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ARCHIVES OF ARCHAEOLOGY

NA^NZA, THE PONCA FORT

W. Raymond Wood

1960

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PREFACE

In 1932 the University of Nebraska initiated the first archaeological work in northeastern and north central Nebraska, and between 1933 and 1940 this area was subjected to intensive survey and excavation by the Nebraska State Archaeological Survey. During the summers of 1936 and 1937, field parties from the University carried out excavations at 25KX1, or Náⁿza, the Ponca Fort, in Knox County, Nebraska. Field work was principally under the direction of the late Perry Newell. This work was under the general supervision of Dr. Earl H. Bell, and field workers were supplied by the Works Project Administration.

This study was initiated in 1953, and essentially completed in 1955, while the writer was a graduate student in the Department of Anthropology, University of Nebraska. Subsequent revision has incorporated data published as late as 1959. I wish to thank Dr. John L. Champe, chairman of the Department of Anthropology, for his continuing interest and assistance in this research. Franklin Fenenga and Raymond S. Price, Jr., contributed materially to this research in technical advice and patiently checked the manuscript in

its earlier stages. I also wish to thank E. Mott Davis, James H. Howard, Marvin F. Kivett, G. Hubert Smith, John M. Roberts, Waldo R. Wedel, Richard P. Wheeler, and Alan R. Woolworth for their respective advice and assistance in various stages of this work. Theodore E. White identified the mammal bones and the stone from Ponca Fort. This fund of assistance, generously given in every instance, is gratefully acknowledged.

The data from Ponca Fort are on file at the University of Nebraska, Department of Anthropology, and include field maps, field notes, photographs, artifacts and human remains. The maps, figures and tables were prepared by the writer from the site record.

February 20, 1960

W. Raymond Wood
University of Oregon
Eugene

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NÁ^NZA, THE PONCA FORT

INTRODUCTION

The purpose of this study is to describe the remains from 25KX1, the Ponca Fort, and to assess the position of the site in Plains archaeology. While the ethnology of the Ponca has received some attention, the archaeology of the tribe is still subject for speculation. One of the objectives of the excavation program of the Nebraska State Archaeological Survey in north central Nebraska between 1933 and 1940 was to locate precisely and excavate a Ponca village site. Of the several sites investigated in this area, only one of the villages, 25KX1, is of Ponca derivation. This study provides, for the first time, a statement of a documented Ponca site. The description of such a site is critical in the direct historical approach for the reconstruction of culture history, in which the archaeologist works from the historic known to the prehistoric unknown. This study will provide a frame of reference from which it may be possible to extend the history of the Ponca into the period before European contact.

Every effort has been made to present data so that the rather complex situation at the site may be appraised by students who do not have ready access to the data. Full

exposition of the site data is presented -- at the risk of spurious data -- for the following reason: excavation at Ponca Fort should be resumed. Much of the site remains undisturbed except for plowing, and further investigations with modern techniques should resolve many of the problems left unanswered here. Archaeological data are amenable to various interpretations, and some of the conclusions reached are highly tenuous. The detail presented should permit others to manipulate the available data and independently validate or negate these conclusions.

The objectives of this study also include a statement of Ponca ethnohistory* from their earliest known contact to the turn of the 19th century, as well as a consideration of some of the practical and theoretical problems of Ponca prehistory. The relationships of the Ponca to the Thegiha-speaking peoples as a whole are beyond the limits of this study, for only a few clues are available to suggest avenues of research for tracing Ponca prehistory. The archaeology of north central Nebraska is still very imperfectly known; let this fact stand as a plea for resuming research in this important contact zone between the Central Plains and the Middle Missouri area.

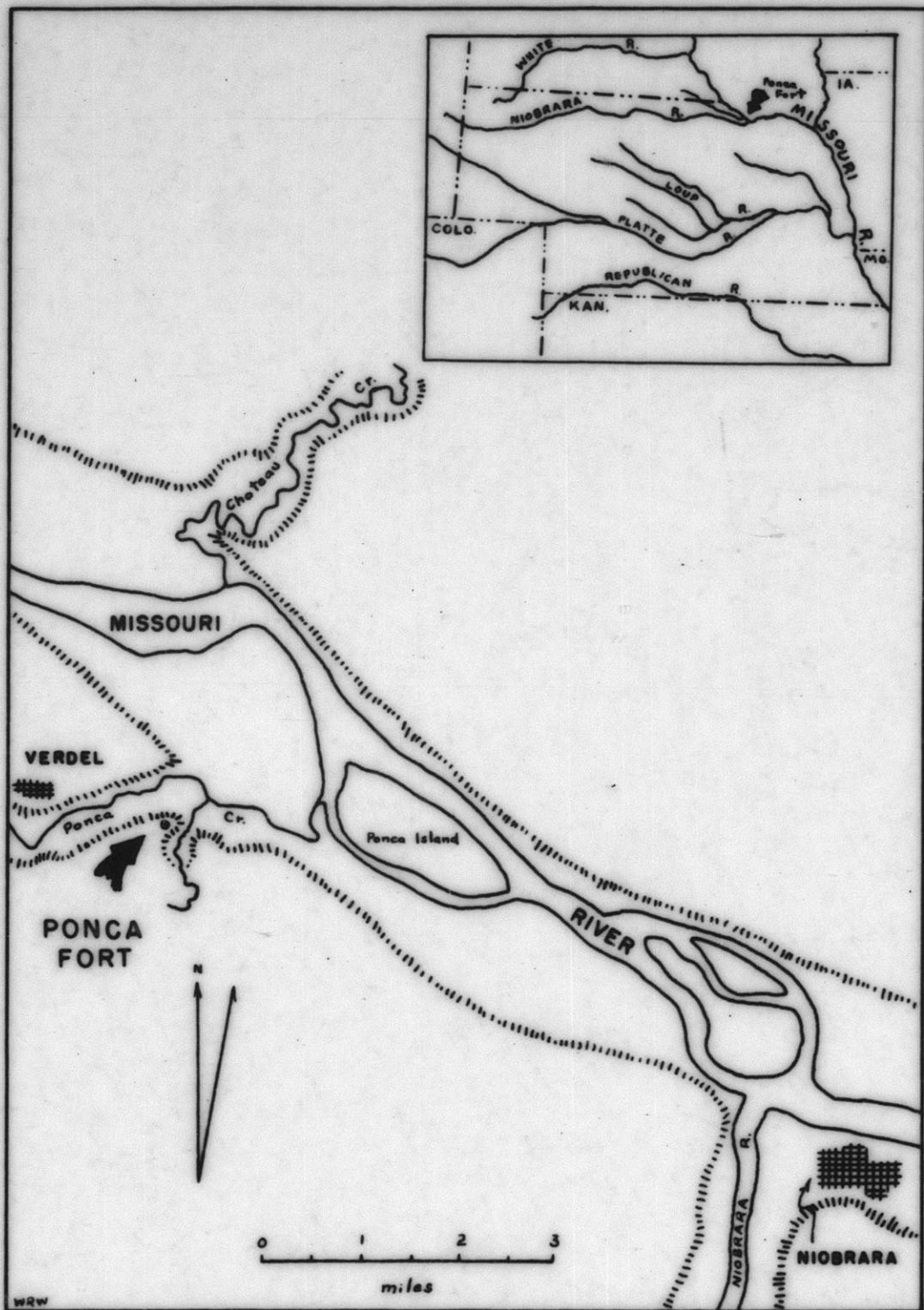
* A preliminary statement of Ponca ethnohistory, for the period 1785-1804, and drawing upon the basic data from the Ponca Fort, has already appeared in print (Wood, 1959).

ARCHAEOLOGY OF THE SITE

The Site Described

Ponca Fort is in the center of Section 29, T33N, R7W, Knox County, north central Nebraska (U.S.G.S. Verdel Quadrangle). Situated on the south bank of Ponca Creek and the Missouri River, it is eight miles northwest of the town of Niobrara and one mile east of the town of Verdel (Map 1). Ponca Creek is 2000 feet north of the site, the creek emptying into the Missouri River a mile and a half to the east.

According to the Soil Survey of Knox County (Hayes, et. al., Series 1930), the county is part of a broad, nearly level to hilly plain which slopes gently toward the south and east. The Missouri River is so deeply intrenched along the northern edge of the county that the local drainage is largely northward to that stream. The Missouri River is sluggish, filling its channel in places, but other streams have steep gradients and are deepening their channels. Water is available from springs along many of the stream valleys. Alluvial soils border the larger streams, impinging in most places against steep river bluffs.



Map 1. Vicinity of the mouth of Ponca Creek.

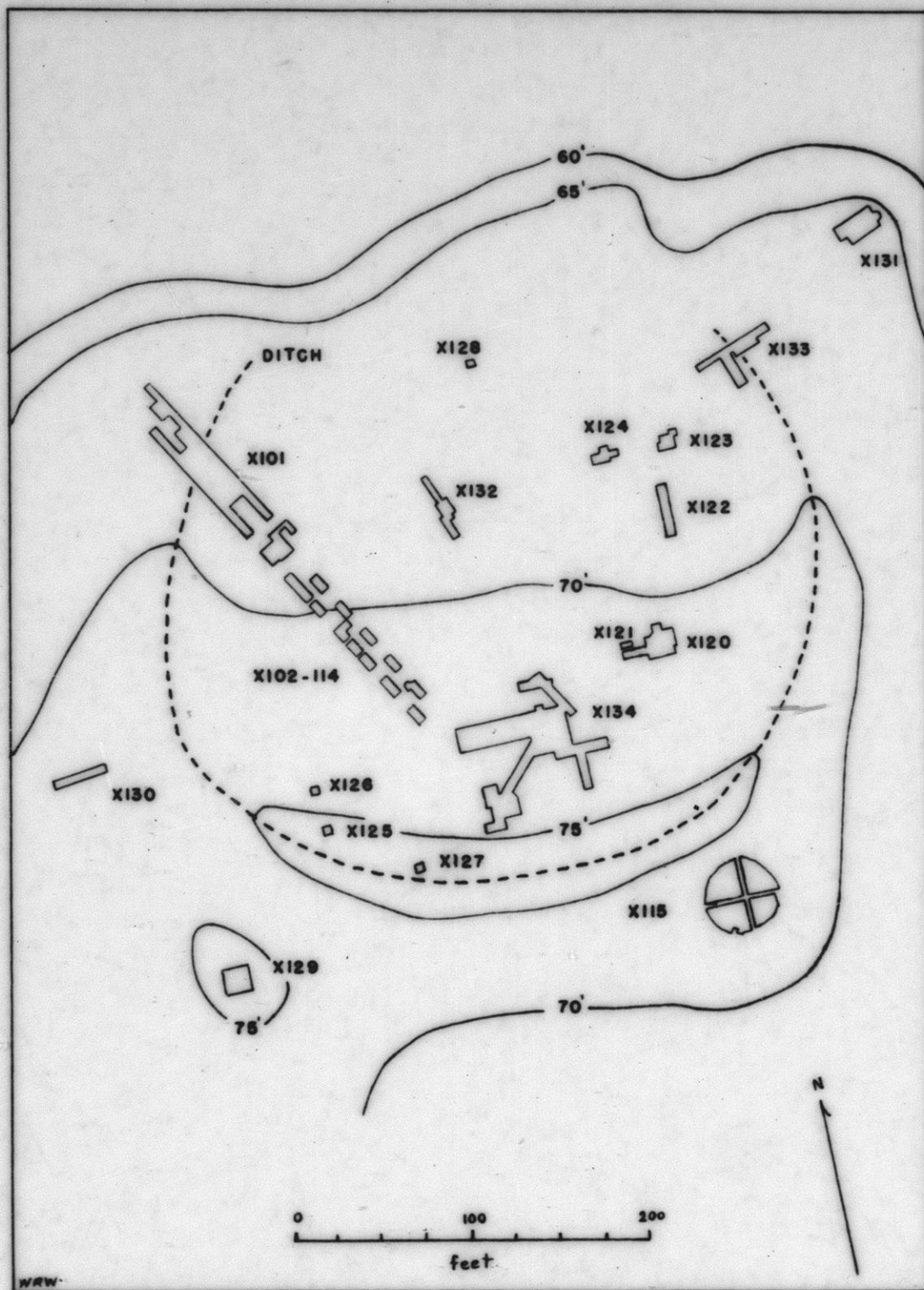
Knox County is prairie country. Through the uplands in virgin areas are wheatgrass and bluestem grasses, while the bottom lands support many other grasses requiring more moisture. Native trees, all of which grow along the stream channels and along the slopes of bluffs, include elm, ash, oak, hackberry, boxelder, cottonwood, and willow. The climate of Knox County is typical of north central Nebraska and is well suited to present-day grain farming and livestock raising. The long warm summers are favorable for corn. The spring is usually cool, with much rain, and the autumns are long and pleasant, with occasional rainy spells. The average frost-free growing season is 151 days.

The site itself is situated on the Missouri River bluffs, on a prominence near the point where the valley of Ponca Creek enters that of the Missouri River. The land east and northeast of Ponca Fort consists of a low fertile terrace of the Missouri River, blanketed with silty clay loam and fine sandy loam. Much of this land is under cultivation today. The prominence on which Ponca Fort was built is fifty to sixty feet above the floor of the valley of Ponca Creek. This elevation provides a view several miles up the valley of Ponca Creek, as well as a panorama of the Missouri valley some distance above and below the mouth of Ponca Creek. On the north, east, and south sides of the site are steep banks, and the site area is separated from the adjoining uplands to the west by a deep swale. The site is thus admirably suited for defense.

In addition to the natural defensive advantages of the terrain, the crest of the prominence is enclosed by a fortification ditch. This feature is oval in outline, the long axis of which is oriented east and west. The ditch encloses an area of about three acres, and is 380 feet east and west by 320 feet north and south (Map 2). The ditch was visible on the ground in 1937, but in the summer of 1953 only one portion was observable, on the south side of the prominence. The ditch is banked on the inner side, and in 1937 this embankment was about 1.5 feet high (Map 3).

The topsoil on the summit of the prominence and within the ditch is a sandy loam, with fine texture and high organic content. The lighter subsoil is largely of gray sand and extends to a depth of about four feet. The upper foot or two of the subsoil contains numerous limey concretions.

The site map, made in 1937, does not show the defensive ditch along the north side of the site, but indicates a steep bank at that point. An aerial photograph of the site taken in the late 1930's by the U.S. Department of Agriculture (Wood, 1959: Plate 1) clearly shows the ditch completely encircling the village. A "midden area" was designated in the field notes in the north central part of the site, within the fortifying ditch, but it was not tested. I was unable to find any clear evidence of such an area during a visit to the site in 1953. Some natural hummocks, used as cemeteries, are outside the ditch; four of these were tested in 1936



Map 2. Sketch map of excavations at Ponca Fort.

and 1937. Most of the site has been cultivated, and that part along the eastern edge is obscured by vegetation in aerial photographs as it was on the occasion of my visit to the site. For this reason any earth lodge depressions that may once have been visible were obliterated or hidden by vegetation.

Archaeological Field Work

Thirty excavation units (herein referred to as X units) were opened at the site during the 1936 and 1937 field work. Two of these units cross-sectioned the fortification ditch, four of them opened burial areas, and the remaining units tested the site area inside the ditch (Map 2).

Unfortunately, no comprehensive site map was prepared by the field workers to show the exact location of X units and their relationships. The site map illustrated (Map 2) was compiled from clues in the field data, and must be regarded simply as an approximation of the situation at the site. The features observed in these X units are described and identified in Table 1 (pp. 28-33).

Excavation 100

This unit consists of four parallel and contiguous trenches across the site along a north-northwest axis, the northwest end of which extends thirty feet beyond the fortification ditch (Map 2). This unit began about eighty feet northwest of the southernmost part of the site,

and from this point stakes were set every ten feet to the north-northwest. The unit was divided into four trenches, each of which was 240 feet long and five feet wide. Each trench was divided into sections ten feet long and five feet wide.

Work was initiated in the southwest trench, and as the work progressed and the next trench was opened, backdirt was thrown into the trench previously excavated. Initially it was planned that alternate sections were to be excavated, but when a feature was encountered the section was enlarged. Excavated sections in X100 that are contiguous to one another, and which are separated from other excavated sections, are closed into fourteen X units, designated X101 through X114, inclusive.

