment. The body sector of the few rims preserving a portion of the body, all were smoothed. The interior was generally brushed diagonally or horizontally but some were smoothed.

Form: Rim is gently flaring (410) or straight (91). The lip is rounded (243), flat (62), outward beveled (158), with a slight vertical flange on inner margin (32), T-shaped (1), or L-shaped (7). Rims range in thickness between 5 and 15 mm, with a mean of 9.1 mm. The diameter of the orifice ranges between 10 and 51 cm, with a mean of 20.5 cm. The height of the rim ranges between 28 and 82 mm, with a mean of 44.1 mm. Three strap handles were present in the series.

Decoration: No decoration was applied to the type except for slight finger indentations around the interior of the rim. These indentations were observed on 119 of the total of 503 sherds.

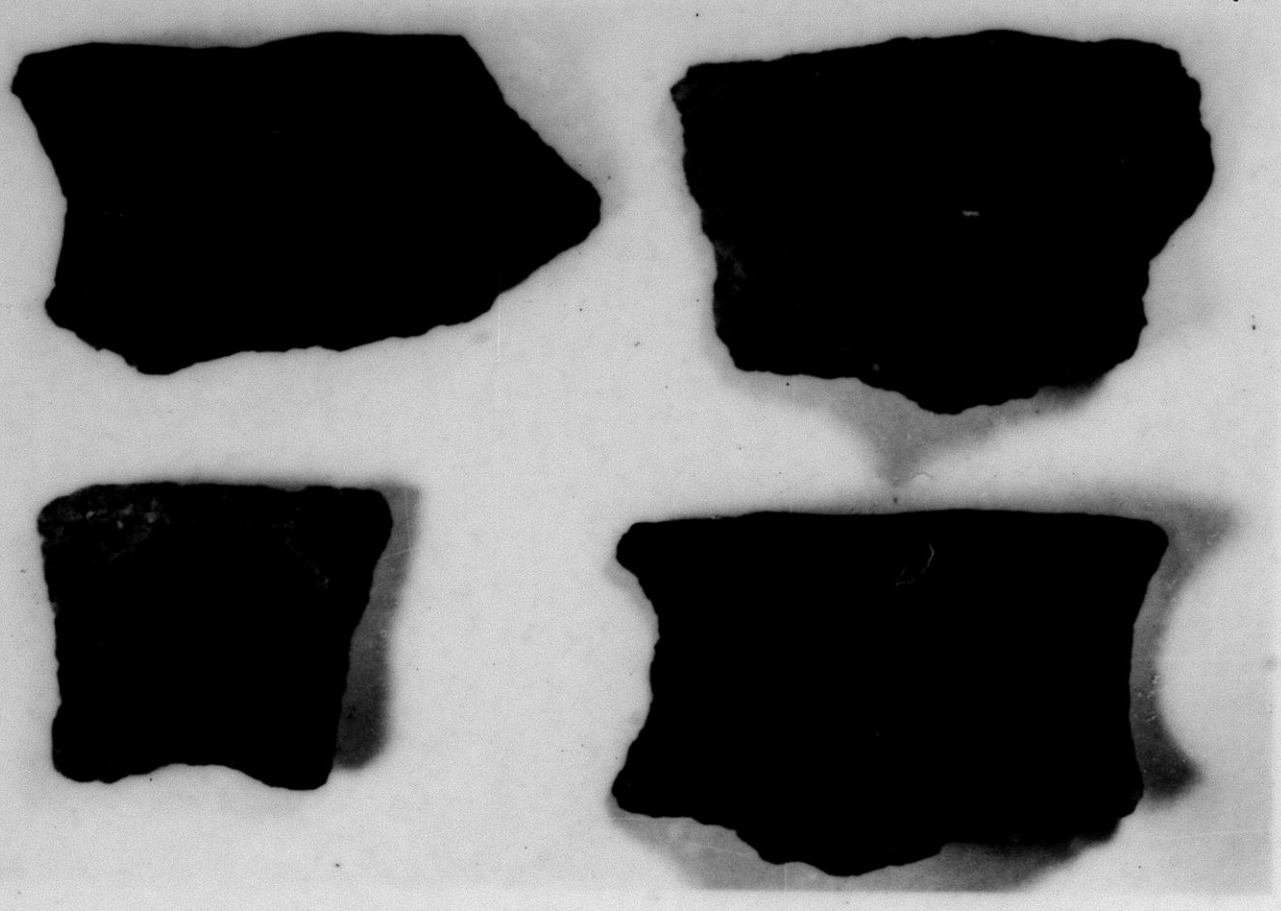


Figure 138. Talking Crow Brushed (½ scale).

Talking Crow Cord Impressed (Smith, 1951: 35-36)

Type material: 290 rim sherds at 39CA6.

Paste: similar to Talking Crow Brushed.

Surface finish: Neck: Of sample of 290 sherds, 122 were brushed (2 of these brushed horizontally), 36 were smoothed, with the remainder not observable. The shoulder and body area is predominantly simple stamped, with a few being smoothed.

Form: Rim is gently flaring (247) or straight (42). The lip is rounded (96), flat (40), outward beveled (125), T-shaped (1), L-shaped (13). Rims

range in thickness between 4 and 15 mm with a mean of 9.2 mm. The height of the rim ranges between 10 and 72 mm, the mean height being 37.8 mm. The diameter of the orifice ranges between 5 and 24 cm, with a mean diameter of 14.4 cm. 21 strap handles were present in the sample. 20 of these extended from the lip to the position where they were riveted to the neck. The upper portion of one handle was attached to the rim 11 mm below the lip. Two lugs were also present, projecting from the lip perpendicular to the rim.

Decoration: Lip decoration on the sample included: (1) parallel cord impressions encircling the lip, 143; (2) perpendicular cord impressions or incisions, 5; (3) diagonal cord impressions or incisions, 53; and (4) herring-bone or incisions, 2. Where lip decorations are not cord impressions, the latter is found on the rim. Rim decoration also consists of cord impressions, the following patterns being recorded: (1) horizontal parallel lines, 121; (2) diagonal parallel lines, 7; (3) diagonal parallel lines bordered above and below by two horizontal parallel lines, 1; (4) horizontal parallel lines bordered by circular punctate impression above, 1; (5) horizontal parallel lines bordered by vertical lines above, 1. The most characteristic decoration is clearly that of horizontal parallel lines which either covers the entire rim area or is confined to the lower sector of the rim leaving an undecorated band adjacent to the rim. 133 of the 290 sherds were decorated on the rim, a situation markedly in contrast with the initial sample reported from the Talking Crow Site were 85% of the necks were undecorated (Smith, 1951: 36). Decoration when present on the shoulder consists commonly of opposed zones of incised lines. Decoration also occasionally appears on the interior of the rim as finger punctates (19), horizontal cord impressed lines (5), or diagonal cord impressed designs. Fifteen handles were decorated, fourteen

of these having parallel horizontal lines and one with the horizontal parallel lines bordered on each side by three vertical lines.

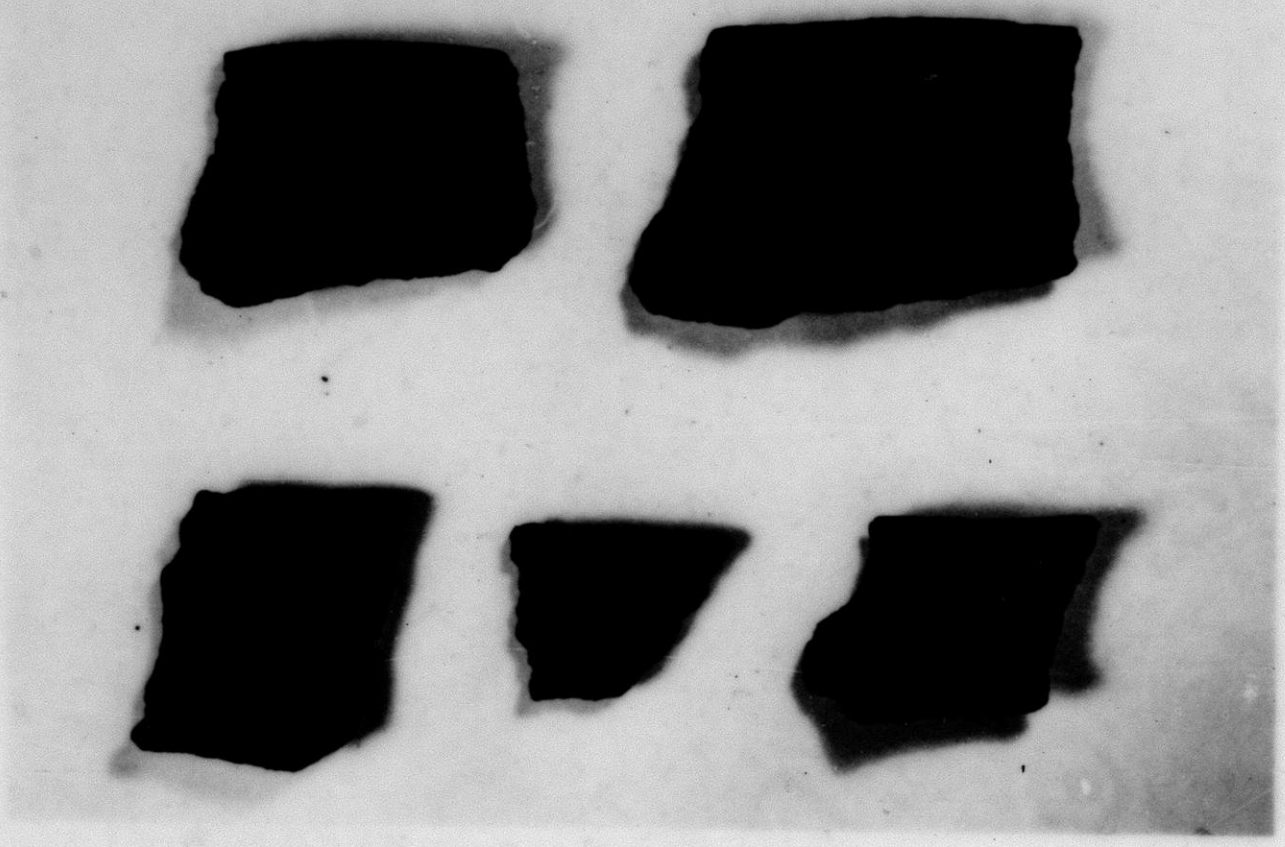


Figure 139. Talking Crow Cord Impressed (½ scale).

Talking Crow Indented (Smith, 1951: 35)

Type material: 304 rim sherds at 39CA6.

Paste: similar to Talking Crow Brushed.

Surface finish: Neck: 262 brushed; 38 smoothed; remainder not observable. All body sherds identified with Talking Crow Identified were simple stamped.

Form: Rim is gently flaking (236) or straight (62). The lip is rounded (60), flat (49), beveled outward (76), or with a slight outward bulge giving an L-shape (10). Rims range in thickness between 5 and 15 mm, with a mean of

9.4 mm. The height of the rim ranges between 10 and 69 mm, with a mean of 43.5 mm. The diameter of the orifice ranges between 10 and 30 cm, with a mean of 19.6 cm. Two strap handles were present in the sample group. A wavy rim was present on 19 sherds.

Decoration: Appears characteristically on the lip either in a broad, finger punctate form (119) or in a sharper tool punctate technique (42). Finger punctate impressions may also appear on the rim (47) or, more rarely (3), on the shoulder area. Incised designs also appear infrequently on the shoulder, either as parallel diagonal lines (4) or as zones of opposed parallel lines (3).

Figure 140. Talking Crow Indented (½ scale).

Talking Crow Straight Rim (Smith, 1951: 36-7)

Type material: 90 rim sherds at 39CA6.

Paste: similar to Talking Crow Brushed.

Surface finish: All sherds have a smoothed rim, one being smoothed over simple stamping. 6 sherds indicated stamped bodies.

Form: Rim is gently flaring (39) or straight (49). The lip is rounded (52), flat (10), outward beveled (23), or L-shape (5). Rims range in thickness between 5 and 12 mm, with a mean of 8.6 mm. The height of the rim ranges between 17 and 60 mm, the mean being 34.3 mm. The diameter of the orifice ranges between 7 and 30 cm, the mean being 15.6 cm. No handles or lugs were noted.

Decoration: The type has been classified to rule out decorated variants, these being included with Talking Crow Indented. However, 14 rim sherds exhibited finger indentations around the interior of the rim.

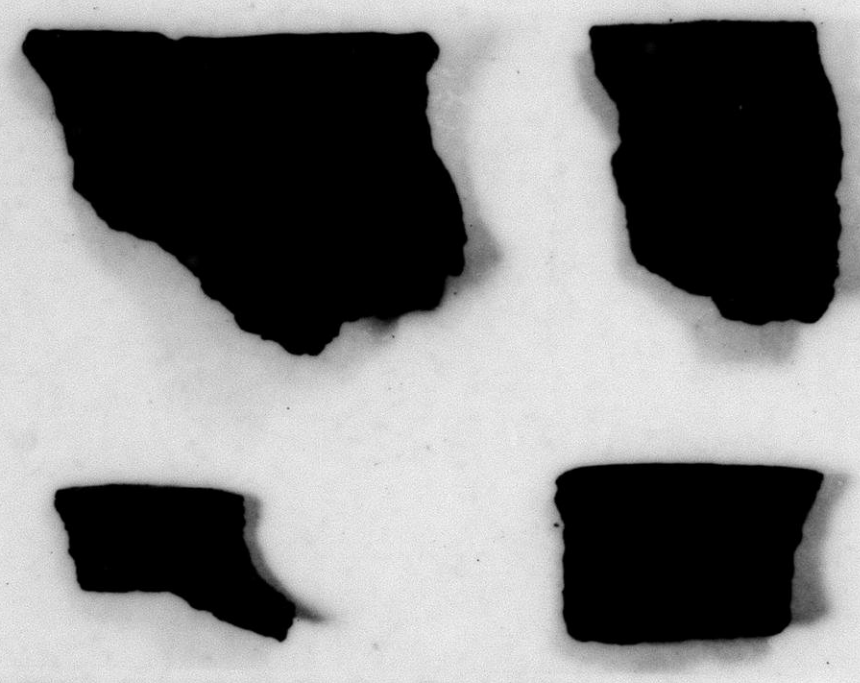


Figure 141. Talking Crow Straight Rim (½ scale).

Intermediate Plain. As has been previously discussed, the "intermediate" category those sherds which are intermediary in form of rim between the Talking Crow and Stanley wares. No essential difference in paste characteristics was noted in any of the three groups.

Type Material: 79 rim sherds at 39CA6.

Surface finish: Neck: 76 brushed, 3 smoothed. Body: 14 stamped.

Form: Rims are flaring (59) or straight (16). An outward bevel to the lip is the most common form. This may be combined with an actual thickening of the rim wall (17 examples) or the lower limits of the bevel may be defined by an outward roll of clay (37 examples). Round lips, rolling outward to the exterior are represented by 17 examples. Another form of beveled lip (7 examples), has the bevel butting against an inner, rounded ledge of clay. The rims vary in thickness between 8 and 18 mm, with a mean of 10.9 mm. The height of the rim ranges between 30 and 70 mm, the mean being 47.0 mm. The diameter of the orifice ranges between 12 and 30 cm, the average being 19.8 cm. No handles or lugs were noted.

Decoration: None.

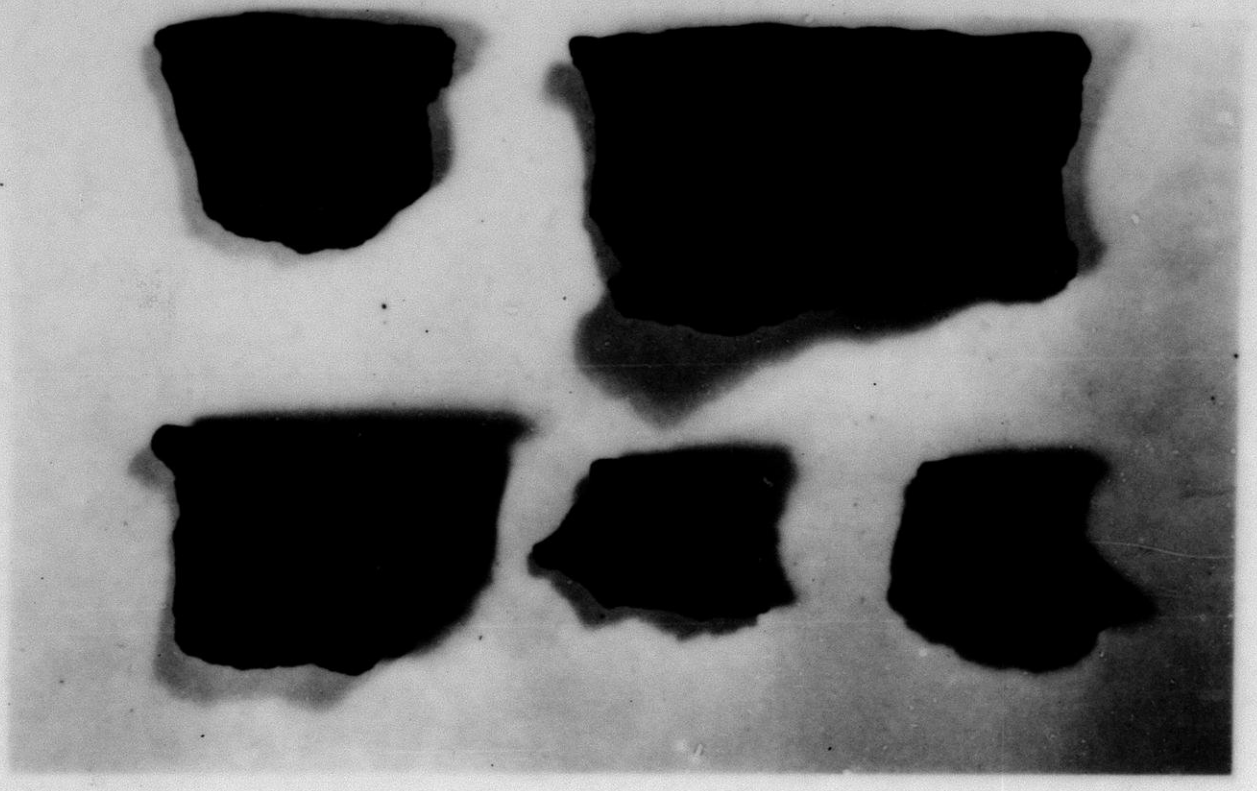


Figure 142. Intermediate Plain (½ scale).

Intermediate Cord Impressed.

Type material: 106 rim sherds at 39CA6.

Surface finish: Neck: 69 brushed, 18 smoothed. Body: 16 stamped.

Form: Rims are flaring (75) or straight (29). As in Intermediate Plain, an outward beveled lip is the most common form. It may similarly represent an actually thickening of the outer wall (29 examples) or the lower limits of the bevel may show an outward roll of clay (52 examples). Round lips, rolling outward to the exterior are also present (23 examples) and also a thick, square L-shaped form (2 examples). The rims vary in thickness between 7 and 15 mm, with a mean of 10.5 mm. The height of the rim ranges between 23 and 105 mm, the mean being 45.7 mm. The diameter of the orifices ranges

between 11 and 26 cm, the mean being 17.5 cm. 16 strap handles were present in the series.

Decoration: Characteristically by cord impressions except for incising on the shoulder. The lip decoration includes parallel lines (56), perpendicular lines (5), diagonal lines (14) and a combination of parallel (encircling) and diagonal lines (1). 66 of the 106 rims were decorated on the rim area. The most common pattern consisted of parallel lines (56), followed in frequency by parallel diagonal lines (5) and one example consisting of three parallel lines bordered by diagonal lines above and below. Finger punctate impressions appeared on the interior of the rim (5 examples) as well as diagonal cord impressions (20 examples). All of the handles were decorated, commonly by horizontal parallel lines (15), which in a single instance was bordered by two vertical lines on each side. The shoulder was decorated by diagonal incised lines (11 instances) or by opposed zones of parallel incised lines (12 instances).

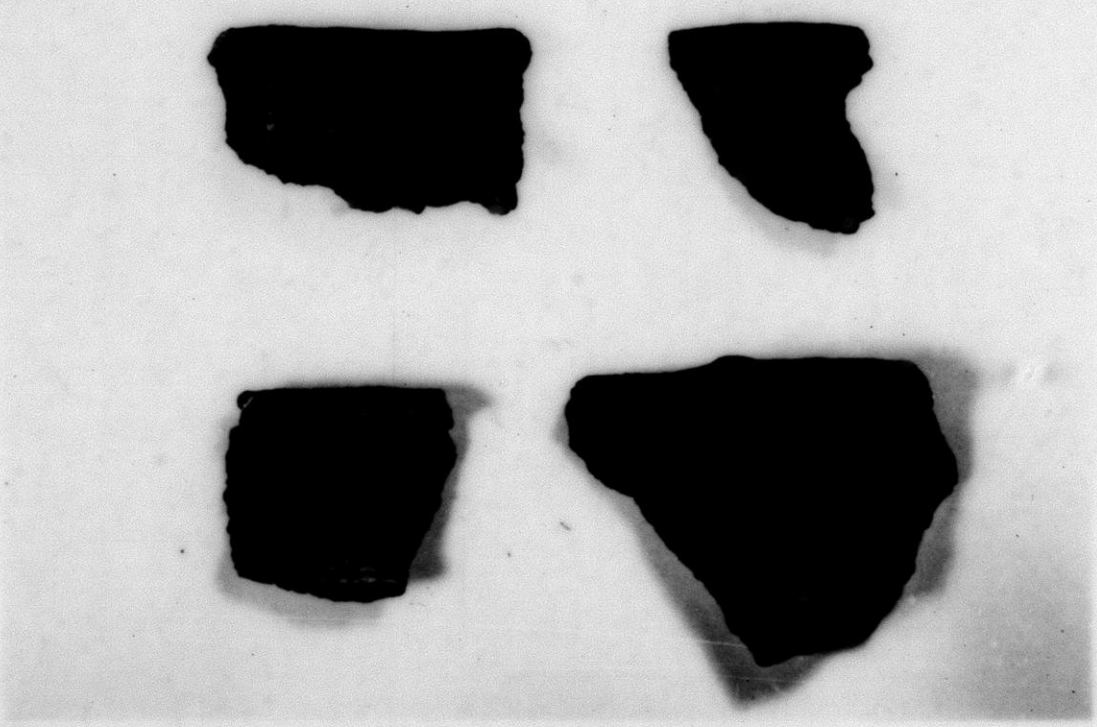


Figure 143. Intermediate Cord Impressed (½ scale).

Intermediate Tool Impressed.

Type material: 48 rim sherds at 39CA6.

Surface finish: Neck: 42 brushed, 6 smoothed. Body: 11 stamped.