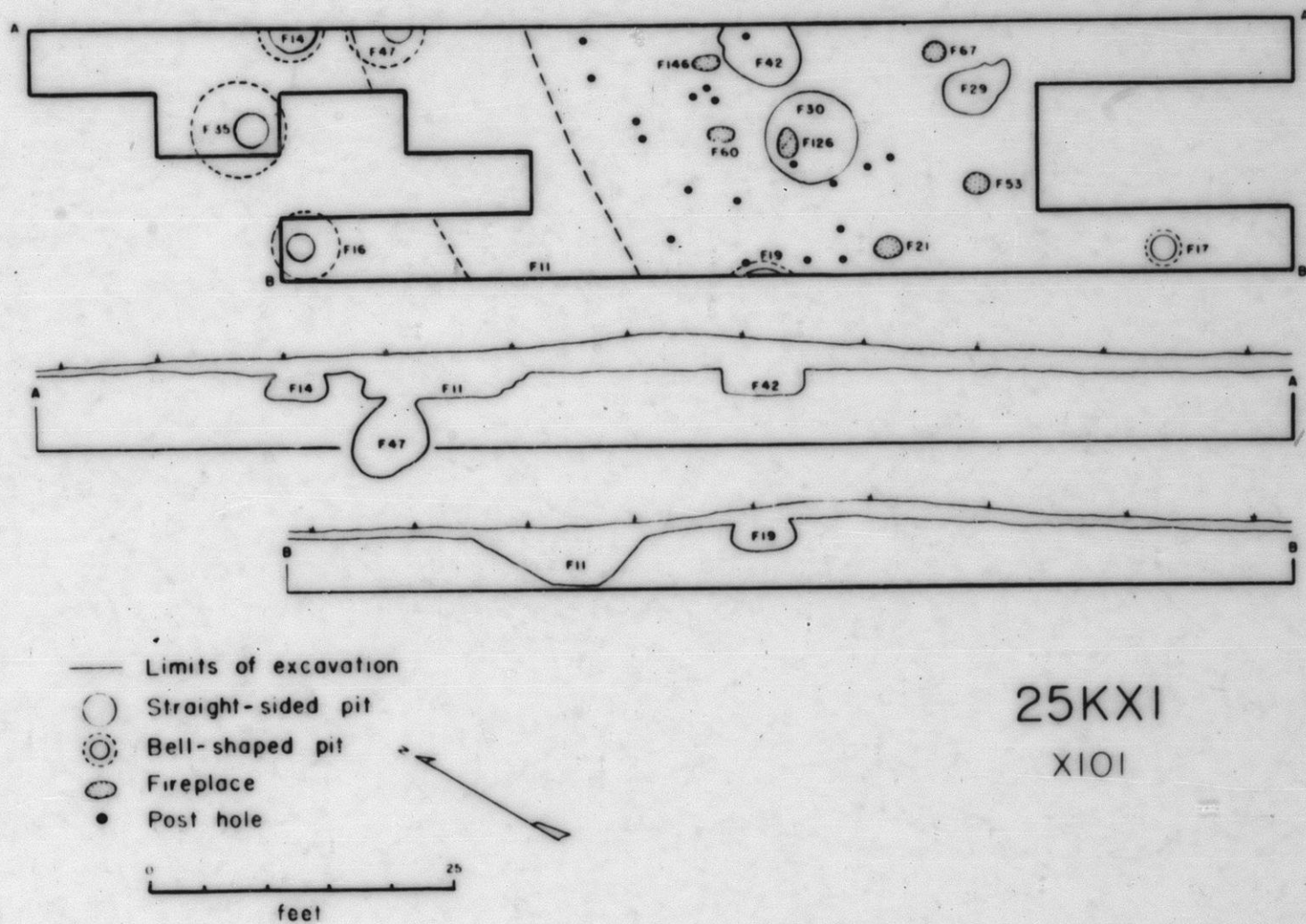
Excavation 101 (Map 3)

This unit is irregular in shape, attaining a maximum length of 100 feet and a width of twenty feet; it was excavated to a maximum depth of five feet. Thirty-six features were in the unit: the fortification ditch, F11, six fireplaces, five bell-shaped pits, two irregular pits, one undercut pit, one straight-sided pit, and nineteen postholes not designated as features.

Excavation 102 (Map 4)

Irregular in form, this unit attained a maximum length of twenty-four feet and a width of fifteen feet; it was dug to a depth of 1.5 feet. It contained a bell-shaped pit and

Map 3. Excavation Unit 101.



two postholes.

Excavation 103 (Map 4)

This unit was five feet wide and nineteen feet long; it was excavated to a depth of 1.7 feet. It contained a single posthole.

Excavation 104 (Map 4)

This unit was five feet wide and ten feet long; it was excavated to a depth of 1.5 feet. Nothing of archaeological significance was in the unit.

Excavation 105 (Map 4)

This irregular unit attained a maximum length of ten feet and a width of nine feet; it was excavated to a depth of 1.7 feet. Nothing of archaeological significance was in the unit.

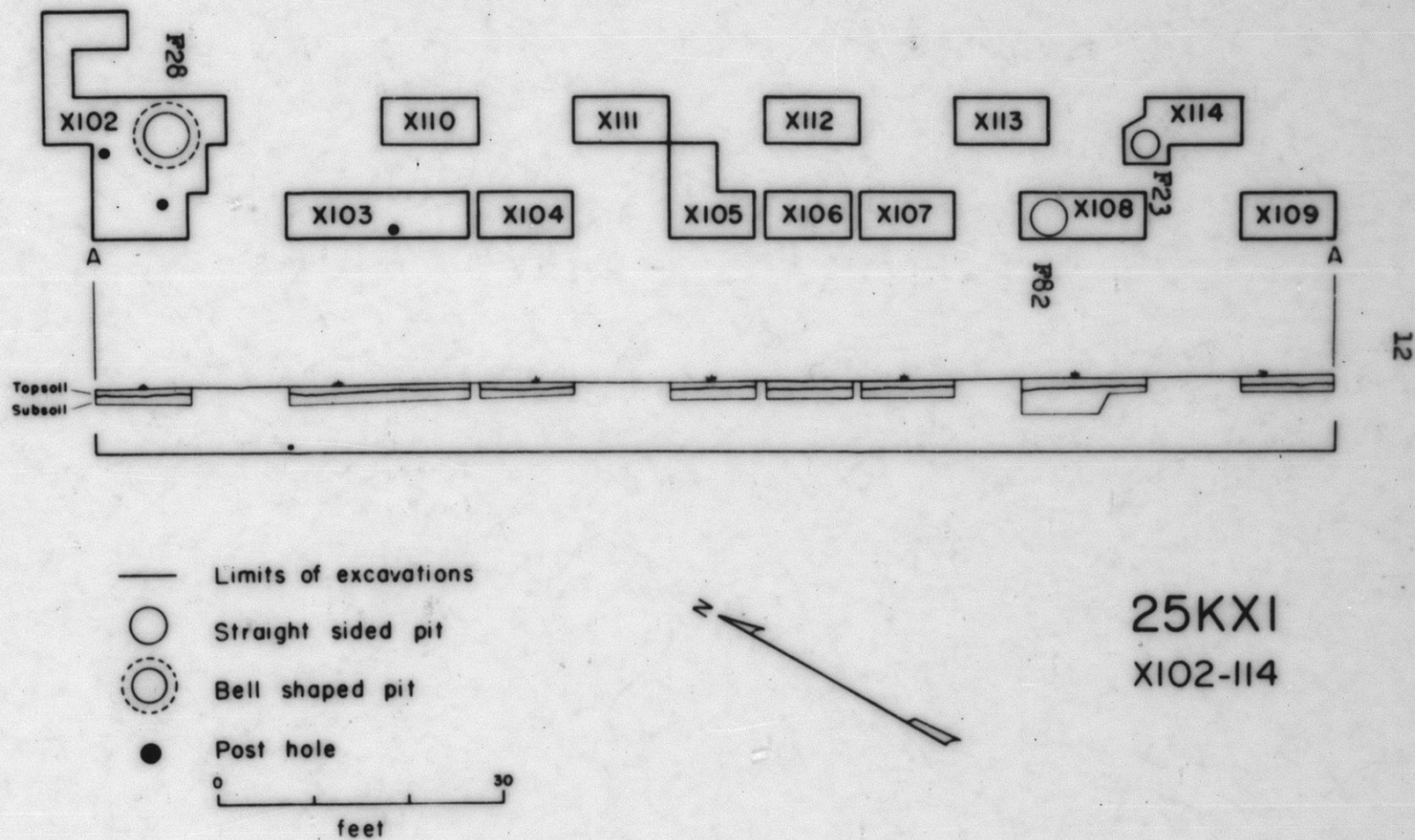
Excavation 106 (Map 4)

This unit was five feet wide and ten feet long; it was excavated to a depth of 1.7 feet. Nothing of archaeological significance was in the unit.

Excavation 107 (Map 4)

Five feet wide and ten feet long, this unit was excavated to a maximum depth of 1.7 feet. Nothing of archaeological significance was in the unit.

Map 4. Excavation Units 102 - 114.



Excavation 108 (Map 4)

This unit was five feet wide and ten feet long; it was excavated to a maximum depth of 3.5 feet. The unit contained a straight-sided pit, F82.

Excavation 109 (Map 4)

Excavated to a maximum depth of 2.5 feet, this unit was five feet wide and ten feet long. Nothing of archaeological significance was in the unit.

Excavation 110 (Map 4)

This unit was five feet wide and ten feet long; it was excavated to a maximum depth of 2.5 feet. Nothing of archaeological significance was in the unit.

Excavation 111 (Map 4)

Excavated to a maximum depth of 1.5 feet, this unit was five feet wide and ten feet long. Nothing of archaeological significance was in the unit.

Excavation 112 (Map 4)

This unit was five feet wide and ten feet long; it was excavated to a maximum depth of 1.7 feet. Nothing of archaeological significance was in the unit.

Excavation 113 (Map 4)

Excavated to a depth of 1.6 feet, this unit was five feet wide and ten feet long. Nothing of archaeological significance was in the unit.

Excavation 114 (Map 4)

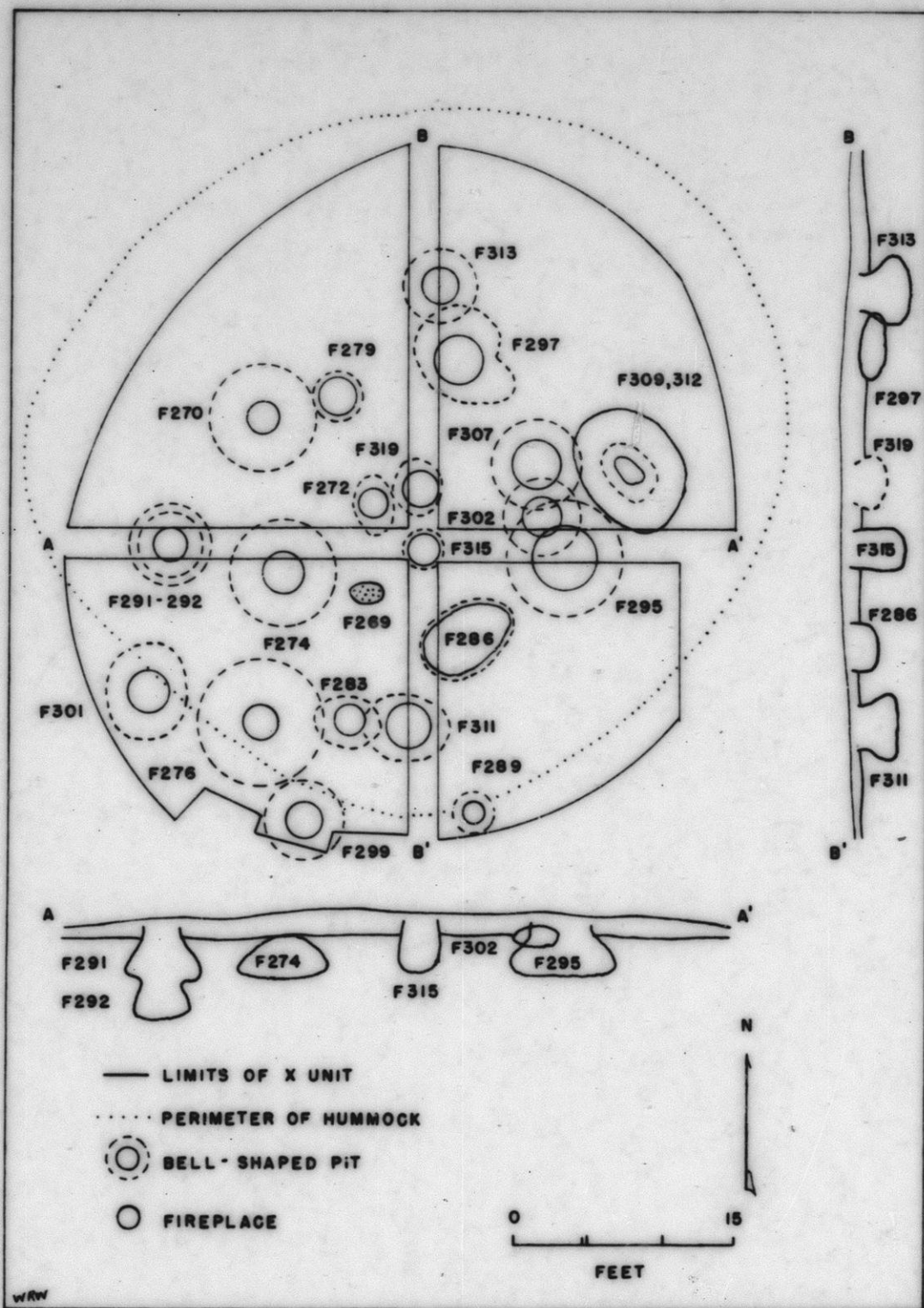
This irregular unit attained a maximum width of seven feet and a length of twelve feet; it was excavated to a depth of 2.5 feet. A straight-sided pit, F23, was in the unit.

Excavation 115 (Map 5)

This unit was designed to excavate a small hummock on a level part of the hill southeast of the fortification ditch. The center of the unit corresponds to the maximum height of the hummock rather than the center.

The technique of excavation was as follows: the maximum height of the hummock was first determined, and a center point was established. A north-south line and an east-west line were then laid down across the feature. These lines divided the hummock into quadrants. The plow zone, from 0.5 to 0.7 foot deep, was then removed from each quadrant. Excavation was carried down from a line one foot on either side of the north-south and the east-west line, leaving a two-foot wall along both axes for profile observations.

The hummock was nearly circular, being forty-seven feet north-south and fifty-one feet east-west. The maximum height above the surrounding ground level was 1.9 feet. The topsoil was a dark soil containing some charcoal, and this soil zone tended to increase in thickness toward the center of the hummock; minimum thickness was 0.6 foot, and maximum thickness was 1.4 feet. Although the field notes refer to this feature as a mound, certain details suggest



Map 5. Excavation Unit 115.

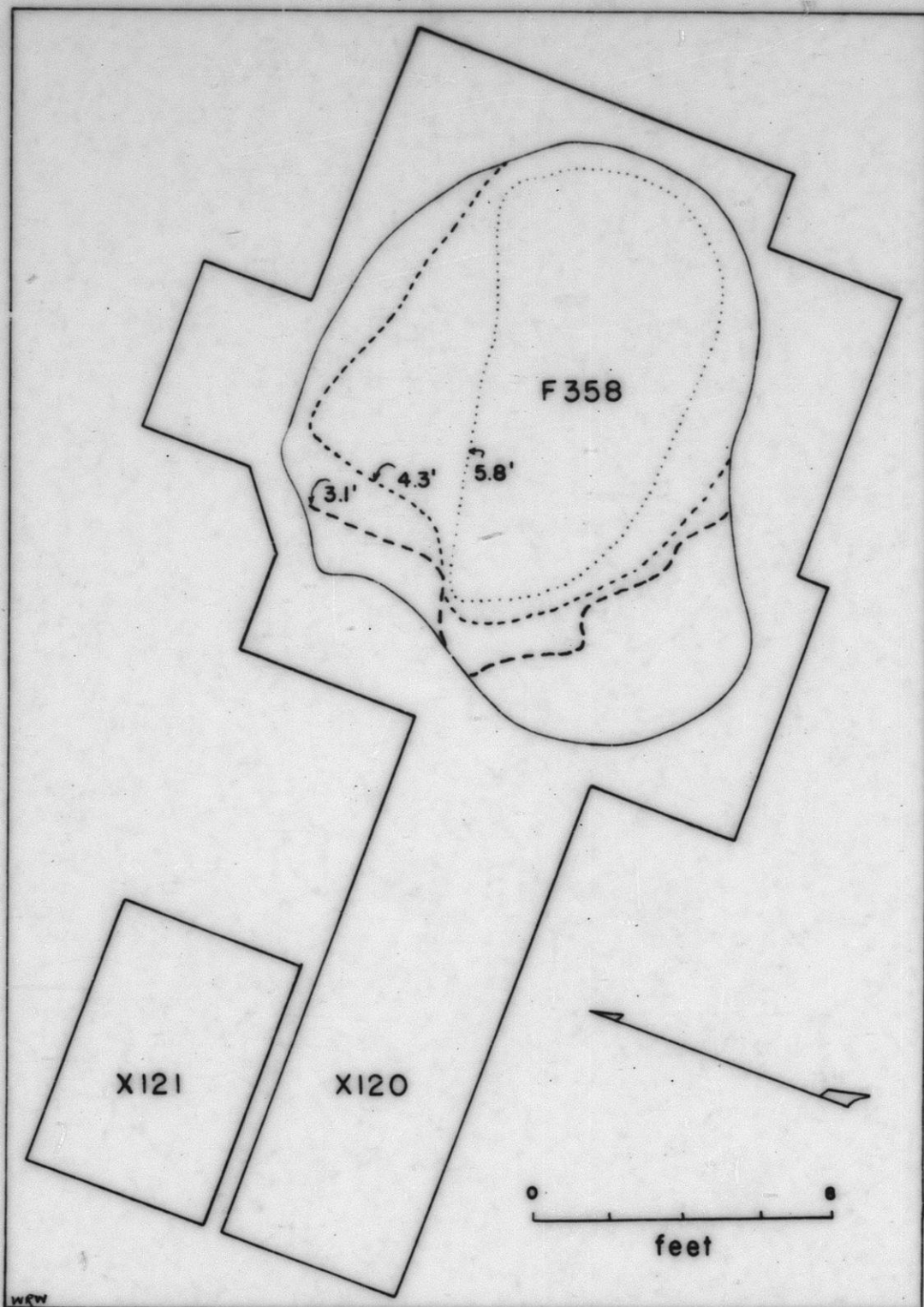
that it is a natural feature. First, although the dark soil thickens near the center of the elevation, inspection of the profiles reveals that the topsoil closely conforms to the profile of the subsoil. Second, each of the pits in the "mound" originate just below the plow zone, usually at 0.6 foot depth. Had a mound of earth been placed over the burial pits the orifices of the pits would have been noted deeper in the soil.

This burial area contained twenty-two pits and one fireplace. Seventeen pits were bell-shaped (two of these had a sub-floor pit), two were undercut, and one was straight-sided. Thirteen of the pits contained human burials. These pits appeared as circular areas of light mixed earth in the darker topsoil. The pit fill consisted of light mixed earth, except for F282, which contained light-colored sand.

The cross-sections of the unit were compiled from four separate cross-sections of the four walls. The sections depict the center line of the septa. The depth of F319 is not on record, and this pit is represented on the map by a dashed line which approximates its estimated size.

Excavation 120 (Map 6)

This unit was initially a trench five feet wide and ten feet long, but it was enlarged to reveal the limits of F358. It was excavated to a depth of 1.9 feet.



Map 6. Excavation Units 120 and 121. Numerals in F358 are designations of depth, in feet and tenths of a foot.

Excavation 121 (Map 6)

This test pit was five feet north and south and seven feet east and west; it was excavated to a depth of 0.7 foot. Burned earth and charcoal were observed on the floor of the unit. These features are not shown on the map since the field records did not specify their location or extent.

Excavation 122 (Map 8)

This unit was twenty feet north-south and five feet east-west; the depth of excavation is unknown. A fireplace, F348, was observed in the unit.

Excavation 123 (Map 7)

Initially this was a five foot test pit, but it was enlarged to reveal the limits of F344. The unit was excavated to a depth of 2.1 feet.

Excavation 124 (Map 7)

This five foot test pit was enlarged after a posthole was observed, but with negative results. The unit was excavated to a depth of 1.2 feet.

Excavation 125

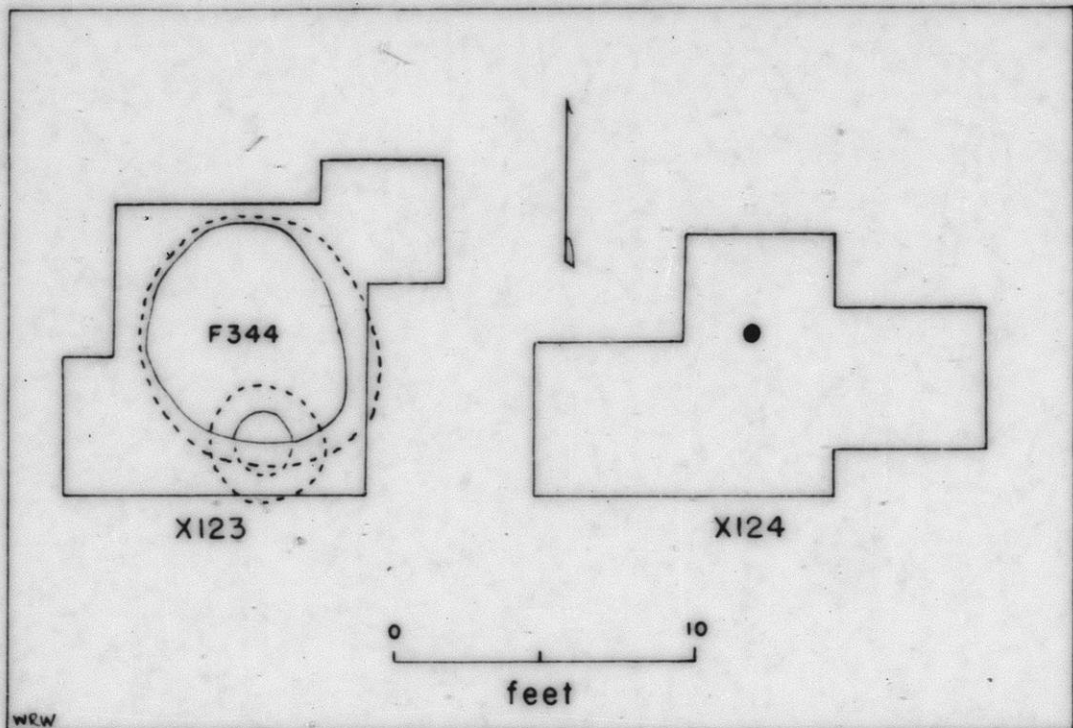
This five foot square was excavated to a depth of 1.2 feet. Nothing of archaeological significance was in the unit.

Excavation 126

This five foot square was excavated to a depth of 1.2 feet. Nothing of archaeological significance was in the unit.



Fig. 1. Fortification Ditch in X101. View is north.



Map 7. Excavation Units 123 and 124.

Excavation 127

This five foot square was excavated to a depth of 1.2 feet. A single posthole was observed in the unit.

Excavation 128

This was a five foot square. Further data are not on record for the unit.

Excavation 129 (Map 8)

The dimensions of this unit were estimated, from field sketches, to have been about fifteen feet square. The notes state that a pit outline, F345, was observed in the unit, but is not shown on the map for lack of details.

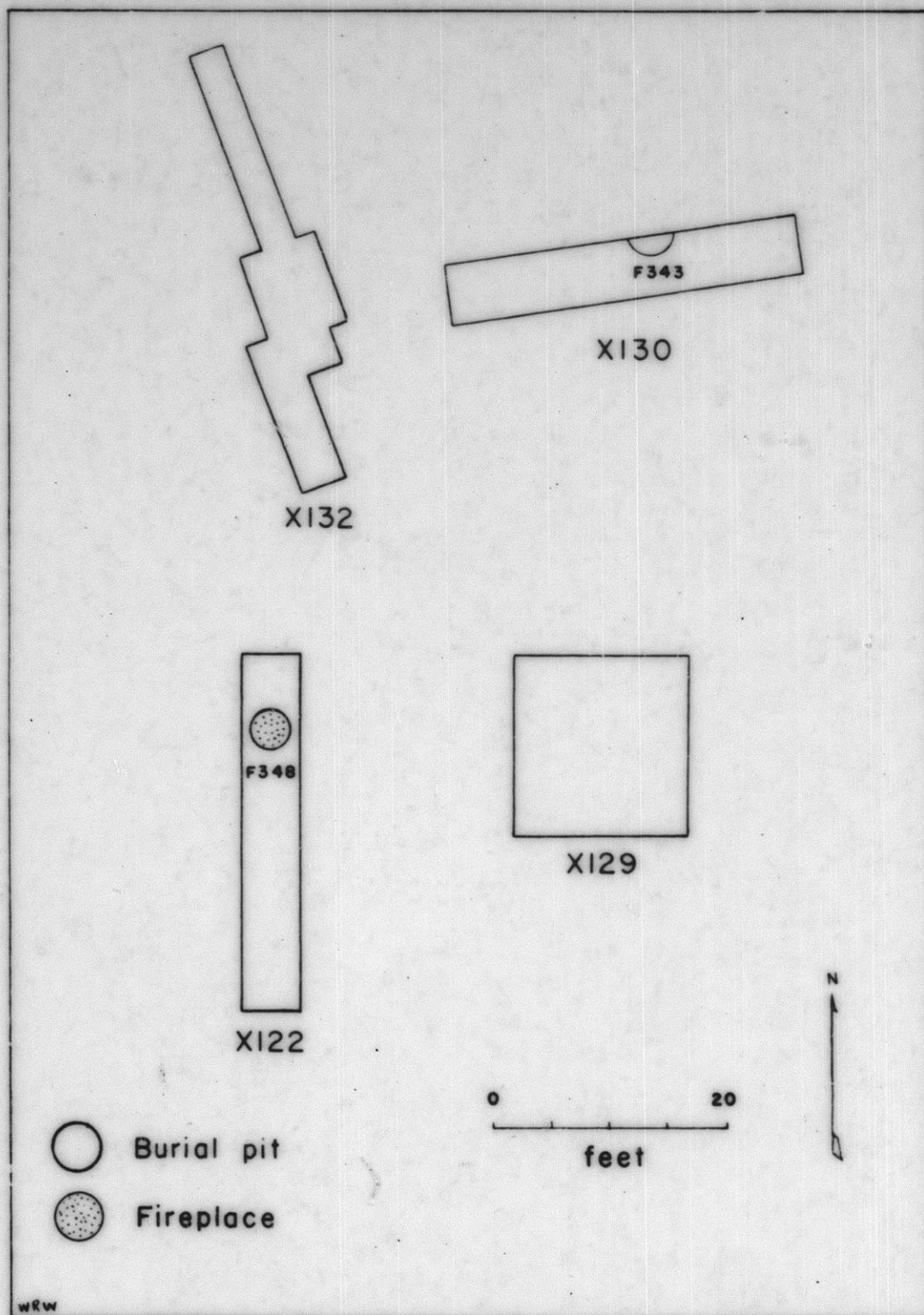
Excavation 130 (Map 8)

This unit was designed to test a hummock west of the fortification ditch (Map 2), and consisted of a trench oriented east-northeast across the apex of the hummock. It was excavated to a depth of 1.8 feet; a length of thirty feet and a width of five feet is estimated from field sketches.

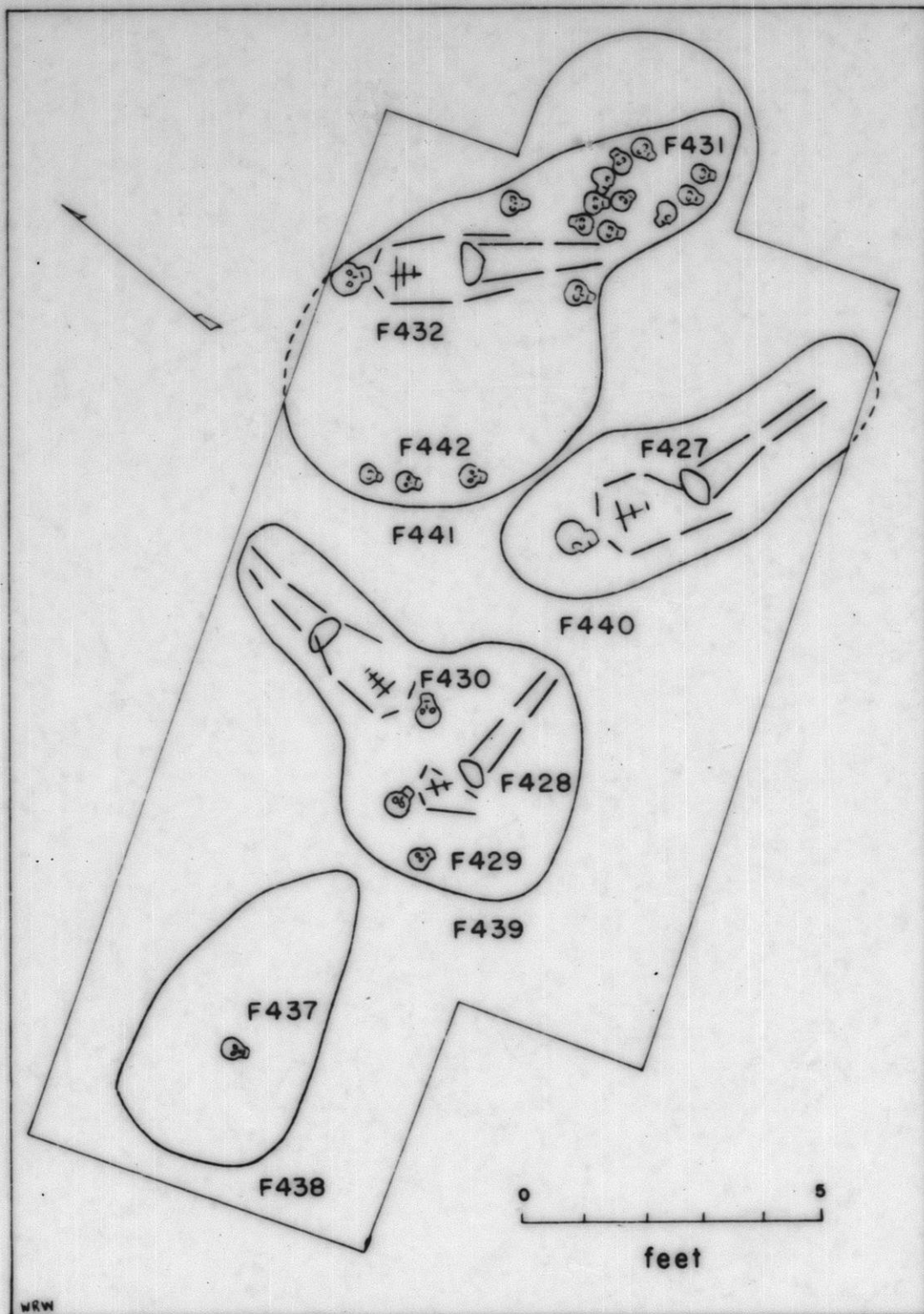
A concentration of burned bone, F342, was in the northwest corner of the unit, and a burial, F343, was near the center of the unit. F342 is not shown on the map since the field notes lack precision.

Excavation 131 (Map 9)

This unit was designed to test a hummock northeast of the fortification ditch (Map 2). Irregular in form, the



Map 8. Excavation Units 122, 129, 130, and 132.



Map 9. Excavation Unit 131.

unit attained a maximum length of twenty-three feet and a width of nine feet. The maximum depth of the excavation at the center of the hummock was 1.6 feet. Three supine and extended burials, one seated adult burial, three infant crania, one adult cranium, and an ossuary of twelve individuals were observed in four pits in the unit.

Excavation 132 (Map 8)

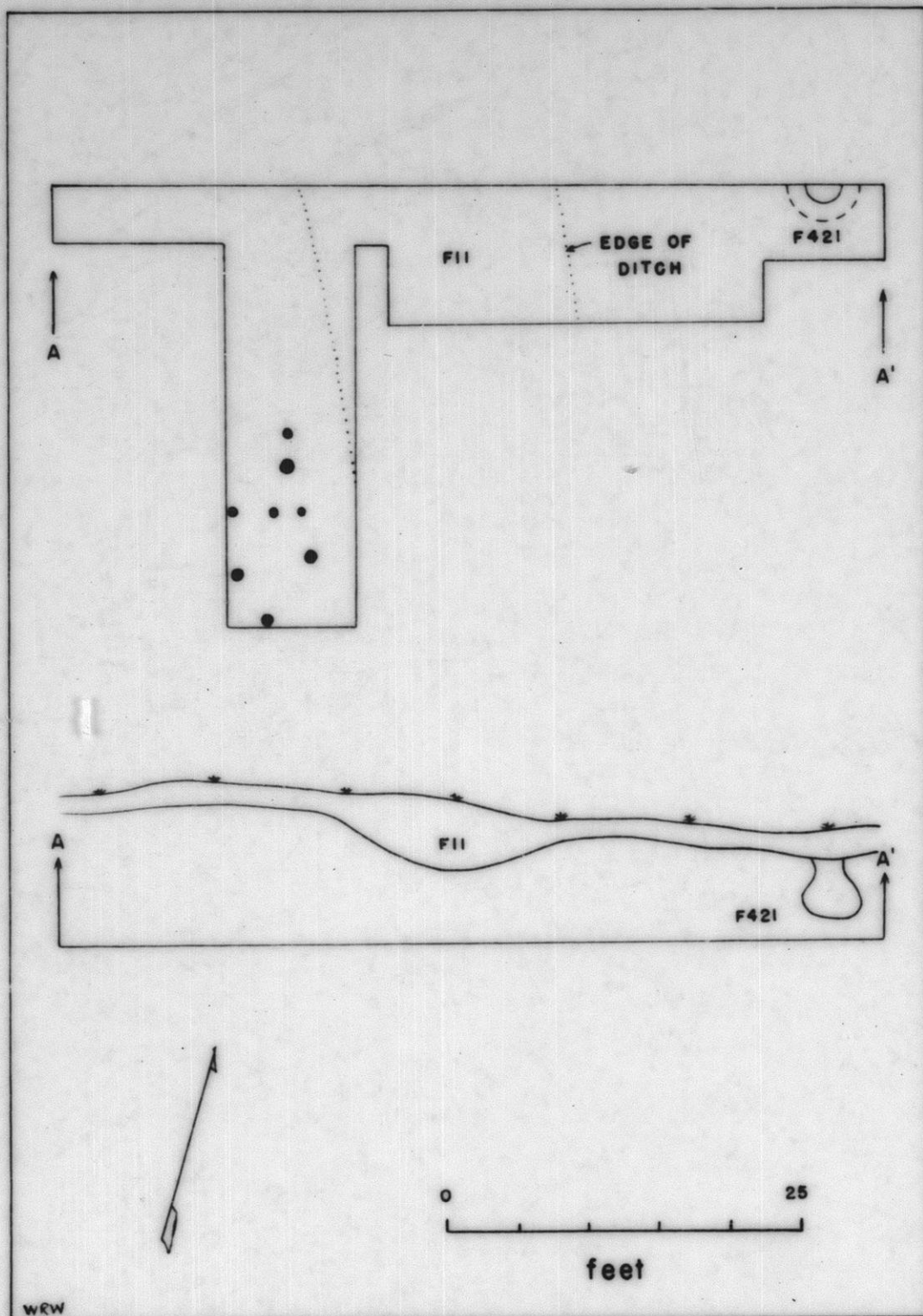
This unit was thirty feet long, between four and nine feet wide, and was oriented to the north-northeast; the depth of the excavation is not on record. Nothing of archaeological significance was in the unit.