Form: Rims are flaring (39) or straight (15). The outward beveled lip is the common form, either with a thickening of the outer wall (21) or with an outward roll of clay (16). 10 examples of round lips, rolling outward to the exterior were also present. The rims vary in thickness between 8 and 14 mm, with a mean of 10.6 mm. The height of the rim ranges between 30 and 73 mm, the mean being 55.6 mm. The diameter of the orifice varies between 12 and 30 cm, the average being 19.3 cm. One strap handle was present in the series.

Decoration: Finger punctate (19) or tool punctate (23) impressions on the lip represent the characteristic decoration. Four lips alternatively have diagonal incisions across the lip. Punctate impressions also appear occasionally on the interior of the rim (4 with finger punctate), or on the exterior (3 with finger punctate; 3 with tool punctate; 1 with vertical incisions). The strap handle was decorated with circular punctate impressions.

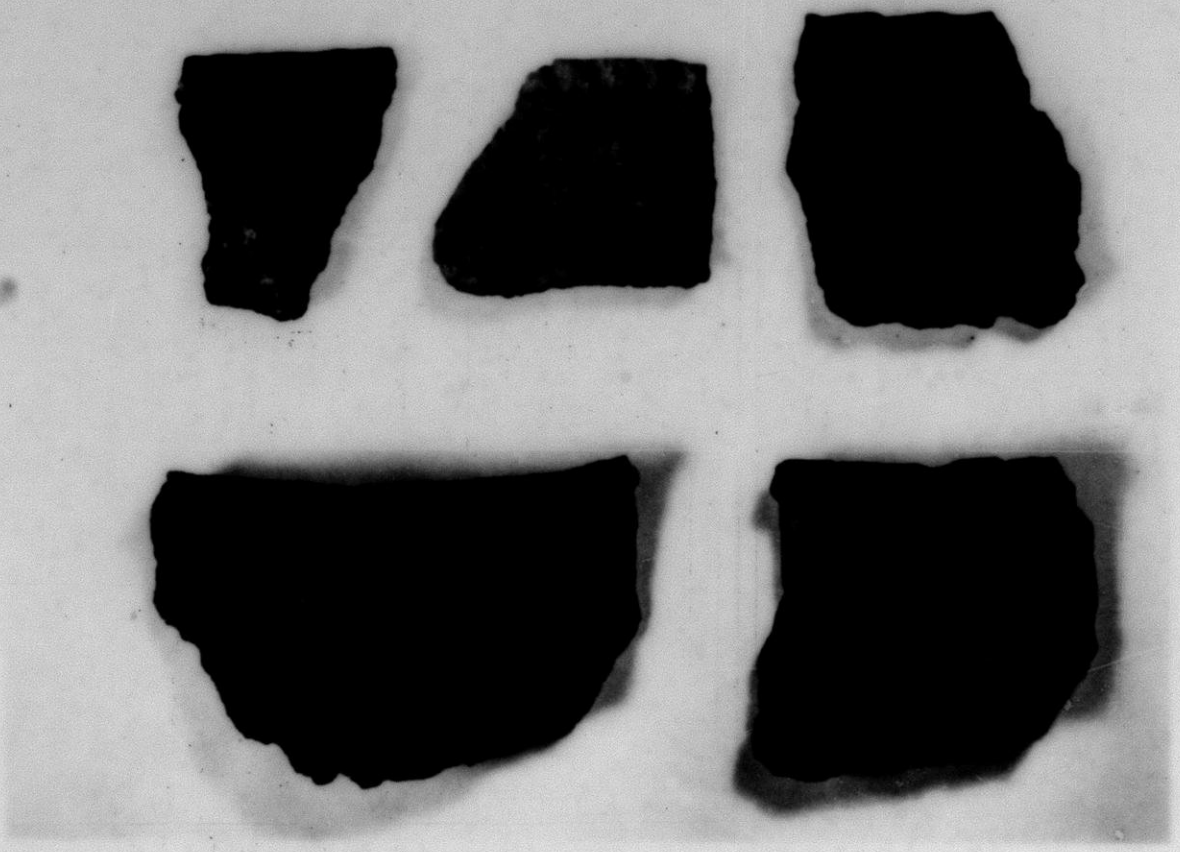


Figure 144. Intermediate Tool Impressed. ($\frac{1}{2}$ scale).

Intermediate Wavy Rim.

Type material: 1 rim sherd at 39CA6.

Surface finish: Body is simple stamped.

Form: Flaring rim with lip beveled to exterior with a slight outward roll of clay. Rim is 9 mm thick, has a height of 53 mm, and the diameter of the orifice is 20 cm.

Decoration: Lip is pinched from both surfaces to produce wavy edge.

Discussion: With but a single sherd in this category from 39CA6, it may seem unprofitable to establish even a tentative type category. Although the number is slightly larger, only six sherds of this category were present at 39WW3. The main importance of the category, however, is to stress the low frequency of the type which is comparable to the lack of importance of Stanley

Wavy Rim at the two sites. It should be recalled that in the Pierre region, Stanley Wavy Rim was one of the most popular types in the entire Stanley Ware.

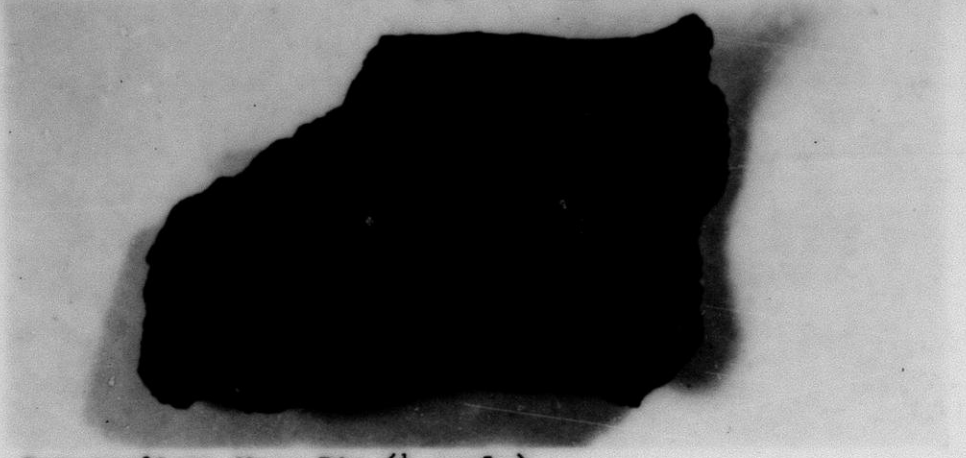


Figure 145. Intermediate Wavy Rim (½ scale).

Stanley Plain (Lehmer, 1954: 45-6)

Type material: 104 rim sherds at 39CA6.

Surface finish: Neck: 90 brushed, 13 smoothed. Body: 13 stamped.

Form: Rims are flaring (71) or straight (25). The addition of a fillet of clay on the exterior to form a collar is, of course, the characteristic feature of Stanley Ware as a whole. The lip in Stanley Plain is either outward beveled (54), rounded (33), or rounded and provided with a short vertical ledge on the interior margin (15). The rims range in thickness between 7 and 16 mm, the mean being 11.5 mm. The height of the rim varies between 30 and 82 mm, the mean being 50.4 mm. The diameter of the orifice ranges between 12 and 26 cm, with a mean of 17.5 cm. No handles or lugs were noted.

Decoration: None.

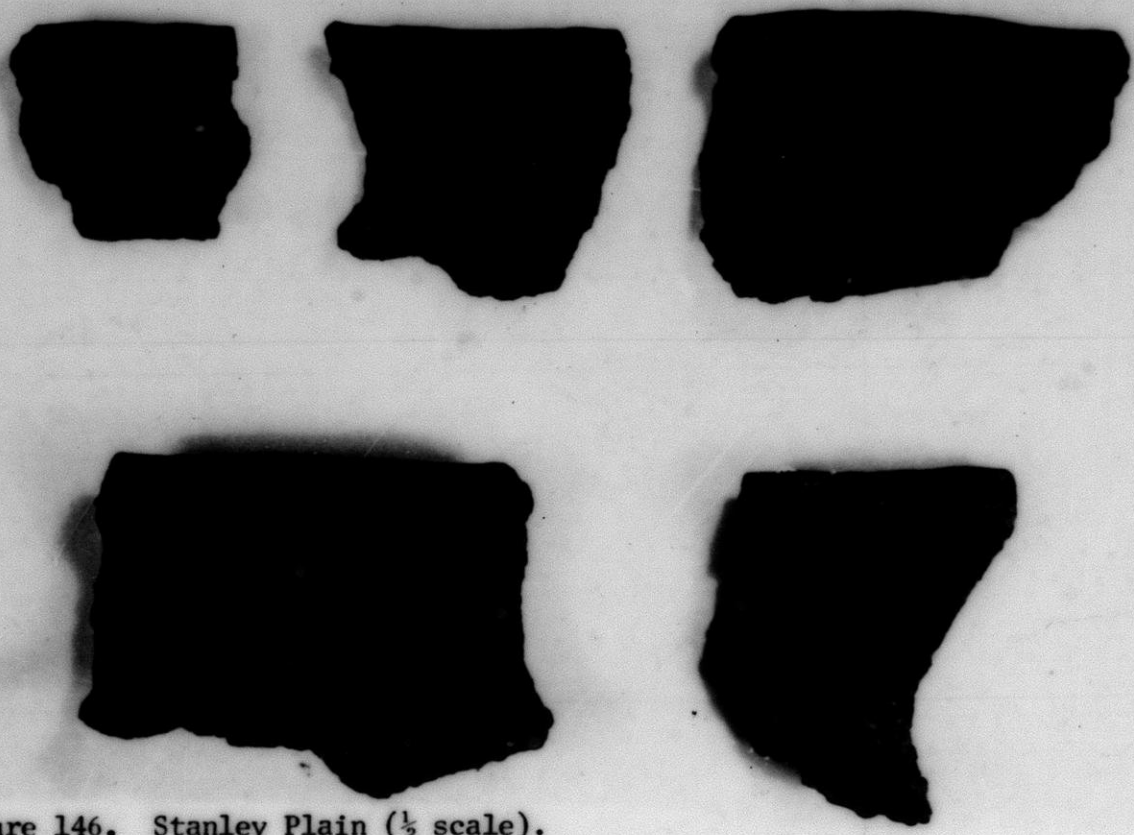


Figure 146. Stanley Plain (½ scale).

Stanley Cord Impressed (Lehmer, 1954: 44)

Type material: 53 rim sherds at 39CA6.

Surface finish: Neck: 37 brushed, 10 smoothed. Body: 10 stamped.

Form: Rims are flaring (38) or straight (15). Lips are outward beveled (34) or rounded (19). The thickness of the rim ranges between 8 and 16 mm, the mean being 10.8 mm. The height of the rim ranges between 27 and 60 mm, the mean being 36.8 mm. The diameter of the orifice varies between 12 and 30 cm, the mean being 18.2 cm. Five strap handles were present and appeared to be associated with the most ornately decorated vessels. 1 lug, formed as a rounded extension of a rim brace, was also present in the sample.

Decoration: Six sherds in the category had a wavy lip. Lip bore parallel encircling lines (9), transverse lines (2), or diagonal lines (4). The rim is decorated with parallel horizontal lines (22), vertical lines (7), diagonal lines (21), zones of opposed lines (1), or with horizontal lines bordered by

punctate impressions below (2). The interior of the rim is also decorated with horizontal lines (2) or diagonal lines (8). Handles are decorated with parallel lines (4), in one instance bordered by 3 vertical lines. Unlike the cord impressed technique of the areas previously described, the shoulder is decorated with incised designs. The patterns included: parallel diagonal lines (2); areas of opposed diagonal lines (15).