Excavation 133 (Map 10)

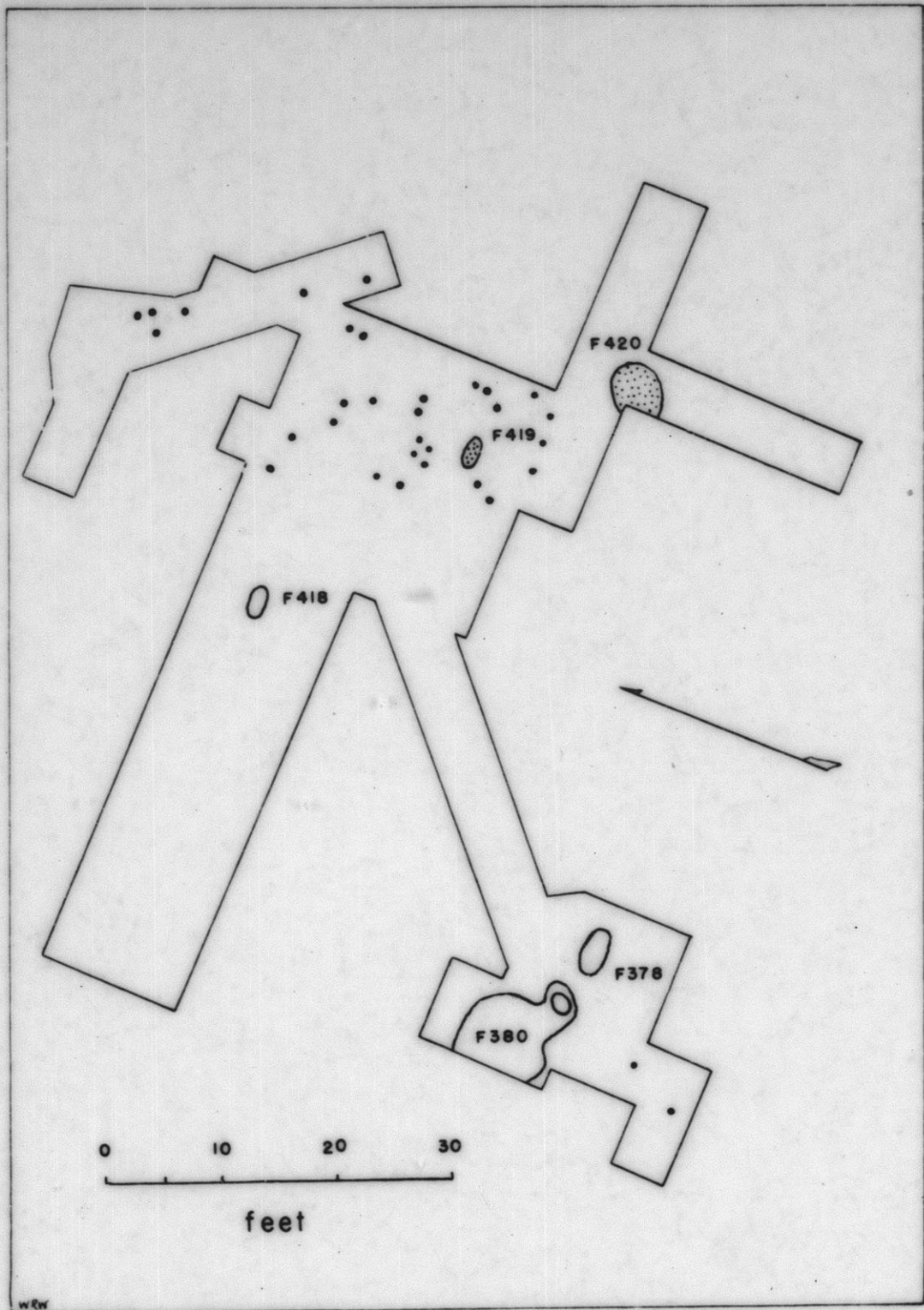
This unit cross-sectioned the fortification ditch in the northeast part of the site. The trench was fifty-seven feet long and between four and nine feet wide. An extension of the unit twenty-six feet long and nine feet wide was excavated parallel to the ditch inside the site (Map 2). The fortification ditch, F11; a bell-shaped pit, F421; and eight postholes were in the unit.

Excavation 134 (Map 11)

Initially this unit consisted of two five foot squares that were merged and extended in a search for features. The resulting large, irregular unit attained a maximum diameter of seventy-eight feet north-south and eighty-two feet east-west. One oval, basin-shaped pit, F378; one



Map 10. Excavation Unit 133.



Map 11. Excavation Unit 134.

irregular pit, F380; two fireplaces, F419 and F420; one burial, F418; and thirty-two postholes were in the unit.

Features*

The features noted during the excavation of the site are tabulated below in Table 1. The most prominent feature at the site is the fortification ditch, F11, which enclosed most of the level surface on the prominence. Post holes in X101 and X133 along the banked inner side of the ditch reveal the former presence of a post stockade. The stockade posts are widely spaced, and if all postholes were located, it would have required additional protection to create a solid wall. Perhaps logs or branches were used to make the wall more substantial, being supported or interwoven using the vertical stockade posts.

Information on houses is conspicuous by its absence in an area where the earth lodge was a common form of dwelling. In X134, a roughly circular cluster of postholes around a fireplace, F419, suggests some form of dwelling using post construction, but nothing suggesting an earth lodge floor plan is present in the field notes or photographs of profiles. Nevertheless, ethnographic data discussed later leads to the conclusion that earth lodges were either missed by the excavations or that they were not recognized as such if encountered.

* See the appendix for an explanation of the system of designating the features.

Pits of a variety of forms occur, of which the most common form was the bell-shaped cache pit. Pits of this sort were used by many sedentary Plains tribes for the storage of foodstuffs, and after fulfilling this function were often used for the disposal of refuse. Such was the case at Ponca Fort, where the most productive features were such former cache pits. Undercut pits, distinguished from the bell-shaped pits in lacking the characteristic swelling below the orifice, were three in number. Irregularly shaped pits and straight-sided pits were also present.

Each of the forms of pits were used for the disposal of the dead. Although one infant burial, F418 in X134, was inside the ditch, the remaining and majority of inhumations were in pits dug into natural hummocks outside the fortification. These burials were commonly accompanied by grave furniture, largely consisting of clothing and ornamentation but including a few implements. Trade goods were in many of the burial pits, often in large numbers.

Fourteen fireplaces are inside the ditch, and one is in X115 outside the ditch. These features are usually shallow, basin-shaped pits filled with charcoal and lined with burned earth.

TABLE 1
Description of Features*

Feature No.	X Unit	Depth below surface	Dimensions (mean)	Identification
11	101	2.1	Max. width, 10.5; min., 5.5; depth, 2.9	Fortification ditch.
14	101	1.3	Orifice diam., 4.8; diam., 6.0; depth, 1.2	Bell-shaped pit.
16	101	1.7	Orifice diam., 2.7; diam., 5.3; depth, 1.9	Bell-shaped pit.
17	101	1.7	Orifice diam., 2.3; diam., 2.8; depth, 2.0	Bell-shaped pit.
19	101	1.6	Orifice diam., 4.5; diam., 6.6; depth, 1.9	Undercut pit.
21	101	No data	Diam., 1.7 N-S, 2.2 E-W	Fireplace
23	114	0.9	Diam., 2.4; depth, 0.2	Straight-sided pit.
28	102	1.7	Orifice diam., 7.0; diam., 7.6; depth, 2.3	Bell-shaped pit.
29	101	1.7	Diam., 3.3; depth, 1.1	Irregular pit.
30	101	4.0	Diam., 7.1; depth, 0.5	Straight-sided pit.

* Measurements are in feet and tenths of a foot.

TABLE 1 (Continued)

Feature No.	X Unit	Depth below surface	Dimensions (mean)	Identification
35	101	0.9	Orifice diam., 2.0; diam., 6.8; depth, 3.3	Bell-shaped pit.
42	101	3.6	Diam., 6.7; depth, 1.5	Irregular pit.
47	101	3.6	Orifice diam., 2.1; diam., 6.9; depth, 7.3	Bell-shaped pit.
53	101	0.9	Diam., 2.1 N-S, 1.3 E-W; depth, 0.3	Fireplace.
60	101	0.8	Diam., 2.5 N-S, 1.8 E-W; depth, 0.1	Fireplace.
67	101	0.9	Diam., 1.5; depth, 0.2	Fireplace.
82	108	0.5	Diam., <u>ca.</u> 4.0	Straight- sided pit.
126	101	2.5	Diam., 2.2 N-S, 1.7 E-W; depth, 0.7	Fireplace.
146	101	0.9	Diam., 2.4 N-S, 1.6 E-W; depth, 0.1	Fireplace.
269	115	0.5	Diam., 1.6 N-S, 2.4 E-W; depth, 0.6	Fireplace.
270	115	0.6	Orifice diam., 2.0; diam., 6.8 N-S, 8.0 E-W; depth, 3.7	Bell-shaped pit; bark layer 1.5 above floor.

TABLE 1 (Continued)

Feature No.	X Unit	Depth below surface	Dimensions (mean)	Identification
272	115	0.7	Orifice diam., 2.0; diam., 4.0 N-S, 2.7 E-W; depth, 3.4	Bell-shaped pit; bark- lined floor.
274	115	0.6	Orifice diam., 2.9; diam., 7.3; depth, 3.8	Bell-shaped pit; bark- lined floor.
276	115	0.6	Orifice diam., 2.2; diam., 7.5; depth, 3.7	Bell-shaped pit; clay plug in orifice.
279	115	0.6	Orifice diam., 2.8; diam., 3.2 N-S, 4.3 E-W; depth, 3.4	Bell-shaped pit; bark level 1.1 above floor.
283	115	0.6	Orifice diam., 2.1; diam., 3.3 N-S, 4.3 E-W; depth, 3.1	Bell-shaped pit.
286	115	0.6	Diam., 4.5 N-S, 6.2 E-W; depth, 3.4	Straight- sided pit.
289	115	0.6	Orifice diam., 1.4; diam., 5.5; depth, 2.6	Bell-shaped pit.
291	115	0.6	Orifice diam., 2.2; diam., 5.5; depth, 3.6	Bell-shaped pit; bark- lined floor.

TABLE 1 (Continued)

Feature No.	X Unit	Depth below surface	Dimensions (mean)	Identification
292	115	4.2	Orifice diam., 1.9 N-S, 2.9 E-W; diam., 4.2; depth, 2.4	Bell-shaped pit in floor of F291.
295	115	0.6	Orifice diam., 4.3; diam., 8.0; depth, 4.0	Bell-shaped pit.
297	115	0.6	Orifice diam., 2.3; diam., 5.5; depth, 3.2	Bell-shaped pit.
299	115	0.7	Orifice diam., 2.2; diam., 5.6; depth, 2.5	Bell-shaped pit.
301	115	0.8	Orifice diam., 2.7; diam., 6.6 N-S, 5.5 E-W; depth, 3.8	Bell-shaped pit; bark- lined floor.
302	115	0.6	Orifice diam., 3.1; diam., 5.2; depth, 2.6	Bell-shaped pit.
307	115	1.4	Orifice diam., 3.4; diam., 5.6 N-S, 6.3 E-W; depth, 3.2	Bell-shaped pit.
309	115	0.6	Orifice diam., 2.3 N-S, 1.3 E-W; diam., 4.2 N-S, 3.3 E-W; depth, 2.7	Bell-shaped pit in floor of F312.

TABLE 1 (Continued)

Feature No.	X Unit	Depth below surface	Dimensions (mean)	Identification
312	115	0.9	Orifice diam., 2.3 N-S, 1.3 E-W; diam., 3.5; depth, 2.1	Undercut pit.
313	115	0.6	Orifice diam., 2.8; diam., 4.5; depth, 3.9	Bell-shaped pit.
315	115	0.5	Orifice diam., 2.2; diam., 2.6; depth, 4.1	Undercut pit.
319	115	0.6	Orifice diam., 2.1; diam., 3.4; depth, No data	Bell-shaped pit.
344	123	2.1	Orifice diam., 8.5 N-S, 6.3 E-W; diam., 8.8 N-S, 7.5 E-W; depth, 2.5	Bell-shaped pit with subfloor pit.
345	129	0.8	No data	"Pit outline."
348	122	0.6	No data	Fireplace.
358	120	1.9	Diam., 12.0 N-S; 15.0 E-W; depth, 4.0	Irregular pit.
378	134	1.2	Diam., 3.5 N-S, 5.2 E-W; depth, 0.3	Oval, basin- shaped pit.
419	134	No data	Diam., 2.0 N-S, 3.0 E-W.	Fireplace.

TABLE 1 (Concluded)

Feature No.	X Unit	Depth below surface	Dimensions (mean)	Identification
420	134	No data	Diam., 5.0	Fireplace.
421	133	1.5	Orifice diam., 2.0; diam., 4.7; depth, 4.2	Bell-shaped pit.
438	131	1.2	Diam., 2.8 N-S, 8.5 E-W; depth, 3.7	Irregular pit.
439	131	1.6	Diam., 7.0 N-S, 4.8 E-W; depth, 3.7	Irregular pit.
440	131	1.6	Diam., 7.0 N-S, 2.5 E-W; depth, 2.7	Irregular pit.
441	131	1.6	Diam., 9.4 N-S, 4.9 E-W; depth, 3.7	Irregular pit.

Artifacts

POTTERY

Pottery is not abundant, and the few sherds recovered were so distributed that no one feature contained more than a few of them. The forty-six rim sherds and handles are identifiable as of McVey Plain type (Gunnerson, 1952: 42, Fig. 1, a-b), Stanley Braced Rim Ware types (Lehmer, 1954: 42-46, Plates 12-14), and unclassified wares designated as Examples A, B, and C.

McVey Plain type (Fig. 3, d)

Sample: 14 rim sherds and one handle, representing between 8 and 12 vessels.

Paste:

Method of manufacture: Probably lump modeled, using the paddle and anvil.

Temper: The majority of sherds are from vessels made from clay containing a fine grit.

Texture: The paste is compact and is well worked.

One sherd exhibits a tendency to split.

Hardness: 2.5 (Moh's scale).

Thickness: Vessel walls range from 5 to 10 mm., averaging 7 mm. The lip and rim are of nearly the same thickness.

Color: Light to medium gray.

Surface Finish: Most sherds clearly revealed the vessels were malleted with a cord-wrapped paddle. In most cases the cord impressions are smoothed over, and on some sherds are nearly obliterated. The lower rims are horizontally smoothed.

Decoration: None.

Form:

Lip: Usually round, but may be flat.

Rim: Straight to somewhat outflaring. Height, 5 to 31 mm.; thickness, 5 to 10 mm.

Neck: Generally constricted, with the rim joining the shoulder in an angular, even curve.

Body: Indeterminate.

Appendages: One strap handle is vertically cord roughened, with diagonal tool impressions along the lip. Width is 30 mm., thickness, 6 mm.

Size: The orifice diameters of two vessels, projected from large rim sherds, were 60 and 189 mm.

Relationship of type: These rims identified as to type on the basis of Gunnerson's study of ceramics of Aksarben Aspect sites along the Missouri River (1952: 42, Fig. 1, a-b). Certain rim sherds from St. Helena Focus sites of the Aksarben Aspect are also similar to the type (Cooper, 1936: 35-37, Plate VII, 1).

Stanley Ware types (Fig. 2, c, e)

Eleven rim sherds and one strap handle are within the range of three types described by Lehmer from 39ST30, the Dodd site, and 39ST14, the Philip Ranch site (1954: 42-46, Plates 12-14). The types recovered at Ponca Fort are:

Stanley Wavy Rim: 4 rim sherds, representing either 3 or 4 vessels (Fig. 2, c).

Stanley Cord Impressed Rim: 3 rim sherds and one strap handle, representing 4 vessels (Fig. 2, e).

Stanley Tool Impressed Rim: 4 rim sherds, representing 4 vessels.

These types occur in sites in central South Dakota designated as the Sanish Aspect (Stephenson, 1954: 18), identified as Arikara of late 18th century date. Stanley Cord Impressed Rim and Stanley Plain Rim sherds are also reported as rare examples from the Biesterfeldt site, North Dakota (Wood, 1955a: 7-8, Fig. 3, a-b), tentatively identified as a Cheyenne village of the late 18th century (Strong, 1940: 370-376). A single sherd of the type Stanley Tool Impressed is also noted from 25CE4, an unexcavated site in Cherry County, northern Nebraska (Wood, 1955b: 35).

Example A (Fig. 2, a)

Sample: 1 rim sherd.

Paste:

Temper: The clay used contained a fine grit, and a few

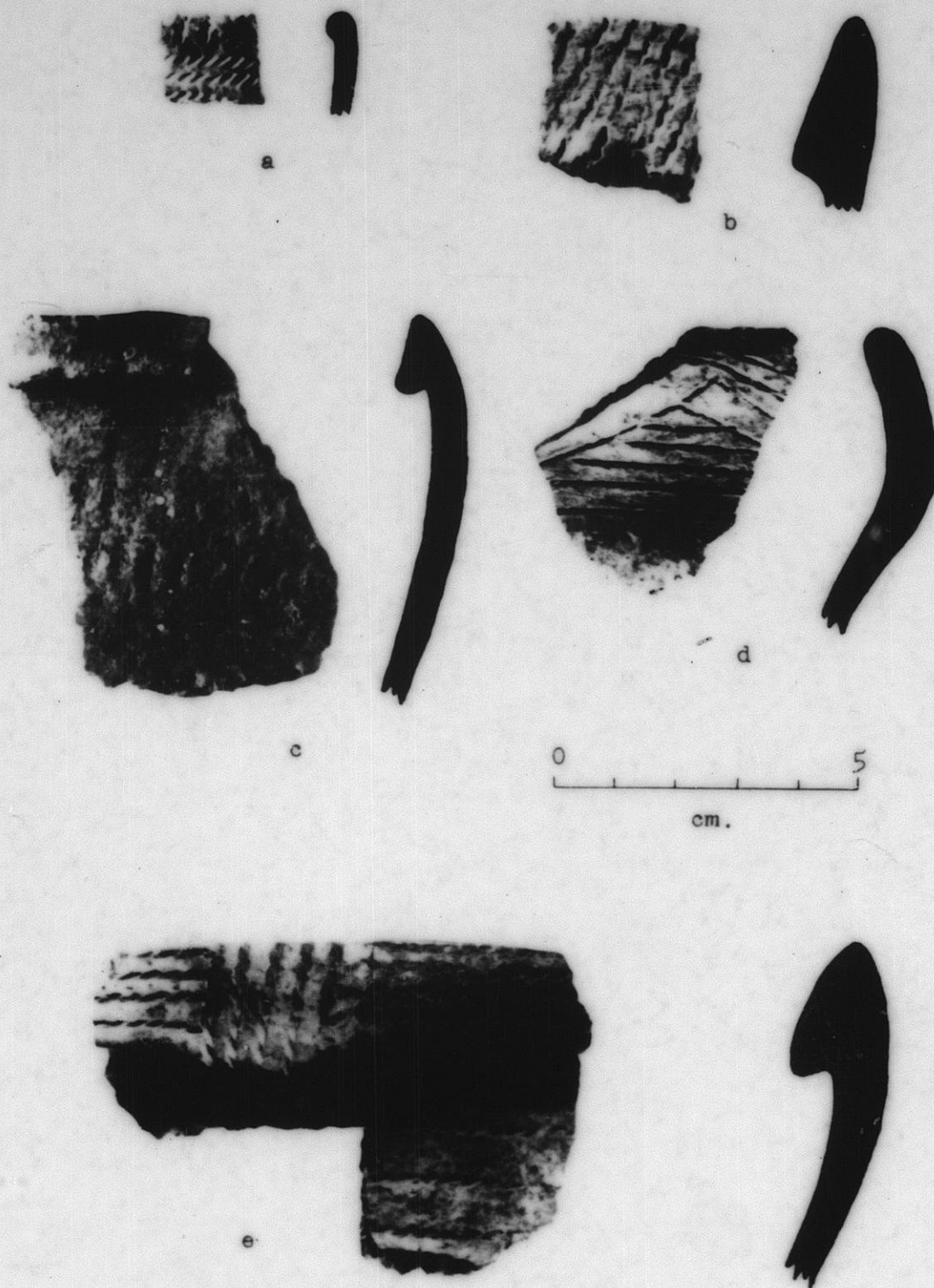


Fig. 2. Pottery rim sherds.

particles of sand and mica which average 0.5 mm.
in diameter.

Texture: The paste is compact and is well worked.

Hardness: 3.0 (Moh's scale).

Color: Light grey.

Surface Finish: All parts of the rim were evenly smoothed.

Decoration: A parallel series of vertical single cord
impressions extend from the lip interior to the lip
exterior. Three horizontal bands of single cord
impressions occur on the outer rim.

Form:

Lip: Round.

Rim: Straight; thickness, 5 mm.

Relationship of Example: This sherd resembles pottery rim
sherds from sites in central South Dakota. It is my
impression that similar, if not identical, sherds occur
at 39HU2, the Oahe site.

Example B (Fig. 2, d)

Sample: 1 rim sherd.

Paste:

Temper: Quartz grains averaging 1 mm. in diameter.

Texture: The paste is compact and well worked.

Hardness: 3.0 (Moh's scale).

Color: Light to dark grey.

Surface Finish: The lip and rim are smoothed, and the upper
shoulder is grooved paddle-stamped, vertically applied.

Decoration: One oblique tool impression occurs on the lip.

Opposed oblique incised lines on the exterior rim form a triangle with the apex directed toward the lip. The base and center of the triangle is formed and filled by five horizontally incised lines.

Form:

Lip: Round.

Rim: Outflaring; height, 30 mm.; thickness, 10 mm.

Neck: Shallowly constricted.

Relationship of Example: No comparable remains have been seen in the literature consulted.

Example C (Fig. 2, b).

Sample: 3 rim sherds, representing 3 vessels.

Paste: Same as Example B.

Surface Finish: Smoothed.

Decoration: Vertical tool impressions occur on the interior lip of one sherd, and oblique tool impressions on the interior lip of another. Diagonal single cord impressions cover the exterior rim. Nodes occur at the base of the collar on two of the sherds.

Form:

Lip: Round.

Rim: Braced or collared. Height, 25 to 32 mm.; thickness, 7 to 11 mm.

Body: Indeterminate.

Relationship of Example: This example does not appear to have been described previously. It resembles the type Colombe Collared from the Philip Ranch site, 39ST14, in central South Dakota (Lehmer, 1954: 102, Plate 18) in certain respects, but the rim profile differs from Colombe Collared.

Body Sherds (Fig. 3, a-c)

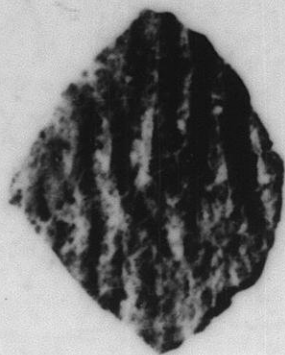
The 186 body sherds in the Ponca Fort collections are classified as follows:

Grooved paddle-stamped	49
Cord roughened	64
Smoothed	66
Brushed	3
Trilled (on smooth surface)	1
Tool impressed (on smooth surface) .	1
	186

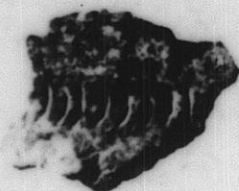
The grooved paddle-stamped sherds are from vessels which were first malletted with a grooved paddle, and one sherd clearly reveals a series of impressions (Fig. 3, a). The paddle stamps on this sherd terminate in square impressions. Many of the sherds were smoothed to varying degrees, and on many sherds the stamps are barely discernable. The width of the impressions varies from 2 to 6 mm., with an average depth of 0.7 mm. Sherds bearing this finish may be from vessels of Stanley Ware or Example B, which are similarly treated.

The cord-roughened sherds are from vessels which were first malletted with a cord-wrapped paddle and subsequently smoothed (Fig. 3, c). The impressions were either applied in parallel series or at random. The twist of the cord used

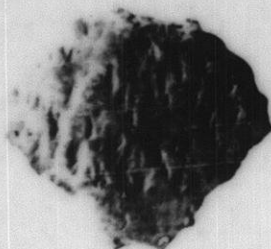
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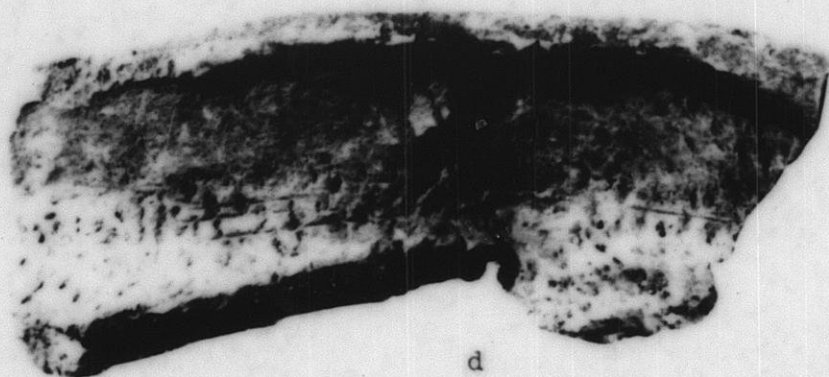
a



b



c



d

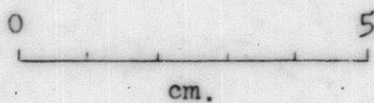
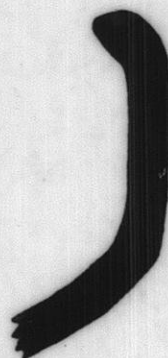


Fig. 3. Pottery rim and body sherds.

TABLE 2

Provenience of Pottery Remains

X Unit or Feature	Depth (feet)	McVey Plain rims	Stanley Ware rim	Example A rim	Example B rim	Example C rims	Grooved paddle- stamped sherds	Cord-roughened sherds	Smoothed sherds	Brushed sherds	Trailed sherd	Tool-impressed sherd
X101	0-0.85						1					
X101	1.1		1				1					
X101	1.8-2.2		1									
X115	0-0.85	1					3	13	5			
X115	1.9-2.5	11					10	48	40	1		
X120			1									
X129	4.0		1									
X134			1				2		2			
F29							5		5			
F35									1			
F274								1				
F295			2					1	1			
F307									1			
Surface		3	5	1	1	3	27	1	11	2	1	1
TOTALS		15	12	1	1	3	49	64	66	3	1	1

may be duplicated by holding two cords in the left hand and twisting to the right with the right hand (S-twist). Cord-roughened sherds may be assigned to vessels of McVey Plain.

The smoothed sherds may be from either grooved paddle-stamped or from cord-roughened vessels, since smoothing has obliterated the marks and assignment is impossible.

The brushed sherds appear to have been rubbed with a corncob or with a handful of coarse grass, which resulted in sharp, parallel scratches in the moist clay. These sherds are identifiable as the lower rims of vessels of Stanley Ware types, since this ware is similarly treated.

One trailed sherd has two parallel lines 2.5 mm. wide over a smooth surface. A final, and tool-impressed sherd, bears a series of small lunate impressions (Fig. 3, b).

CHIPPED STONE

Projectile Points (9 specimens)

Five of the nine projectile points are complete enough to name in accordance with a descriptive title as utilized by Davis (1956: 64-69). These categories correspond to four of the classes in the classification of Strong (1935: 88-89).

- (1) Triangular, straight base, unnotched (Strong NBa).
The tip is lacking. Projected length, ca. 25 mm., width is 13 mm. and thickness 3 mm.; weight, 0.7 gm. Material, grey chert (Fig. 4, a).

- (1) Plain lanceolate, convex base (Strong NAb1). The tip is lacking. Projected length, ca. 25 mm., width is 16 mm. and thickness 3 mm.; weight, 1.4 gm. Material, opaque white chalcedony (Fig. 4, b).
- (1) Triangular, concave base, side notched (Strong NBol). Specimen is complete: dimensions, 22 x 14 x 3 mm.; weight, 0.9 gm. Material, brown chalcedony (Fig. 4, c).
- (2) Lanceolate, expanding stem, straight base (Strong SCb2). Dimensions: 41 x 17 x 6 mm., weighing 3.9 gm.; and 38 x 20 x 6 mm., weighing 4.5 gm. Material, opaque white and brown chalcedony (Fig. 4, e-f).
- (4) Point fragments, too small to determine their original form, are of grey, tan, and white cherts.

End scrapers (2 specimens)

Both scrapers were made by trimming one end of a chert flake on the end opposite the bulb of percussion, thus creating the working end. The sides of the implements were also flaked. One of them is triangular in outline and has a triangular cross-section; it measures 20 x 17 x 7 mm., and is made of white chalcedony (Fig. 4, d). The other is larger and is rectangular in outline and nearly flat in cross-section; it measures 53 x 29 x 8 mm., and is made of grey chert (Fig. 4, 1).

Side scraper (1 specimen)

An unifacially flaked piece of yellow jasper (Fig. 4, h) is similar to a sidescraper figured by Kidder (1932: Fig. 20, d) from Pecos.

Knives (4 specimens)

Two of these implements are plain lanceolate in outline, with convex sides and a convex base (Strong NAb1). The more complete of the two specimens has an estimated length of 93 mm.; width is 31 mm. and thickness is 10 mm. (Fig. 6, c). A third implement has a convex base and relatively parallel sides; it is not classed as to form.

The midsection of a small knife may be a fragment of a diamond-shaped, alternately beveled "Harahey" knife. The specimen is beveled on opposing edges (Fig. 4, g). The material in each instance is Bijou Hills quartzite.

Choppers (29 specimens)

These artifacts are oval blades with lenticular cross-sections, bifacially flaked from Bijou Hills quartzite. Seven of them are quite large, ranging in length from 205 to 244 mm.; in width, from 88 to 132 mm.; and in thickness, from 25 to 40 mm. (Fig. 6, d). A series of smaller specimens, twenty-two in number, ranges in length from 125 to 162 mm.; in width, from 64 to 90 mm.; and in thickness, from 20 to 30 mm.

"Bow shave" (1 specimen)

A flake of Bijou Hills quartzite with a shallow notch

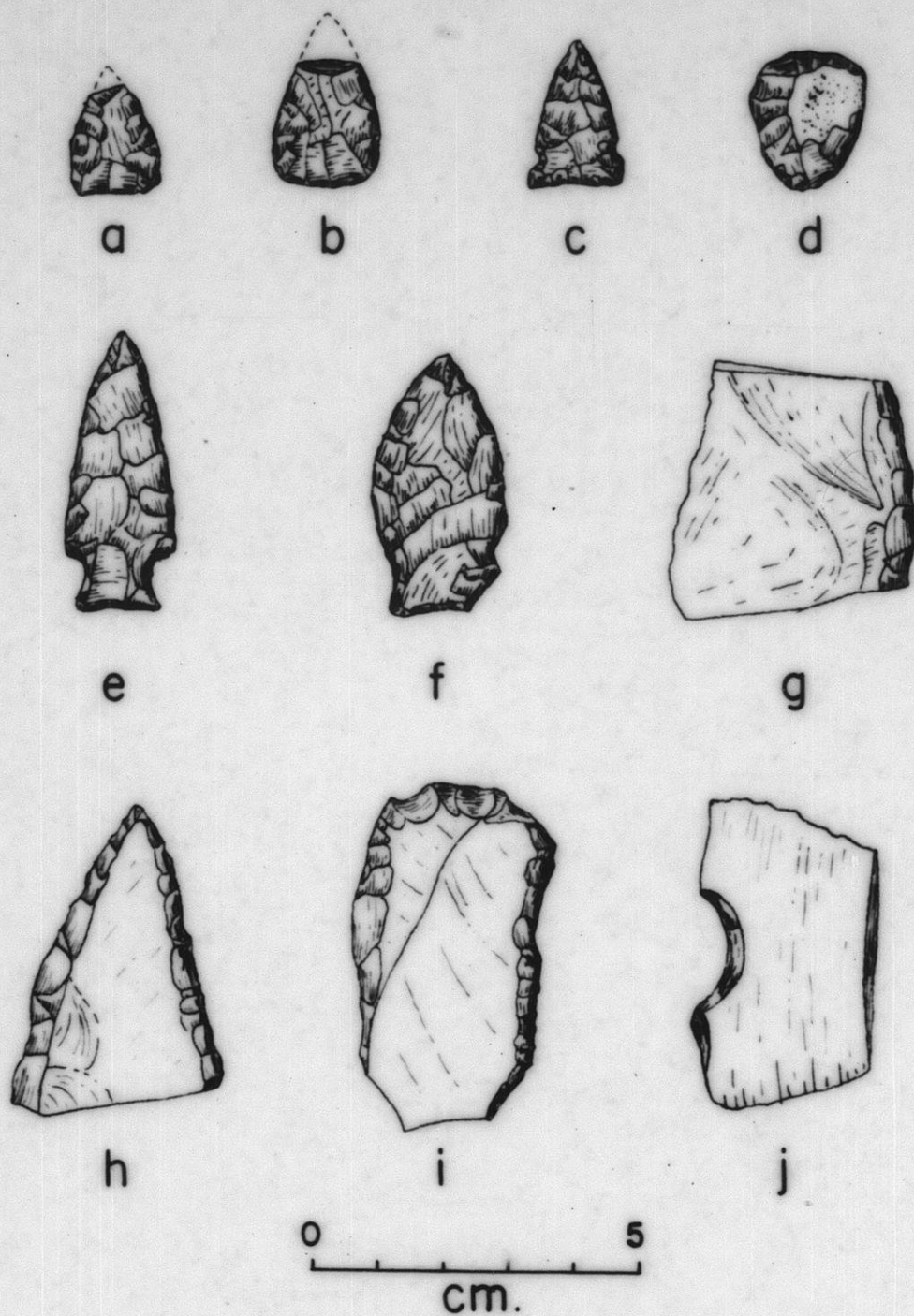


Fig. 4. Chipped stone artifacts.