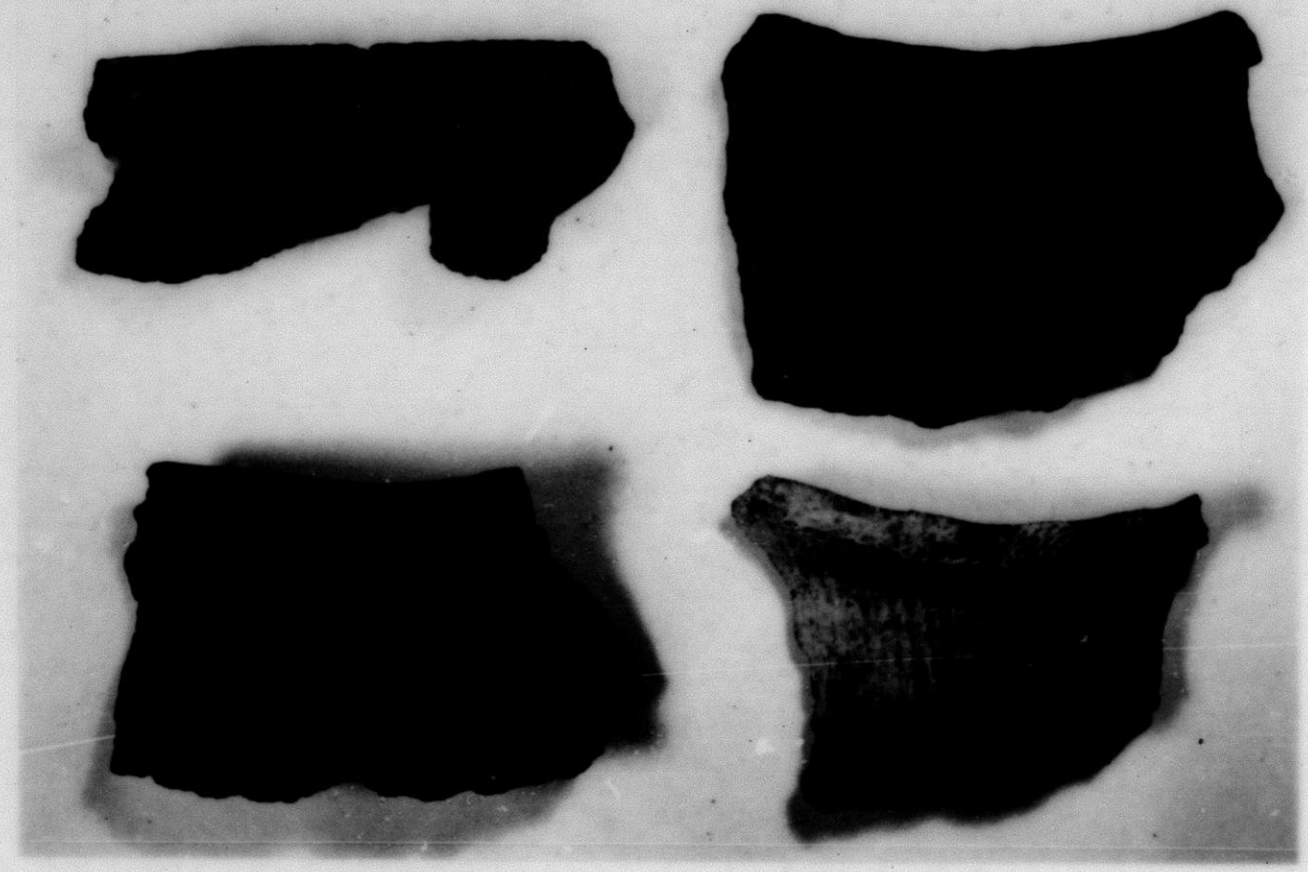


Figure 147. Stanley Cord Impressed (½ scale).

Stanley Tool Impressed (Lehmer, 1954: 45)

Type material: 48 rim sherds at 39CA6.

Surface finish: Neck: 42 brushed; 6 smoothed. Body: 3 stamped.

Form: Rims are flaring (30) or straight (13). Lips are outward beveled (37) or rounded (11). The thickness of the rim ranges between 8 and 15 mm, the mean being 10.9 mm. The height of the rim varies between 40 and 61 mm, the average being 47.5 mm. The diameter of the orifice ranged between 16 and 28 cm, the mean diameter being 21.1 cm. No handles or lugs were present.

Decoration: Primarily finger punctations (11) or tool punctations (22) but also incised decoration on rim brace of: horizontal lines (2), vertical lines (4) diagonal lines (6), or herringbone pattern (1). The immediate lip area was infrequently decorated as follows: wavy lip (1), tool punctate (1), finger punctate (1), diagonal incisions (1). No decoration was noted on the interior or shoulder.

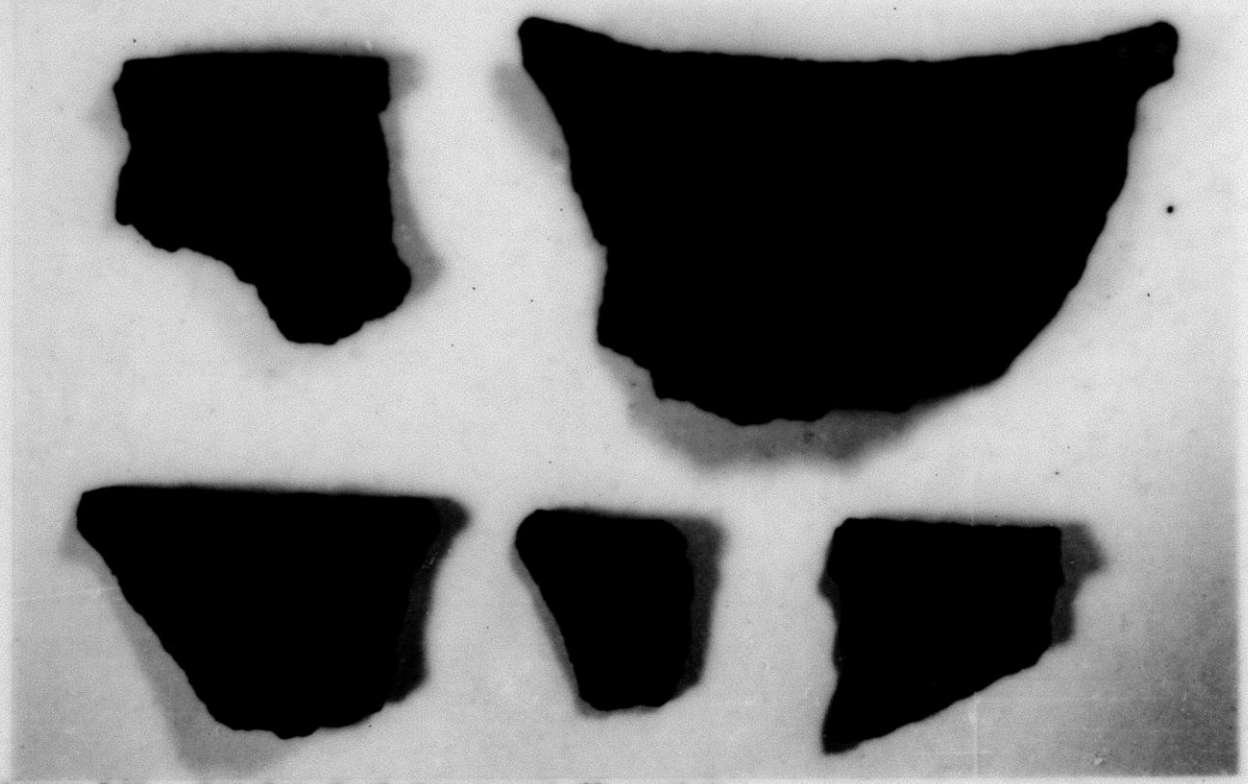


Figure 148. Stanley Tool Impressed (½ scale).

Stanley Wavy Rim (Lehmer, 1954: 43-44)

Type material: 37 rim sherds at 39CA6.

Surface finish: Neck: 36 brushed; 1 smoothed. Body: 9 stamped.

Form: Rims are flaring (27) or straight (9). Lips are outward beveled (12), rounded (21), or rounded with a narrow vertical flange on the inner sector of the lip (3). The thickness of the rim ranges between 8 and 14 mm, the mean being 11.3 mm. The height of the rim ranged from 28 to 72 mm, the mean being 44.9 mm. The diameter of the orifice ranged from 16 to 28 cm, the mean being 23.1 cm. No handles or lugs were noted.

Decoration: Confined to the wavy rim formed by alternate indentations on the exterior and interior of the lip area.

Figure 149. Stanley Wavy Rim (½ scale).

S-Rim Category

Type material: 319 rim sherds at 39CA6.

Surface finish: Neck: 167 brushed (2 brushed horizontally); 36 smoothed. Body: 9 stamped.

Form: Considerable variation is to be found in rim form (see profiles) though a gently rounded bulging area is most common (190 examples). Frequently a vertical extension of the rim is to be found above the bulging area (78 examples). Lips are round (199), flat (49), outward beveled (10), round roll to exterior (2) T-shaped (7), L-shaped (14), and inward beveled (38). Rim thickness ranges between 4 and 16 mm, with a mean of 8.0 mm. The height of the rim ranges between 17 and 70 mm, the mean being 37.8 mm. The diameter of the orifice veries between 10 and 26 cm, the mean being 18.6 cm. No handles or lugs were noted.

Decoration: Rim decoration is complex and varied. The following patterns were noted: parallel horizontal lines (102); parallel diagonal lines (43); parallel horizontal lines bordered by punctate elements above (43); various rainbow patterns (26); parallel diagonal lines bordered by horizontal lines (27); chevron patterns (8); zones of opposed lines (18); parallel diagonal lines bordered by punctate impressions (3);parallel horizontal lines bordered by punctate elements below (2); parallel horizontal lines bordered by diagonal lines above (5); and, parallel horizontal lines bordered by herringbone punctate elements above (1). The lip treatment included: wavy lip (2); parallel encircling lines (1); transverse lines (5); diagonal incisions and lines (30); tool punctate impressions (7); finger punctate impressions (29); chevron designs (9). The interior was decorated in 10 instances with finger

punctate impressions and with parallel diagonal lines in 6 instances.

All 6 of the S-shaped rims were undecorated. Of the remaining decorated rims 212 were cord impressed, 73 bore incised decorations and 25 bore punctate decorations. 12 rims combined cord impressions and incising. 27 rims combined cord with finger and tool impressions.

Comparisons. In a sample of 389 S-rims from 39WW3, the distribution of decorative variants appears to have followed a different pattern. A total of 52 sherds (13.4%) had an undecorated collar although 24 of these sherds had a notched or cord impressed lip. 148 sherds (38%) had horizontal cord impressions on the rim while 38 sherds (9.8%) had various forms of rainbow patterns in the cord impressions, normally combined with horizontal cord impressions. 109 sherds (28%) bore incised designs, 12 sherds (3.1%) bore punctate designs, and 30 sherds (7.7%) bore cord impressions in various diagonal and vertical combinations. Rim sherds in this category, though representing a greater diversity in style of decoration and rim form, are essentially comparable to the various component units of the Le Beau S-Rim type and demonstrate a continuity in ceramic tradition from the ceramics of 39WW10. The greater complexity in rim form and decorative pattern may represent further influence from a northern center where the S-rim tradition is more strongly represented.

Nordvold Horizontal Incised

This important type at 39WW10 is also represented at 39WW3 (28 rims) and 39CA6 (48 rims). While some of the sherds are identical to those of 39WW10, some smaller vessels do appear which are characterized in particular by a short rim of about 25 mm.in height. Rim thickness ranges between 5 and

11 mm, average 6.2 mm. Some attributes of the type at these sites are:

Table 100. Trait-Frequency, Nordvold Horizontal Incised.

| | 39WW3 | 39CA6 |
|---|---|---|
| Straight rim | 13 | 4 |
| Flaring rim | 15 | 4 |
| Flat lip | 6 | - |
| Rounded lip | 19 | 5 |
| L-shaped lip | 3 | - |
| Lip undecorated | 10 | 5 |
| Lip: punctate decoration diagonal incisions | 10 | 3 |
| Lip: herringbone decoration | 3 | - |
| Lip: encircling incised line | 3 | - |
| Rim/shoulder brushed | 8 | 1 |
| Rim: horizontal lines only | 15 | 4 |
| Rim: horizontal lines bordered above by punctate decoration | 13 | 4 |

Le Beau Punctate.

While this type is also present at 39WW3 (17 rims) and 39CA6 (14 rims) in a form with an angular rim comparable to 39WW10, it also merges rather impreceptably into an S-rim bearing a punctate decoration. Attributes of the type at these sites are:

Table 101. Trait-Frequency, Le Beau Punctate.

| | 39WW3 | 39CA6 |
|---|---|---|
| Rounded lip | 10 | 1 |
| Flat lip | 7 | 13 |
| Lip beveled inward | 1 | - |
| Lip undecorated | 15 | 9 |
| Incisions on lip | 1 | - |
| Broad finger imprints on lip | 1 | 5 |
| Rim smoothed | 14 | 2 |
| Rim/shoulder brushed | 3 | 12 |

Akaska Stab and Drag.

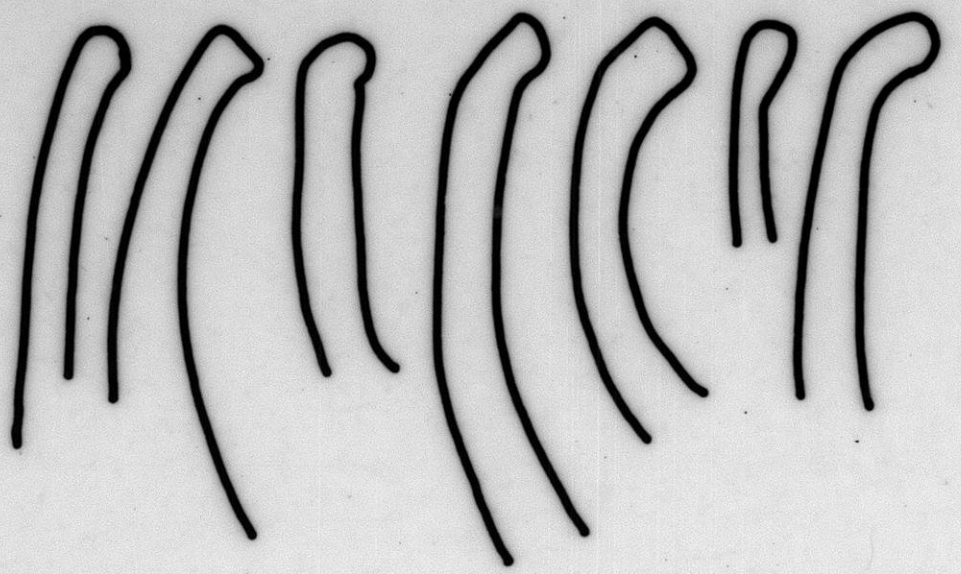
Seven rims from 39CA6 and one from 39WW3 (a surface find) are decorated with the stab and drag technique that characterizes this type. It appears most commonly on the S-rim form (5 examples including the surface sherd from 39WW3), the remainder being gently flaring rims. Decorative patterns, with one exception, simply consist of bands of horizontal lines encircling the rim. The single exception, from 39CA6, has a decoration on the collar of opposed triangular zones of parallel lines.

Steamboat Cord Wrapped Rod.

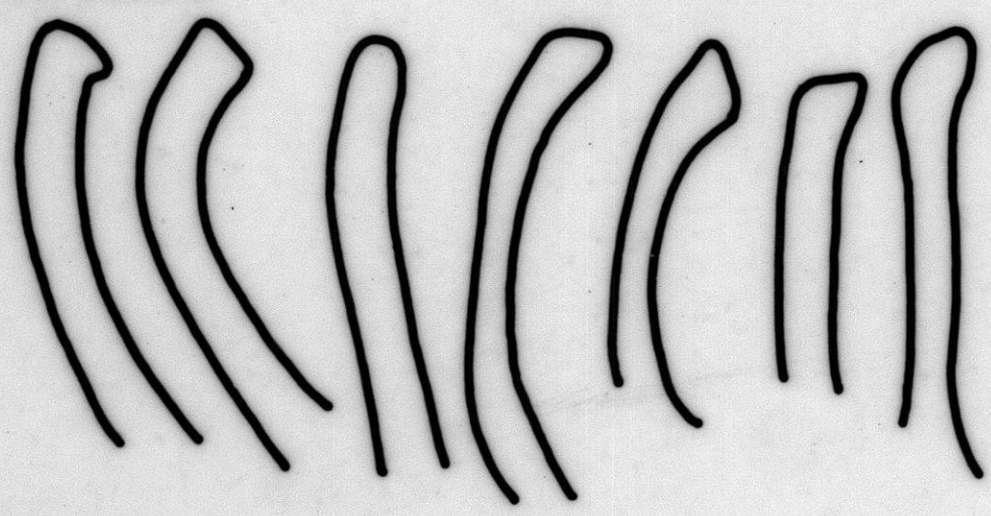
Three rim sherds from 39CA6 bear a decoration of a cord wrapped rod, the diagonostic feature of this type. Two rims are S-rims with a very moderate degree of outward curvature to the rim while the third sherd is from a thick, gently flaring form with a round, undecorated lip. On the latter sherd, horizontal impressions of the cord wrapped rod are to be found on the beginning of the shoulder area, the rim being undecorated. The remaining two sherds have diagonal impressions on the collar in one instance and horizontal impressions on the collar in the second example.

APPENDIX II-A. Bamble Site (39CA6)

Talking Crow Brushed



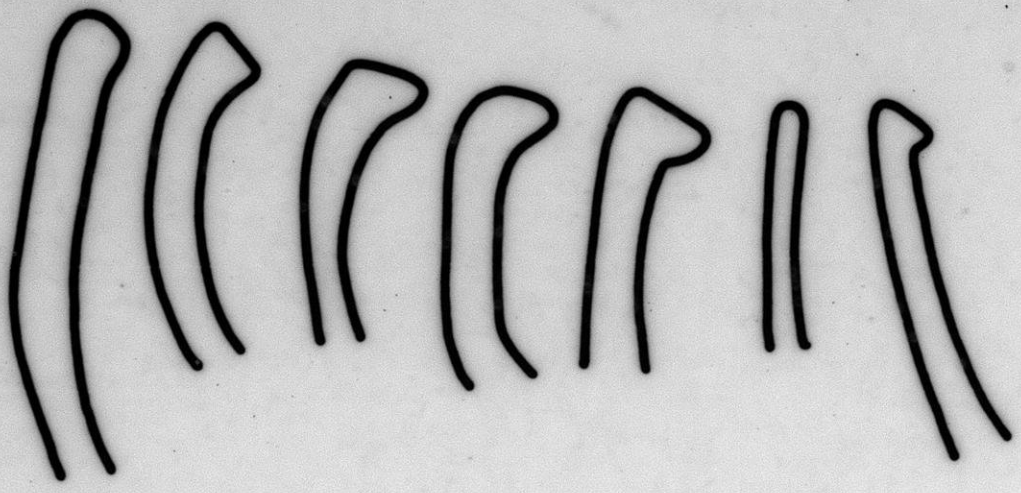
Talking Crow Indented



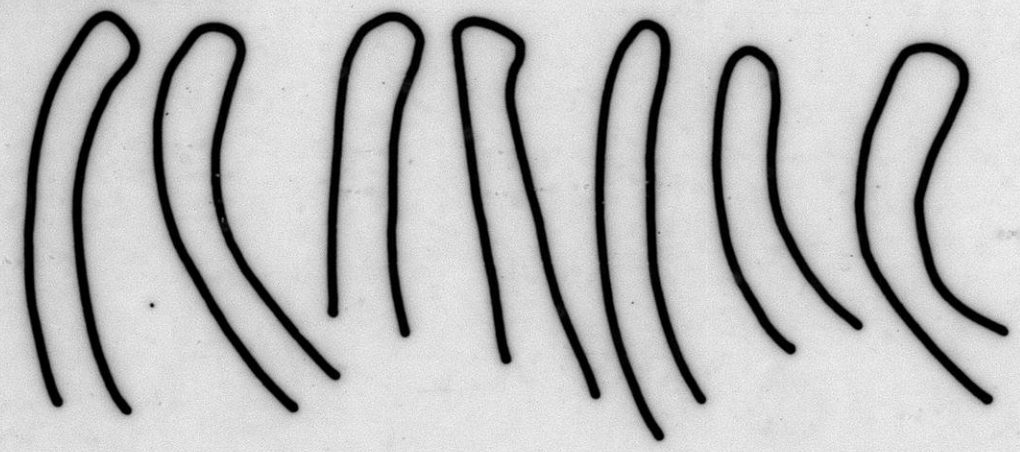
Note: All interiors shown to left.

Appendix II-A continued.

Talking Crow Cord Impressed

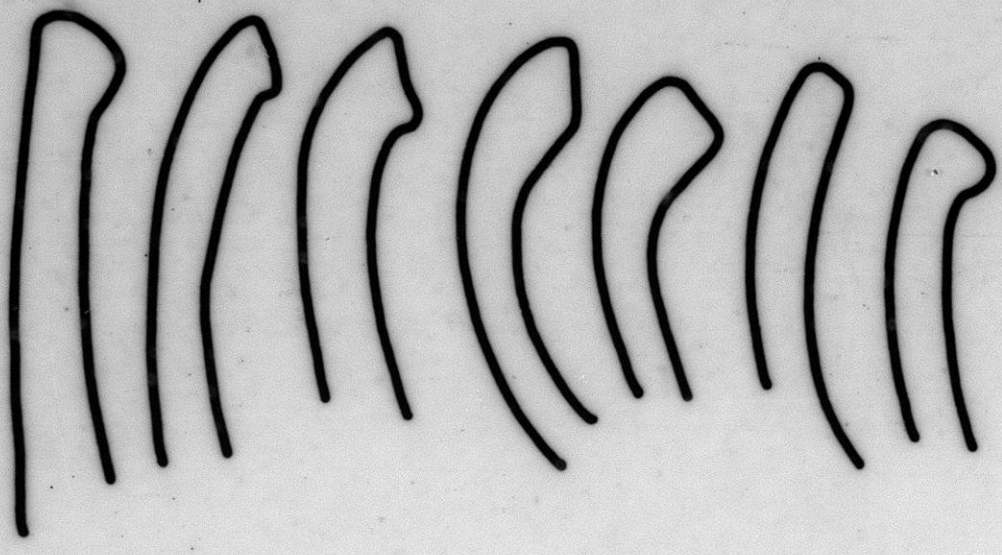


Talking Crow Straight Rim

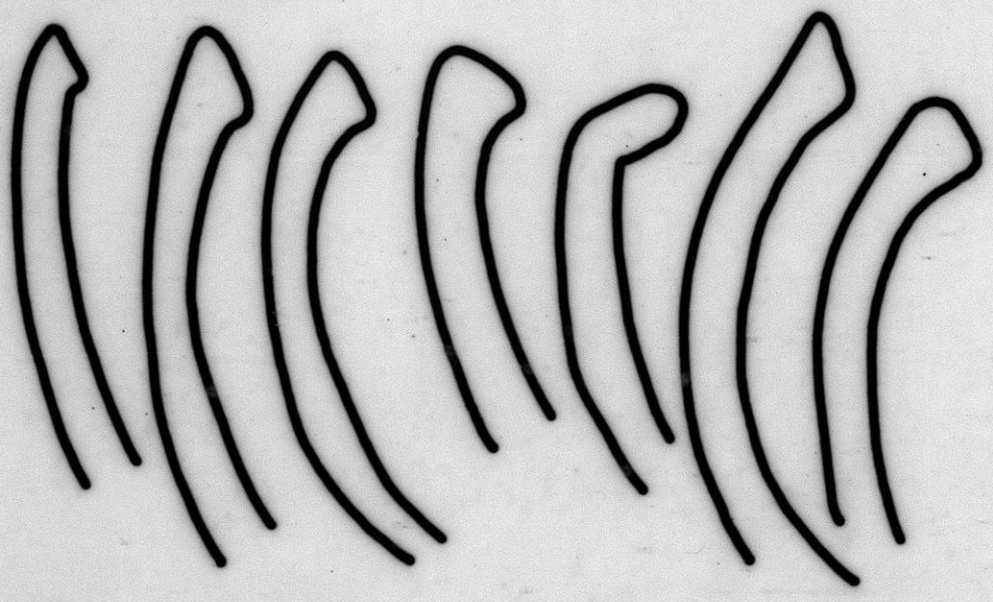


Appendix II-A continued.