TABLE 3

Provenience of Chipped Stone Artifacts

X Unit or Feature	Depth (feet)	NBa point	NAb1 point	NBb1 point	SCb2 points	End scrapers	Side scraper	Knives	Choppers	"Bow shave"	Flake knives
X101	0-0.85								1		5
X101	1.1										1
X101	1.8-2.2								3		
X115	0-0.85								1		
X115	1.9-2.5				1		1				
X133	1.7										1
X134									1		1
F35									1		
F82									1		
F279											1
Surface					1	2	1	3	16	1	24
Provenience unknown		1	1	1					5		4
TOTALS		1	1	1	2	2	1	4	29	1	37

on one edge is similar in form to the so-called "bow shaves" or "spoke shaves" (Fig. 4, j).

Flake knives (37 specimens)

Flake knives bearing prepared, bifacially flaked edges along one or more sides are classed as flake knives; material is Bijou Hills quartzite and colored cherts.

GROUND STONE

Shaft smoothers (16 specimens)

Only one of these implements is complete. One flat side bears a straight, U-shaped groove, and the other side is convex. It is U-shaped in cross-section; it measures 96 x 48 x 26 mm. (Fig. 5, a).

The remaining specimens are fragmentary mid-sections or ends, each of which has a U- or a V-shaped groove on the flat upper surface. The mid-sections have relatively parallel sides (Fig. 5, b), while the ends are either rounded or squared (Fig. 5, c). Cross-sections are U-shaped or triangular. The material in each instance is a coarse, buff sandstone.

Grooved abraders (6 specimens)

These fragments of a coarse, buff sandstone bear U-shaped or V-shaped grooves along one or more level surfaces. They probably fulfilled the same function as the shaft smoothers but they are not shaped.

Discoidal hammer stone (1 specimen)

A circular dense sandstone hammer averages 85 mm. wide and 36 mm. thick. The circumference of the hammer is battered smooth, and pecked depressions 4 mm. deep occur in its two flat faces (Fig. 5, d).

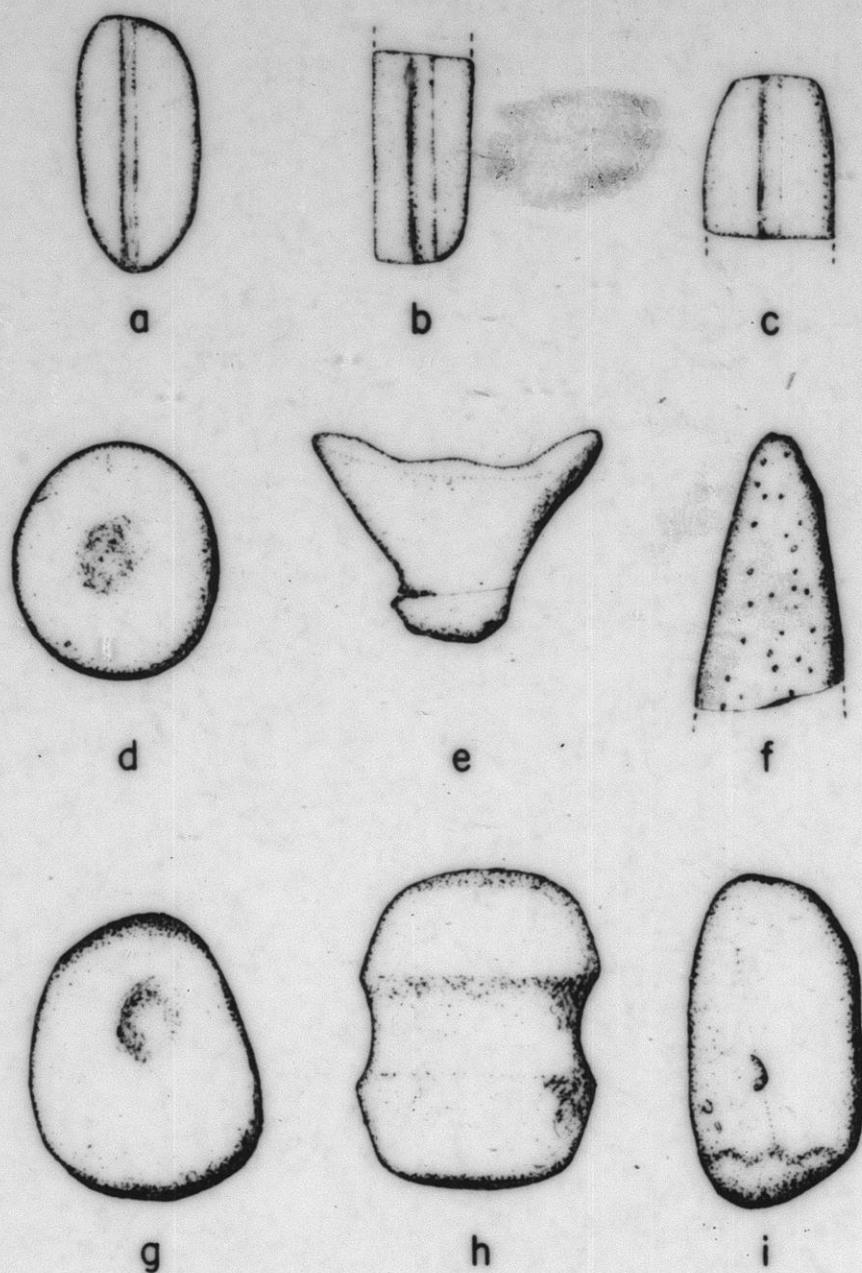
Whetstones (4 specimens)

A triangular piece of dense grey sandstone is ground smooth on all surfaces. The sides of the triangle are concave, and ear-like projections occur at the corners (Fig. 5, e). Two other stones are conical in form and oval in cross-section. One of them is stained red, probably with ocher (Fig. 5, f). A fourth specimen is rectangular in form, with the sides ground smooth. The surfaces are convex; material is a dense grey sandstone.

The identification as whetstones is based on form and the texture of the ground surfaces and is tentative, but there are metal knife blades from the site which could have been sharpened on such stones.

Cobble hammer stones (6 specimens)

Water-worn cobbles of granite and greywacke have one or more battered ends or sides. The cobbles are ordinarily oval, and they vary in length from 70 to 150 mm. Four of them have pits pecked into one or both faces (Fig. 5, g).



0 5 10
cm.

Fig. 5. Ground stone artifacts.

Grooved mauls (6 specimens)

These familiar artifacts are granite cobble with a groove at the midpoint which encircles the stone. Both ends of the stone are battered from use as a hammer, but the remaining surface is unmodified. Lengths, 117 to 143 mm.; diameters, 71 to 128 mm. (Fig. 5, h).

Muller (1 specimen)

A block of coarse sandstone, measuring 124 x 66 x 35 mm., has two smoothly ground sides. These abrasive surfaces may have been created by grinding the stone on one of the mealing slabs described below (Fig. 5, i).

Mealing slabs (37 specimens)

These objects are irregular stone slabs with one or more smoothly ground faces. Ten of them are bifacially flaked along one or more edges. Striations on the ground surfaces are random, not parallel, in orientation, suggesting that they were ground in random fashion. Materials include coarse sandstone, Bijou Hills quartzite, granite, and pink quartzite. The muller described above may have been used with such grinding slabs.

Pitted cobblestone anvils (6 specimens)

Large slabs of pink quartzite and grey granite, from 187 to 250 mm. in diameter, have wide, shallow, basin-shaped pits pecked into one flat surface. The pits are 70 to 120 mm. wide and average 20 mm. in depth. Such artifacts are

often called "cherry pounders," in which food was pulverized using a hafted grooved maul. as a hammer.

Modified pebble (1 specimen)

A river-worn pebble, averaging 50 mm. wide and 24 mm. thick, is pecked and ground flat on one side. The other side of the stone retains the original surface.

Pipe fragment (1 specimen)

A fragment of catlinite from the bole of a pipe has a bore 15 mm. wide at the top. The bole is burned black, and the exterior surface is deeply scored (Fig. 9, a).

Carved catlinite (1 specimen)

A flat fragment of a catlinite object bears carefully executed excisions on both faces (Fig. 11, b). It is 3 mm. thick. One rounded and polished edge remains which suggests that it object may originally have been a disk.

Bannerstone (1 specimen)

This fragment represents half of the original artifact. When it was complete, the specimen was nearly square. The fragment is 42 mm. long (parallel to the hole), 20 mm. thick, and the estimated original width is 54 mm. The cylindrical perforation along the short axis is 14 mm. wide. (Fig. 13, j).

TABLE 4

Provenience of Ground Stone Artifacts

X Unit or Feature	Depth (feet)	Shaft smoothers	Grooved abraders	Discoidal hammer stone	Whetstones	Cobble hammer stones	Grooved mauls	Muller	Mealings slabs	Pitted cobble- stone anvils	Modified pebble	Pipe fragment	Carved catlinite	Bannerstone
X101	0-0.85	2	1				2		6					
X101	1.8-2.2				1		1		1					
X102									1					
X109	0.85		1											
X120								1	1					
X123									1					
X129	4.0								1					
X133	1.7	2				1			1					
X134		1	1			1			1					
F16		2								2				
F29		1				1								
F35						3			1					
F82									1					
F274									2					
F292									2					
F295							2		1	1				
F309							1							
F344				1										
Surface		7	2						11		1	1		1
Provenience unknown		1	1		3				6	3			1	
TOTALS		16	6	1	4	6	6	1	37	6	1	1	1	1

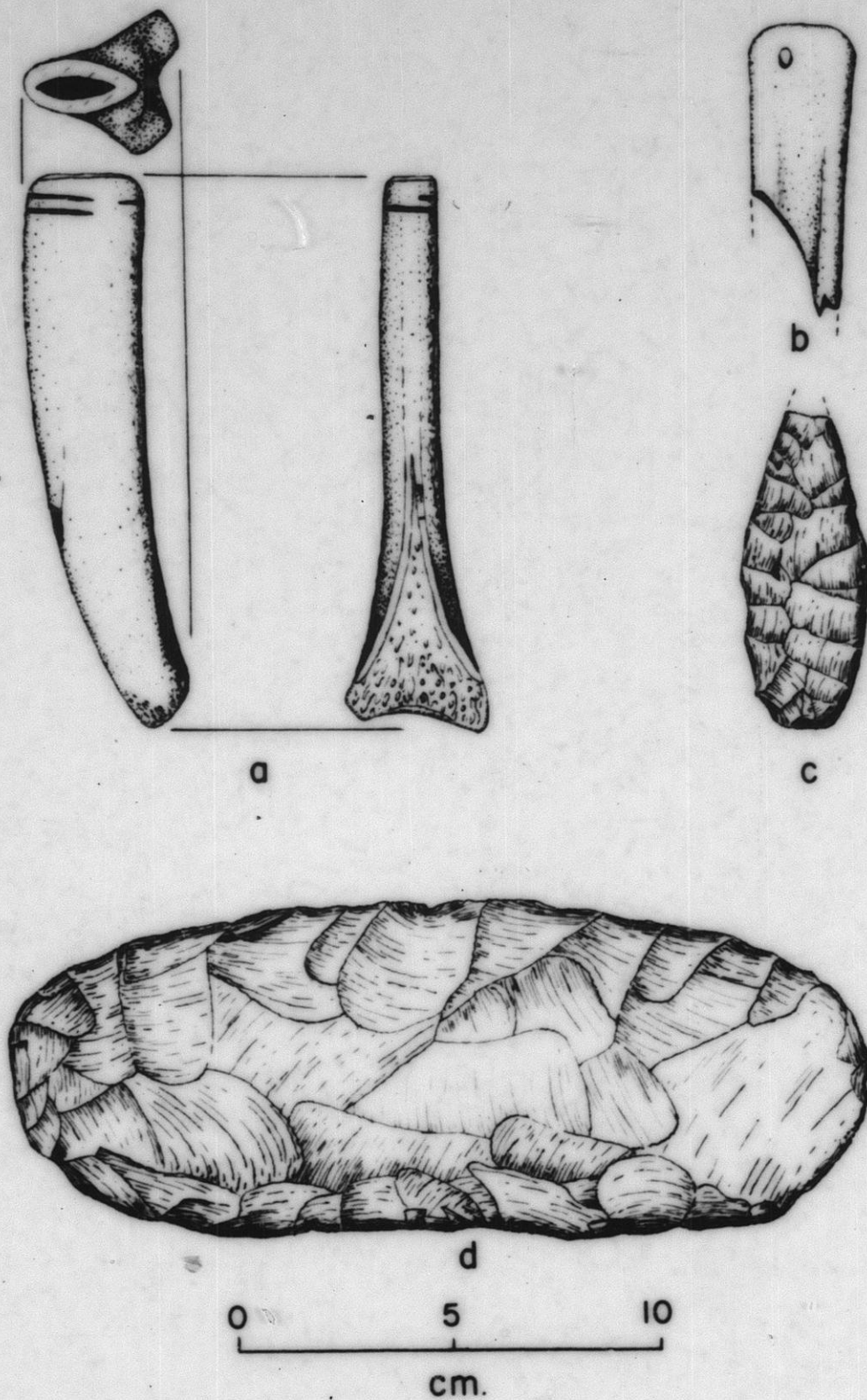


Fig. 6. Chipped stone artifacts and work in bone.

WORK IN BONE

Knife handle (1 specimen)

On part of a bison dorsal spine, 140 mm. long, the distal end is cut square and the cancellous tissue removed, perhaps for the inclusion of a stone or metal knife. The square-cut end is scored by two shallow cuts. The proximal end is partially cut away and shaped (Fig. 6, a).

Tubes (2 specimens)

One of these ornaments is made from the mid-shaft of a dog tibia; the ends were transversely scored and broken away, and the entire tube polished. Length is 110 mm. A second specimen is split along the long axis; the bone interior permits its identification as a bird long bone. Length is 132 mm. (Fig. 7, a).

Fleshing tools (8 specimens)

Each of these tools was fashioned from the metapodial of elk. The shaft of the bone was so cut that a chisel edge remained, the proximal end being left as a handle. It is likely that the tarsal bones were left articulated to provide additional leverage, but were separated from the fleshers in the field. Six of the implements are serrated (Fig. 7, b), and two are beveled on the lower side of the blade (Fig. 7, c).

Shaft wrenches (2 specimens)

The ribs of an animal large enough to be bison were

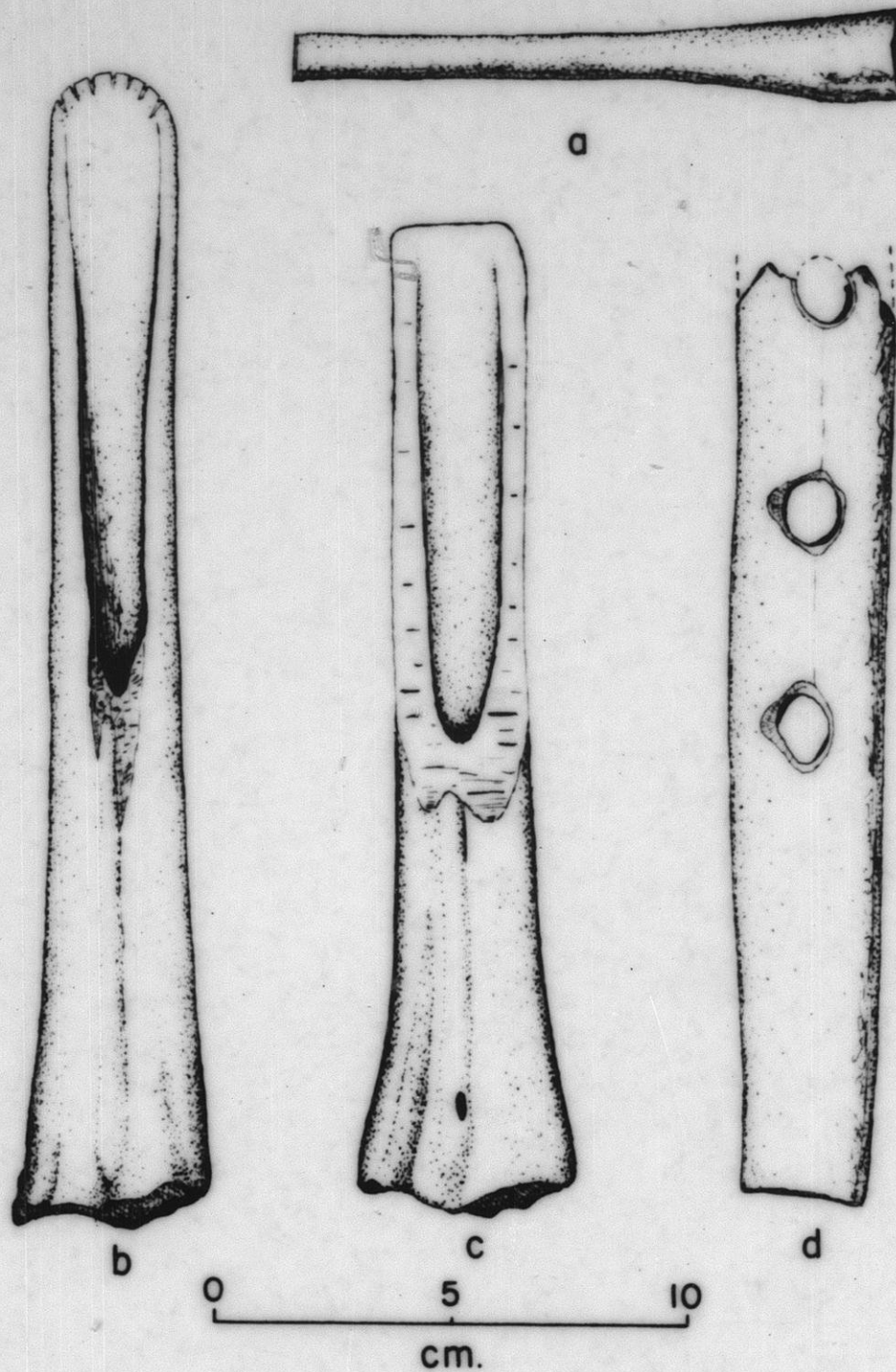


Fig. 7. Work in bone.

pierced in the manufacture of this tool. One of the wrenches has two holes, while the other has three. The latter implement (Fig. 7, d) is stained with red ochre.