Intermediate Plain



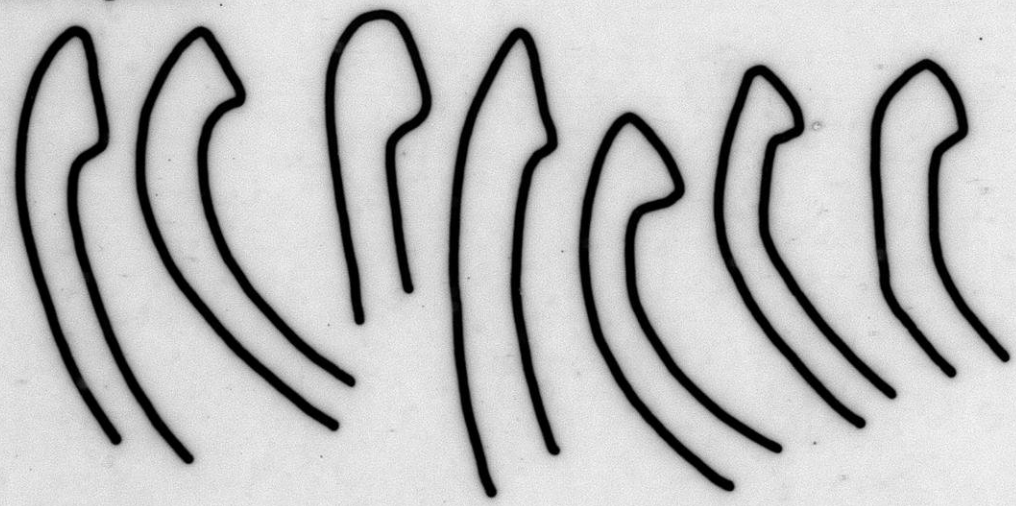
Intermediate Tool Impressed



Appendix II-A. continued.

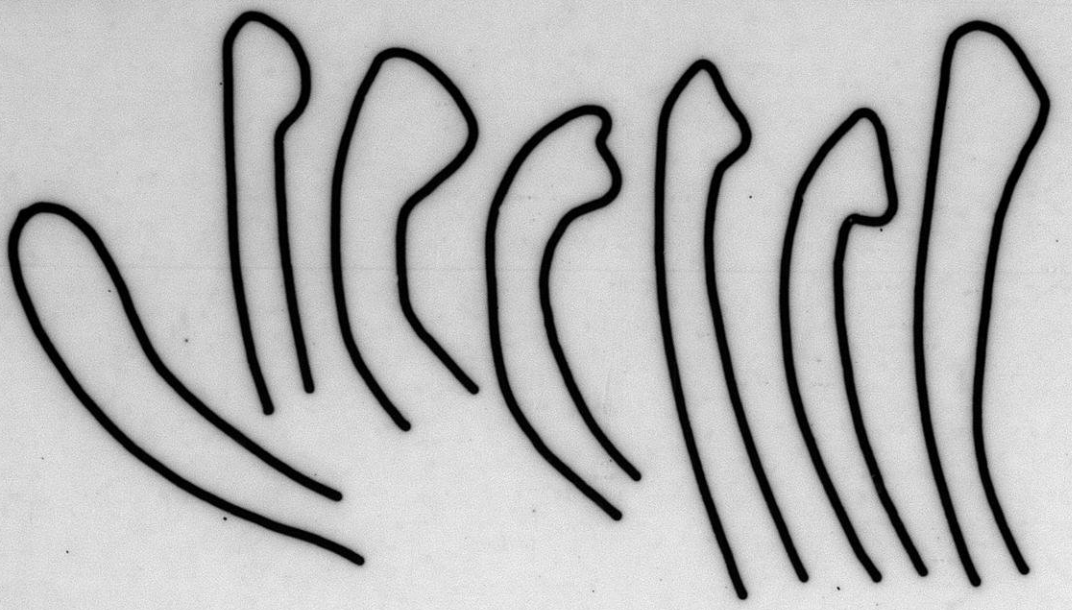
Intermediate Cord Impressed

Stanley Cord Impressed



Appendix II-A continued.

Stanley Plain



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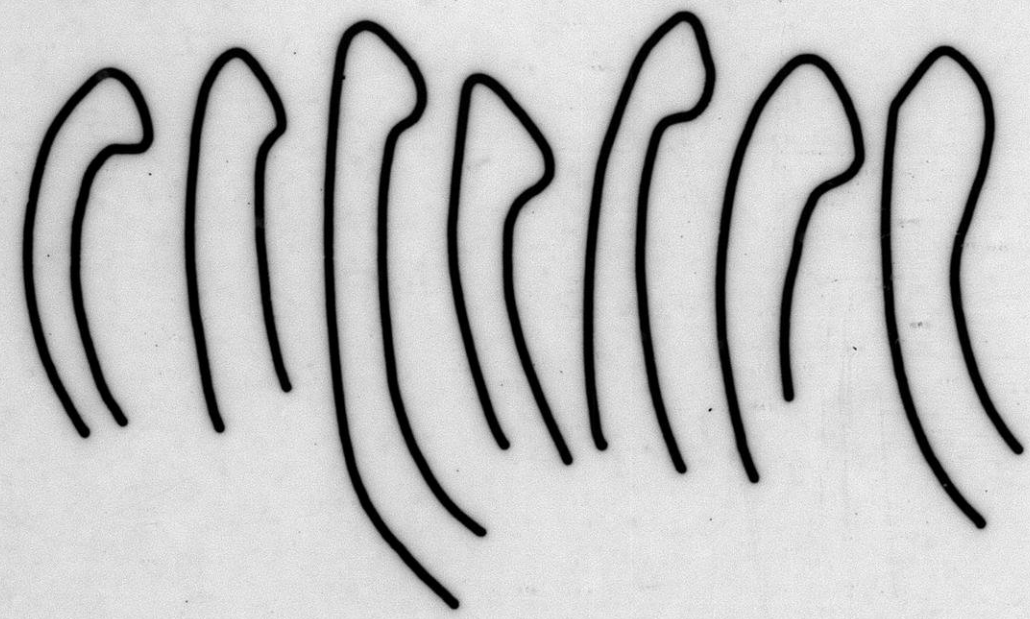
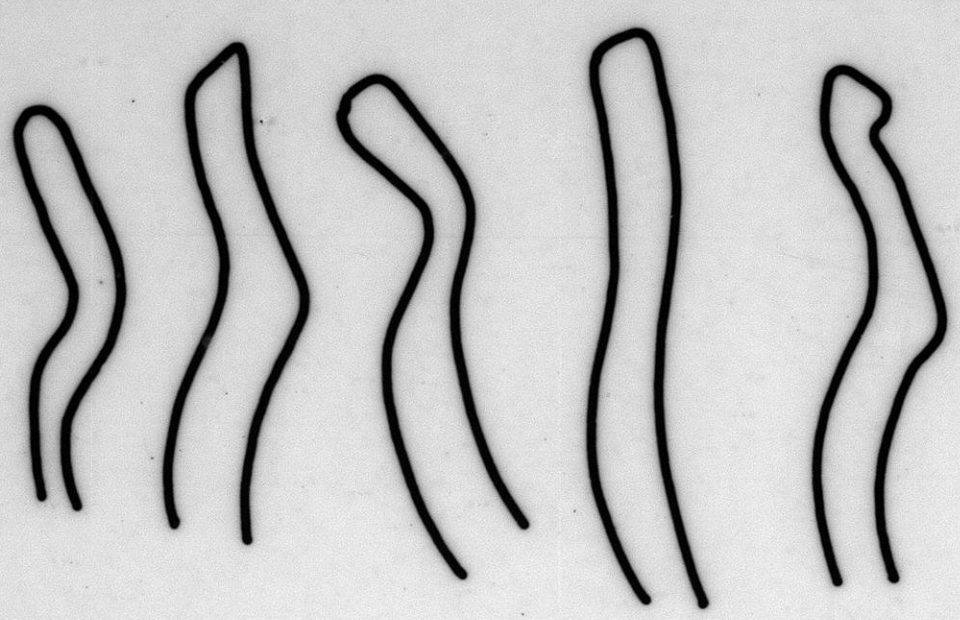
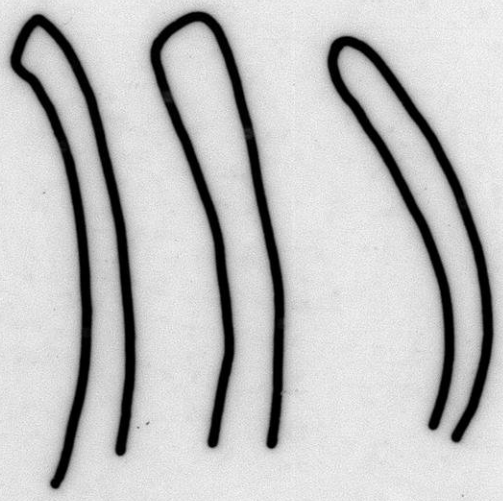


Appendix II-A continued.