Scapula hoes (34 specimens)

All of the scapulae appear to be from bison. The articulating surface is retained on all intact specimens, but all hoes are modified by the reduction of the scapular processes. The end opposite the glenoid is sharpened; on four hoes the edge is beveled on the side bearing the scapular processes, and on one it is beveled on the opposite side. Either roughened areas or notches of varying depth occur along the blade edges 230 to 320 mm. from the glenoid, perhaps for use in securing the hoe bindings. Length varies from 300 to 489 mm. (Fig. 8, a).

Bison ulna pick (1 specimen)

The distal end of this bone (Fig. 8, b) is splintered and worn, possibly from use as a digging stick or pick. The proximal end of the bone bears cuts directed toward the articulating surface.

Pendant (1 specimen)

This ornament appears to have been cut from one end of an elk metapodial. One end is transversely cut and the corners rounded; the other end is broken. A highly polished foramen penetrating the bone suggests that the item was suspended by a thong or cord (Fig. 6, b).

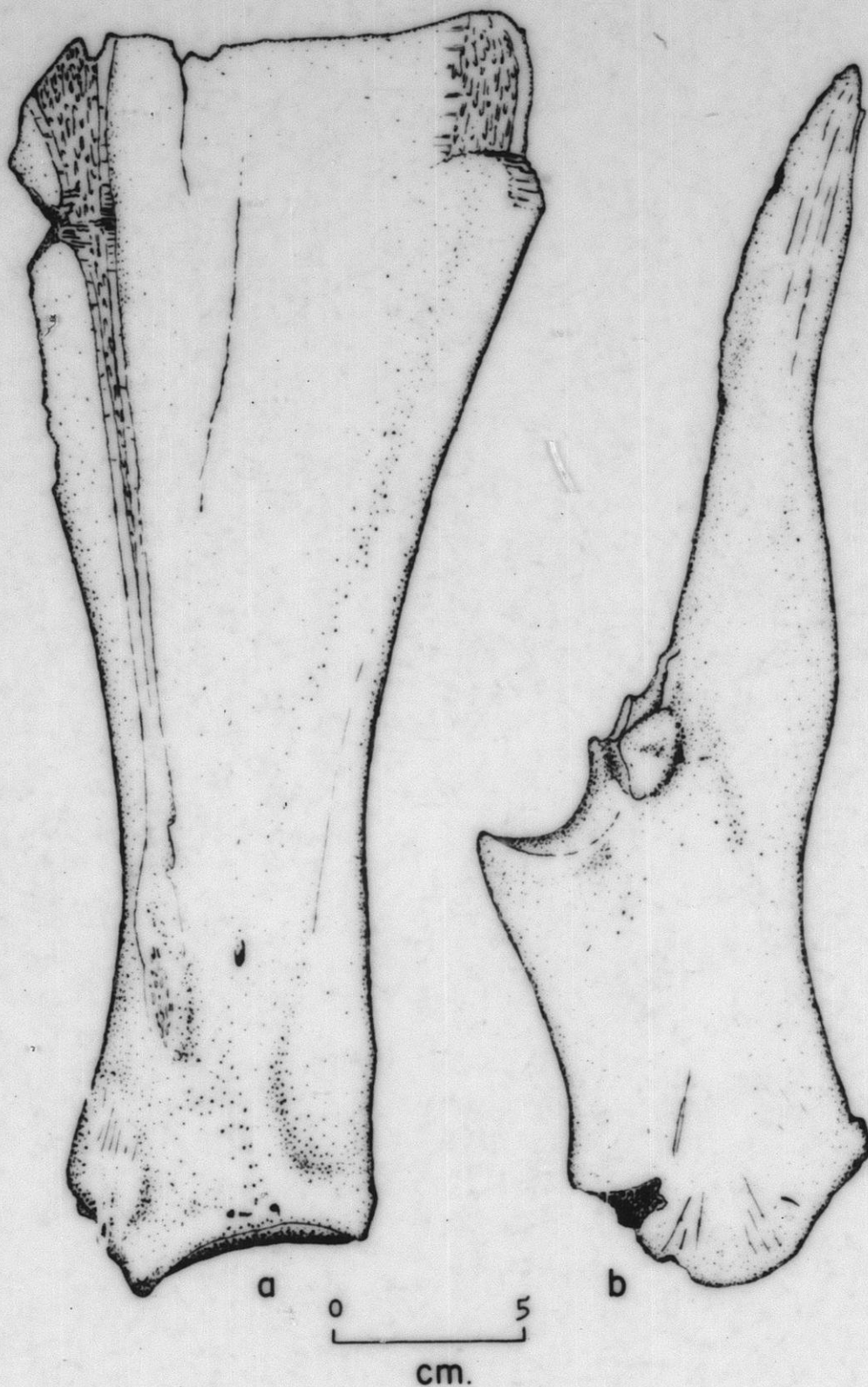


Fig. 8. } Work in bone.

TABLE 5
Provenience of Work in Bone

X Unit or Feature	Depth (feet)	Knife handle	Tubes	Fleshing tools	Shaft wrenches	Scapula hoes	Bison ulna pick	Pendant
X101	0-0.85		1	2		1	1	
X101	1.7					1		
X108	4.0					1		
X115	0.85					1		
X131					1			
X133	0.85			1		1		
X133	1.7					4		
X134				1		1		
F16						4		
F35						5		
F82						1		
F276						3		
F279						1		
F283						1		1
F286						1		
F291						2		
F292						2		
F295			1					
F301						1		
F309				2				
Provenience unknown		1		2	1	3		
TOTALS		1	2	8	2	34	1	1

TRADE GOODS: SHELL OBJECTS

Conch shell gorget (1 specimen)

This oval, cup-shaped object is composed of marine conch shell. The edges are smoothed and the surfaces are polished. Two perforations along one edge were drilled from both sides of the shell. It was found in association with the hair pipe described below (Fig. 12, e, and Fig. 16).

Hair pipe (1 specimen)

This tubular bead, $3 \frac{1}{8}$ in. long and $\frac{3}{8}$ in. thick, conforms to the description of beads made for the Indian trade as reported by Ewers (1957). It was associated with the shell gorget described above in a burial pit near the neck of an adult, together with many other trade goods (Fig. 16).

TRADE GOODS: IRON OR STEEL OBJECTS

Hoes (2 specimens)

These implements are $6 \frac{3}{4}$ in. long and $4 \frac{7}{8}$ in. wide. The outer part of the blade is flat, but the inner side is ridged. Blades are oval in outline and the cutting edge is convex; both hoes appear to have been hand-wrought (Fig. 12, f).

Hatchet (1 specimen)

The specimen is highly oxidized, more so than might be suggested by the illustration (Fig. 13, 1). The oxidation has preserved part of the cedar handle, fused several white

seed trade beads to the blade, and preserved the imprint of a finely woven textile over most of one side of the blade. Length is $2 \frac{7}{8}$ in.; maximum height (at blade), $1 \frac{5}{8}$ in.; minimum height (at handle opening), $\frac{13}{16}$ in.; diameter of handle opening, $\frac{1}{2}$ in.

Projectile point (1 specimen)

The point is triangular with straight sides; the stem has been lost. Present length, 35 mm.; width, 19 mm.; thickness, 2 mm.; weight, about 2.0 gm. (Fig. 11, e).

Firesteel (1 specimen)

A flat, oval band of iron or steel, $3 \frac{1}{8}$ in. long and $1 \frac{7}{8}$ in. wide, probably is a firesteel. The metal is $\frac{3}{16}$ in. thick and $\frac{7}{8}$ in. wide (Fig. 12, b).

Kettle handles (2 specimens)

The objects so identified are lengths of wire $8 \frac{1}{4}$ in. long and $\frac{5}{16}$ in. thick, bent into oval forms $3 \frac{3}{8}$ in. long and $2 \frac{3}{8}$ in. wide. The ends of the metal do not touch. It is possible that these items may also be bracelets (Fig. 12, b).

Fragments (16 pieces)

A number of unidentifiable fragments of sheet metal are about $\frac{1}{16}$ in. thick.

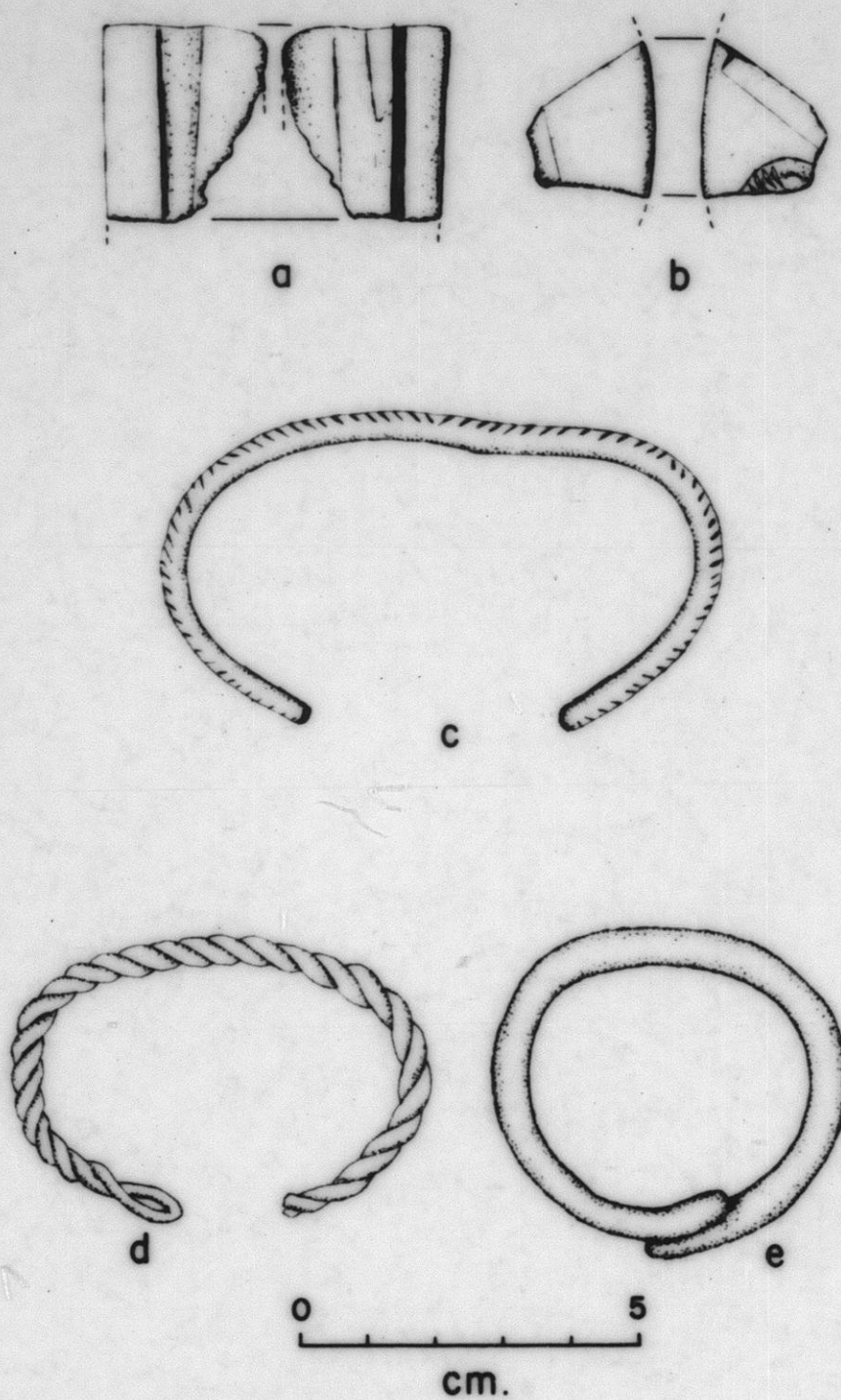


Fig. 9. Ground stone artifacts and trade bracelets.

TABLE 6

Provenience of Trade Goods: Shell, Iron or Steel, and Lead Objects

X Unit or Feature	Depth (feet)	Conch shell gorget	Hair pipe	Hoes	Hatchet	Projectile point	Firesteel	Kettle handles	Iron fragments	Lead button weights	Lead colls	Lead strips
X123	4.0					1						
X129							1					
X131								2				2
X131	1.7										1	
X134									13			
F274					1							
F279											5	
F283		1	1								3	
F289											12	
Surface				2					3			
Provenience unknown										2		
TOTALS		1	1	2	1	1	1	2	16	2	21	2

TRADE GOODS: LEAD OBJECTS

Button weights (2 specimens)

These circular specimens are $1/2$ in. in diameter and $1/32$ thick. They were used to weight cloth-wrapped buttons (Fig. 11, c).

Coils (21 specimens)

Coils of lead wire, superficially resembling springs, are composed of wire averaging $1/8$ in. wide. The coils are between $5/8$ and $7/8$ in. wide, and lengths vary up to about $7/8$ in.

Strips (2 specimens)

These two irregularly rolled or bent lead strips are about $7/16$ in. wide and $3\ 1/8$ in. long.

TRADE GOODS: BRASS OR COPPER OBJECTS

Bells (3 specimens)

Two of these are circular, containing iron clappers. Bases are pierced by two holes $3/16$ in. wide connected by a narrow slot. Diameter, $3/4$ in.; height (excluding loop), $9/16$ in.; height (including loop), $3/4$ in. Bells of this variety are commonly known as "hawk bells" (Fig. 11, i).

A larger bell, also containing an iron clapper, is crushed, and measurements are estimated: height, 1 in.; width, $1\ 1/8$ to $1\ 1/4$ in. Two perforations on the base, $3/16$ in. wide, are connected by a narrow slot (Fig. 11, j).

Projectile points (3 specimens)

Form is triangular, with straight sides and a small, squared stem. Length varies from 24 to 34 mm.; width, from 14 to 19 mm.; thickness, from 0.5 to 0.7 mm.; weight, from 0.9 to 1.6 gm. (Fig. 11, d, f).

Tube (1 specimen)

A piece of metal is rolled into a tube $1/4$ in. wide and $2\ 4/16$ in. long (Fig. 11, g).

Buttons (3 specimens)

These are circular brass buttons, from $1\ 3/16$ to $1\ 7/16$ in. wide, and are $1/16$ in. thick (Fig. 10, a). One of them has an elaborate, geometrically incised design on the face. The diameter of the latter button is $1\ 7/16$ in. (Fig. 10, d).

Knife blades (3 specimens)

Three rectangular pieces of metal have serrated edges. They are 3 to $3\ 1/16$ in. long, $5/8$ to $1\ 1/16$ in wide, and $1/32$ in. thick. The thinness of the metal would not have permitted these objects to be very effective as cutting implements since very little pressure is sufficient to bend the blade (Fig. 10, b).

Bangles (38 specimens)

These are strips of metal rolled into tight cones from 1 to $1\ 3/4$ in. long (Fig. 10, c). They were customarily attached to the extremities of clothing by means of knotted thong or cord.