S-Rim

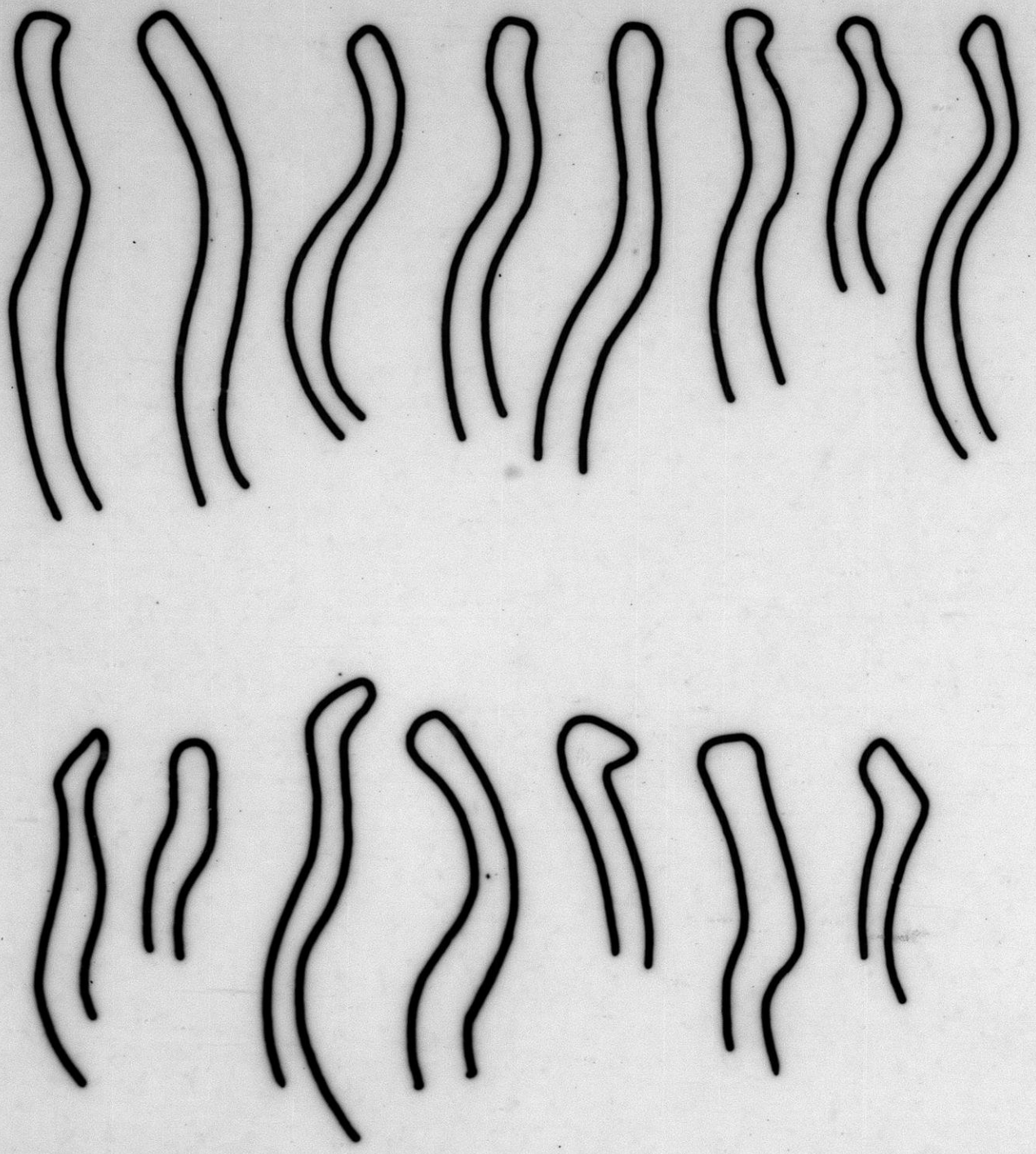


Bowls



APPENDIX II-B. Spiry-Eklo Site (39WW3).

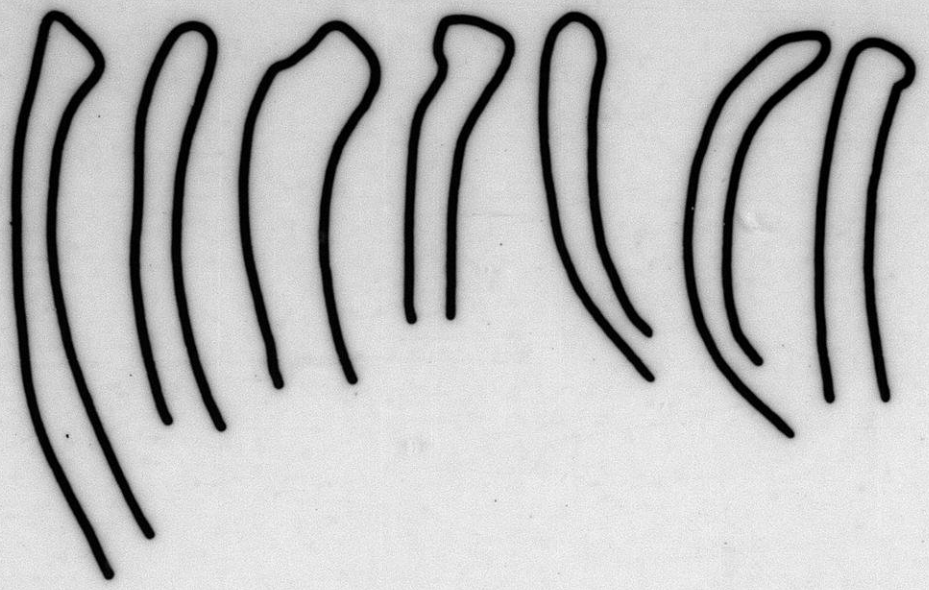
S-Rim



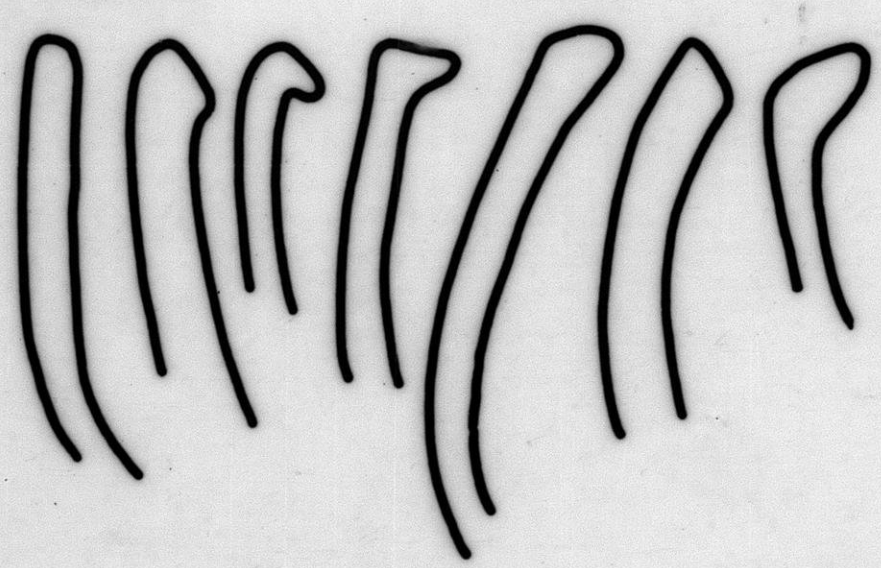
Note: All Interiors shown to left.

Appendix II-B continued.

Talking Crow Brushed

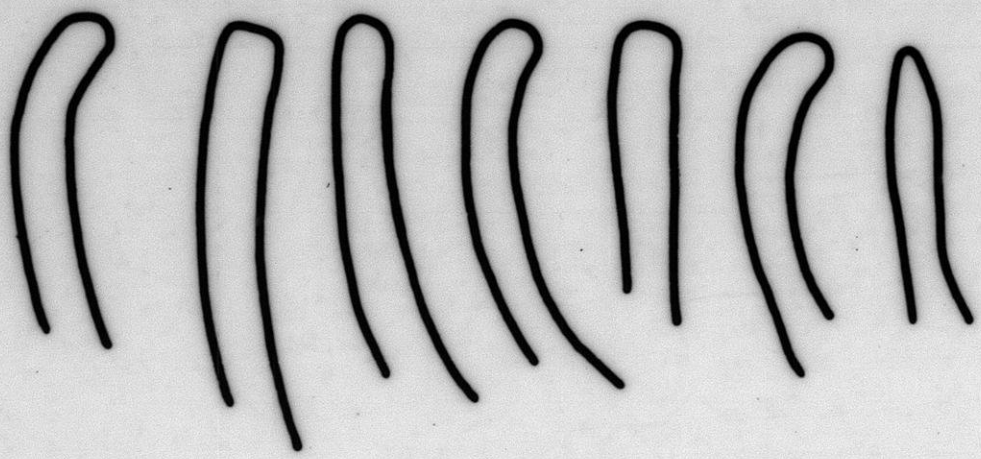


Talking Crow Cord Impressed

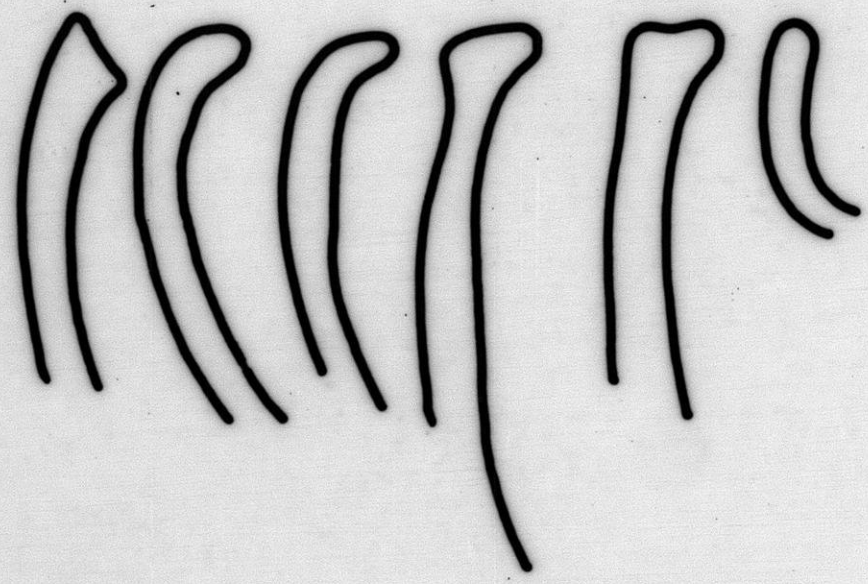


Appendix II-B continued.

Talking Crow Straight Rim

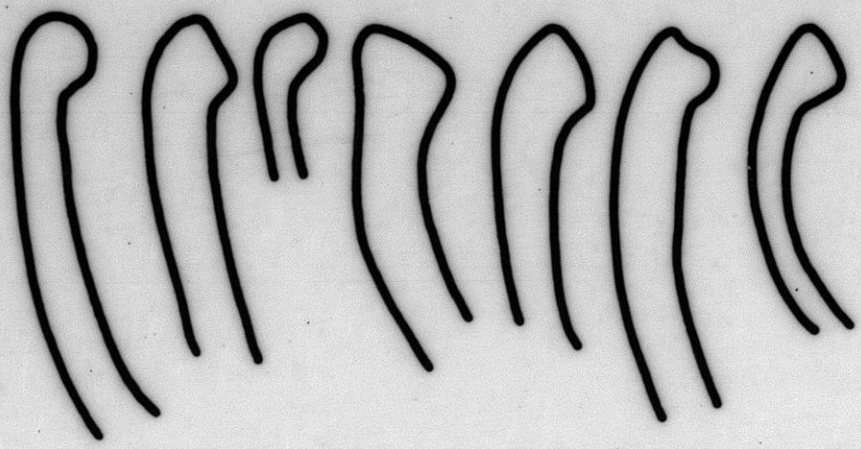


Talking Crow Indented

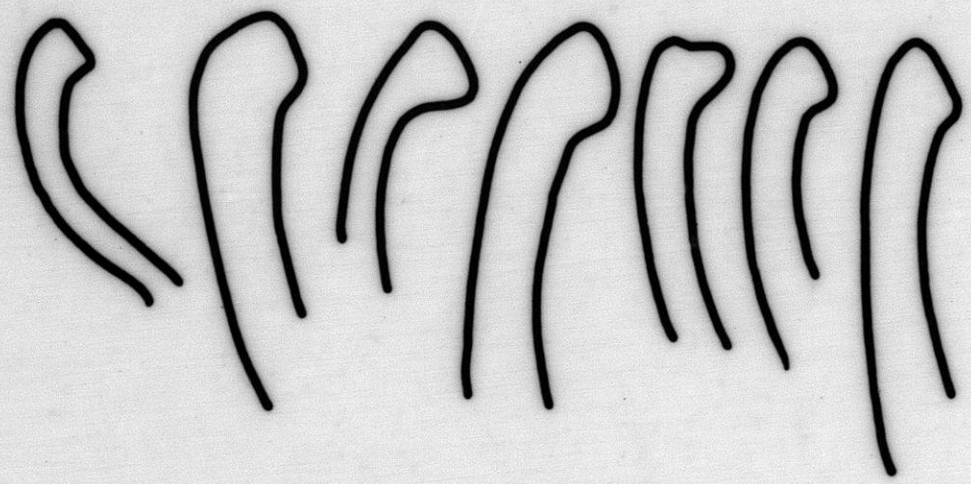


Appendix II-B continued.

Intermediate Plain

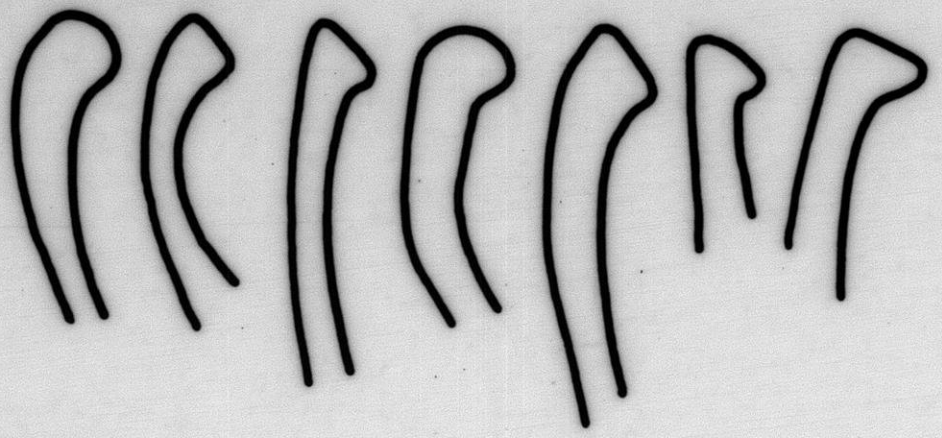


Intermediate Tool Impressed



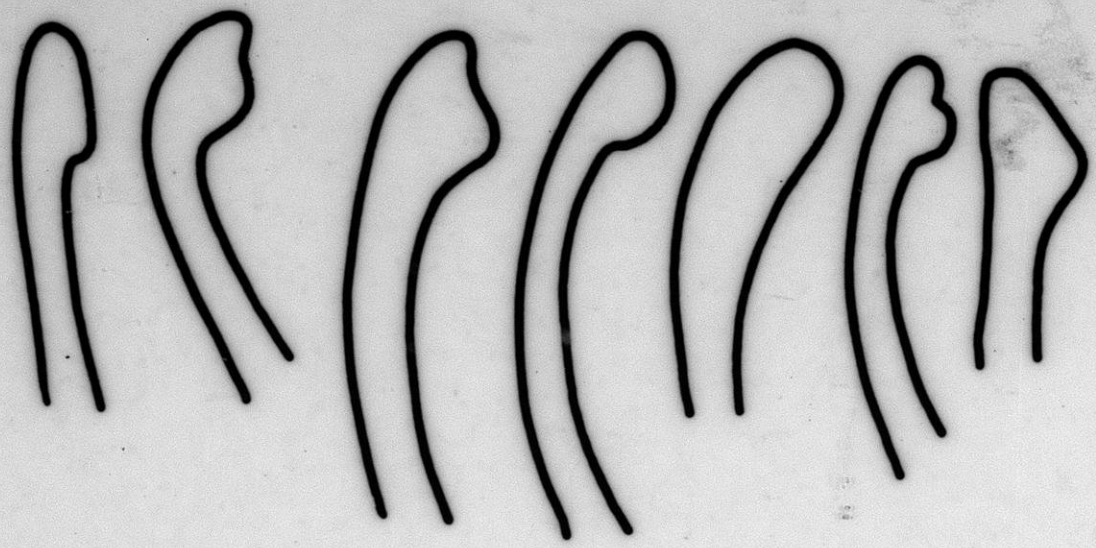
Appendix II-B continued.

Intermediate Cord Impressed

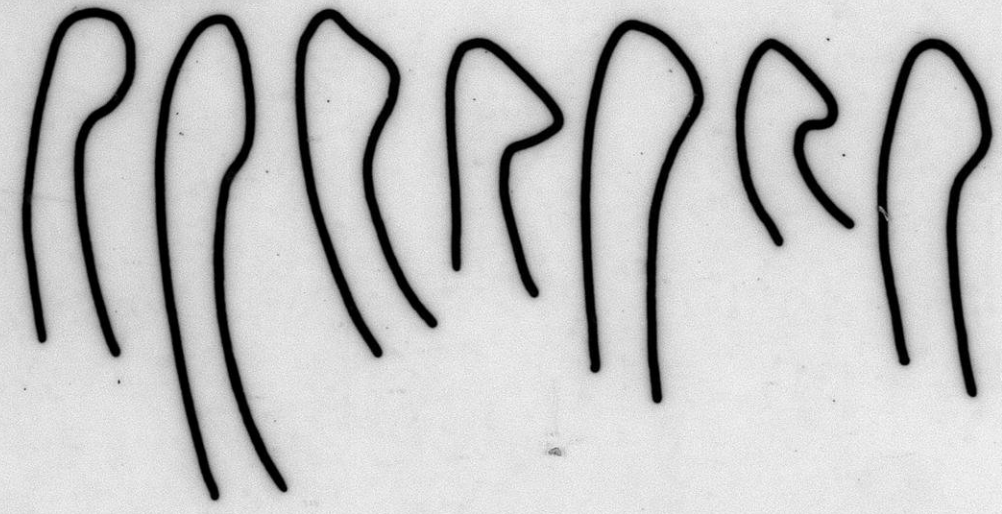


Appendix II-B continued.

Stanley Plain

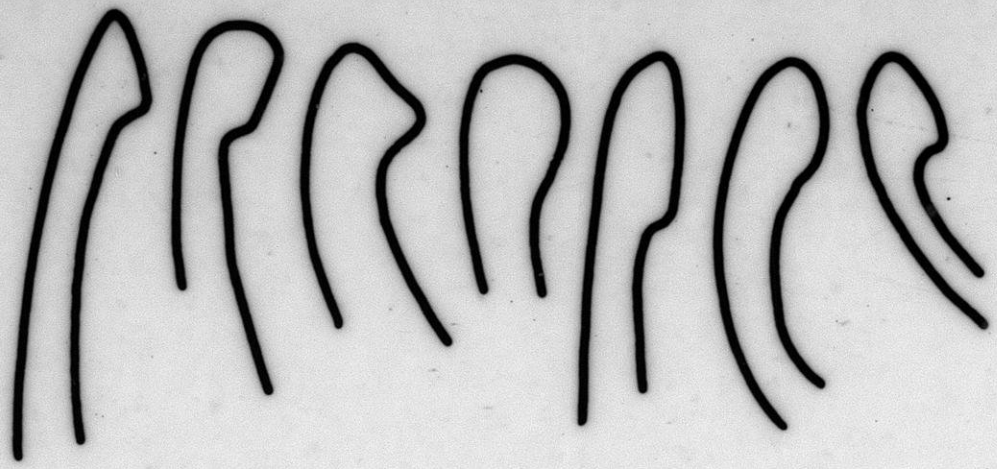


Stanley Cord Impressed



Appendix II-B continued.

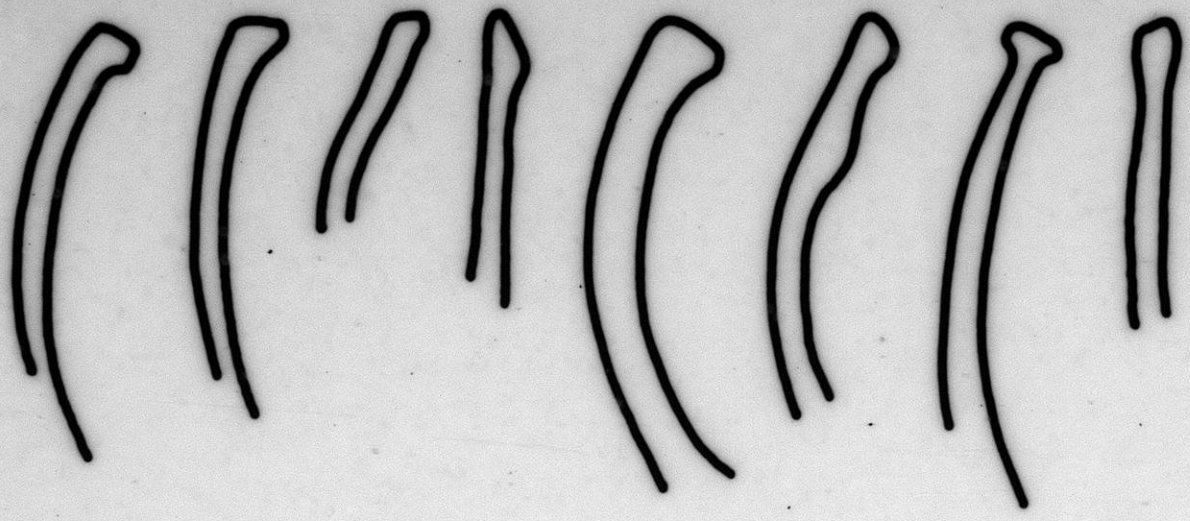
Stanley Tool Impressed



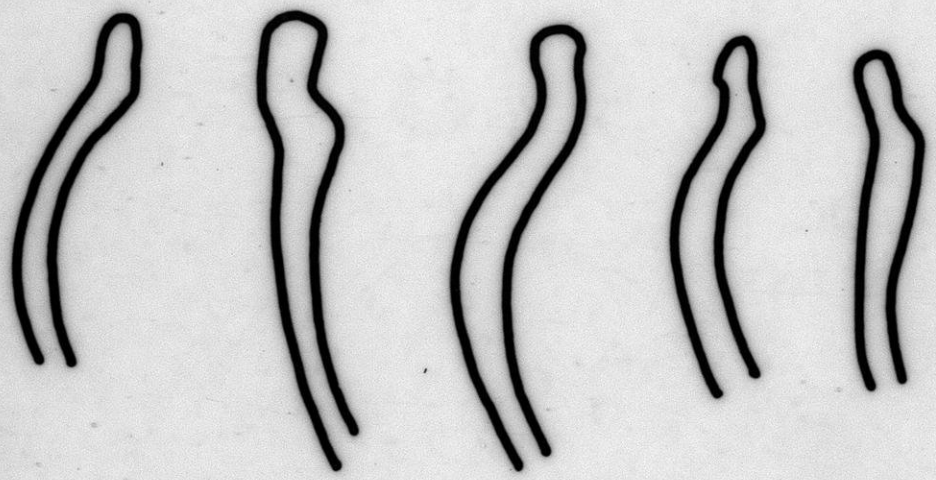
Bowls

APPENDIX II-C. Spiry Site (39WW10).

Nordvold Horizontal Incised



Le Beau Punctate



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