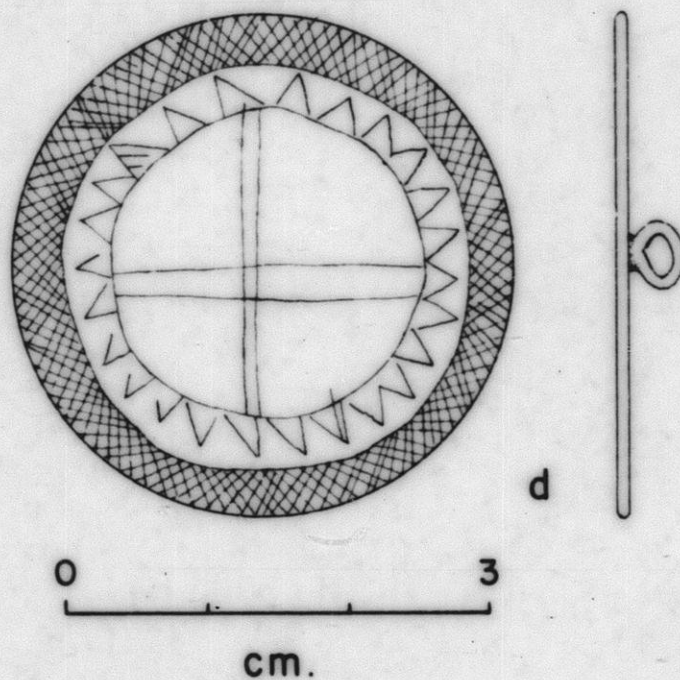
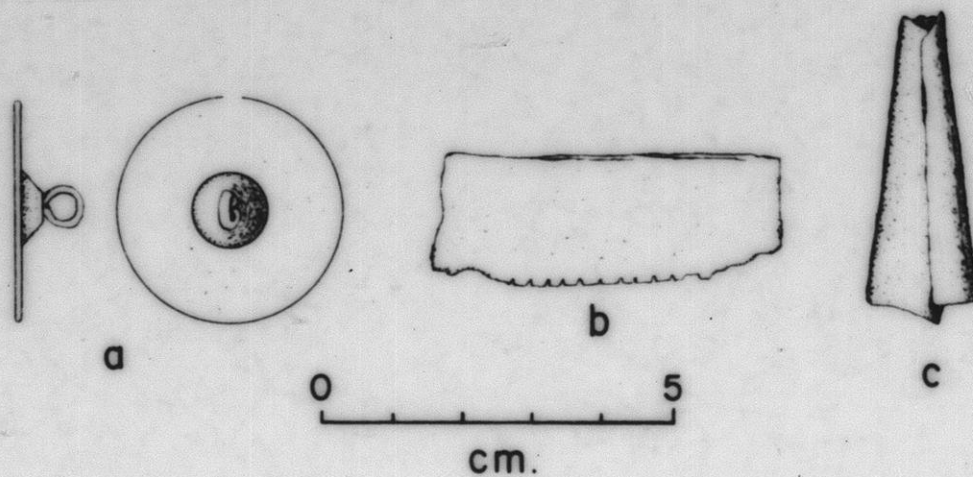


Fig. 10. Trade goods of brass or copper.

Kettle patches (11 specimens)

Irregular pieces of sheet metal may be from kettles or similar containers. Eleven symmetrical pieces with even edges, containing one or more perforations or rivets (Fig. 12, c) were perhaps used to patch kettles.

Tubular beads (17 specimens)

Far more beads were recovered than are presently in the collections. The sample available consists of beads $3/16$ in. long and $1/8$ in. wide, made of rolled metal. Many of the beads are still strung on thong (preserved by oxidation), and one technique of use is illustrated (Fig. 16). Most of the beads were found with burials (Fig. 11, h).

Finger rings (17 specimens)

Four rings are made of circular wire $3/16$ in. wide, from lengths between $2\frac{1}{4}$ and $3\frac{1}{4}$ in. long. The rings are about $13/16$ in. wide (Fig. 13, e).

Two rings are composed of metal strips, $5/32$ in. wide and $3/16$ in. thick, and from $2\frac{3}{4}$ to $3\frac{3}{4}$ in. long. The rings are about $13/16$ in. wide (Fig. 13, f). These rings, as well as the above-described wire rings, were likely native-made of materials acquired from traders.

Eight manufactured, continuous-band rings are $3/16$ in. wide and $1/32$ in. thick; ring width, $13/16$ in. (Fig. 13, g).

Three manufactured, continuous-band rings, identical with the band rings described above, bear a molded faceted glass

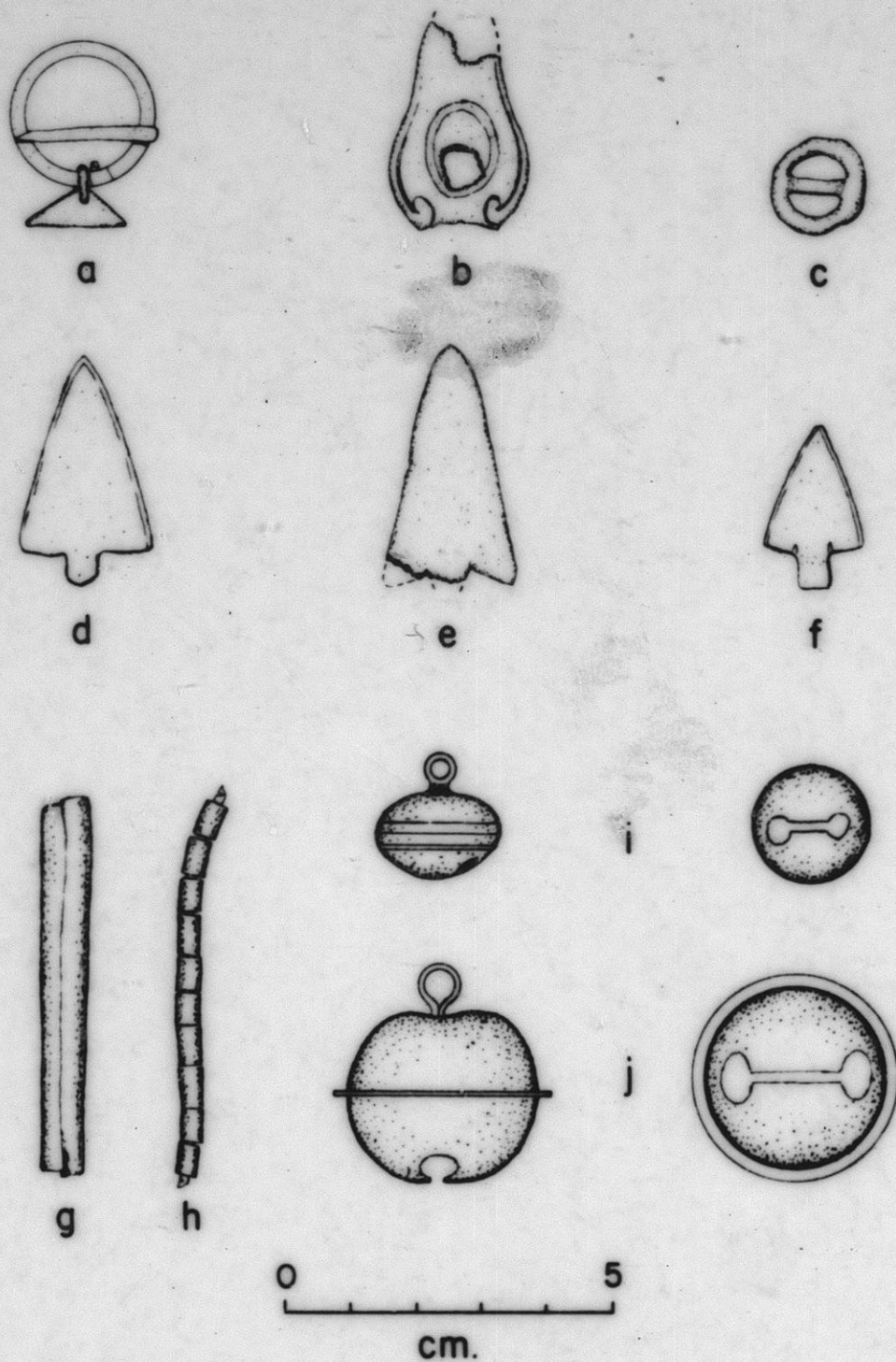


Fig. 11. Trade goods of brass or copper, lead, white metal, and iron or steel.

TABLE 7

Provenience of Trade Goods: Brass or Copper Objects

X Unit or Feature	Depth (feet)	Bells	Projectile points	Tube	Buttons	Knife blades	Bangles	Kettle patches	Tubular beads	Finger rings	Neck band	Springs
X101	0-0.85		1					1		1		
X101	1.7-2.5							1				
X131		2				3	26			4		
X131	1.7											2
X134								1				
F28							1	1				
F271												1
F279												1
F283					3					10	1	
F295									17			
F297							8					
F299												1
F301												2
F315										2		3
Surface			2	1			3	6				
Provenience unknown		1						1				1
TOTALS		3	3	1	3	3	38	11	17	17	1	11

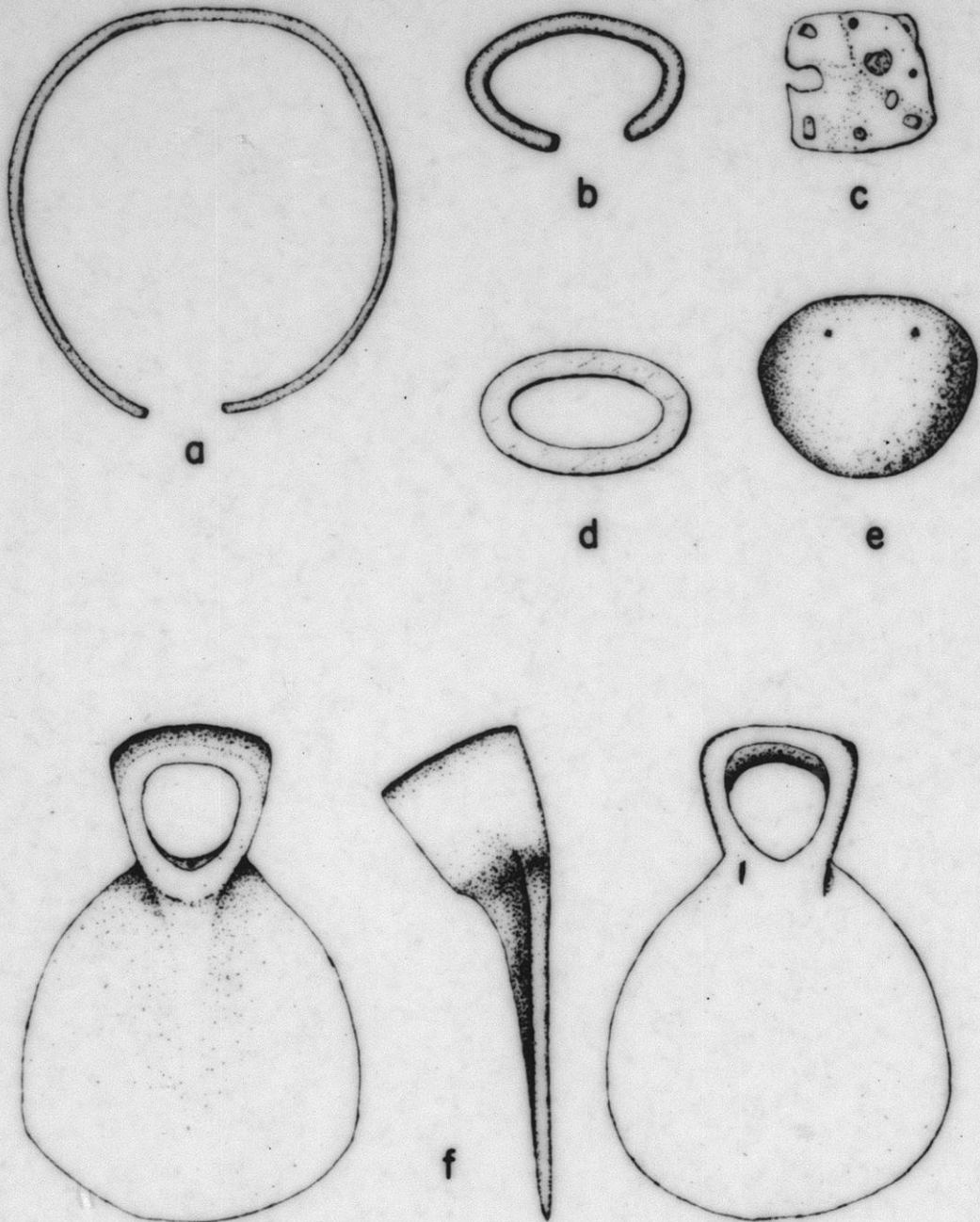


Fig. 12. Trade goods of brass or copper, iron or steel, and shell.

set. The glass is of three colors: emerald green, violet, or clear (Fig. 13, h).

Neck band (1 specimen)

A length of wire $3/16$ in. wide and $17 \frac{1}{8}$ in. long is bent into a circular form $5 \frac{3}{4}$ in. wide. The identification as a "neck band" is supported only by the size and form of the object (Fig. 12, a).

Springs (11 specimens)

These objects are composed of wire $1/16$ in. thick, coiled into springs from $9/16$ to $1 \frac{5}{8}$ in. wide. One of them was found in a burial pit and had oxidized and preserved a left human ear. Possibly other springs were so used as earrings, but such springs were also used at times as tweezers to remove facial hair.

Bracelets (27 specimens)

Two bracelets are made from bands of metal $1/4$ in. wide and $3/16$ in. thick. One of them is complete: it is made from a band $4 \frac{5}{8}$ in. long, and is bent into an arc $1 \frac{13}{16}$ in. wide.

Two bracelets are made from wire $1/8$ in. thick. The ornaments were composed of a single piece of wire, bent back upon itself and twisted (Fig. 9, d).

Bracelets made from a heavy round wire predominate; there are twenty-three such ornaments. The wire is $3/16$ to $1/4$ in. thick; bracelet diameters range from $1 \frac{11}{16}$ to $3 \frac{1}{4}$ in. (Fig.

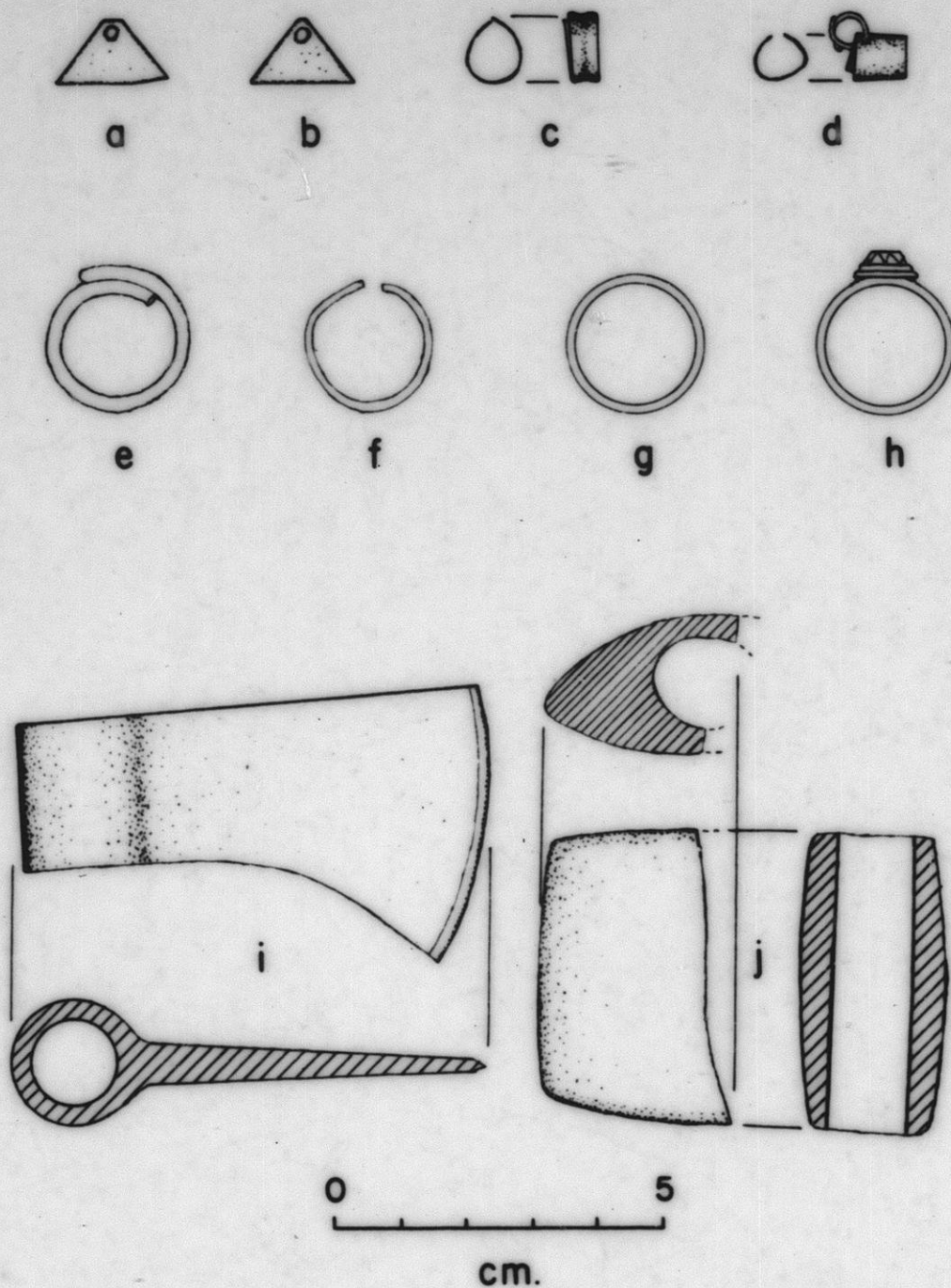


Fig. 13. Trade goods of white metal, brass or copper, steel, and native ground stone artifacts.

9, e). One of them is decorated by oblique lines filed into the upper surface (Fig. 9, c).

Gun ornament (1 specimen)

A decorated piece of brass is identifiable as part of the side ornamentation of an early gun, although it is not identifiable as to make (Fig. 11, b).

Cartridge case (1 specimen)

A 50 calibre case, center fire.

TRADE GOODS: OBJECTS OF WHITE METAL

Pin brooches (6 specimens)

Circular objects of a white metal, apparently a silver alloy, are 21 mm. wide. The brooches were attached to clothing by means of a pointed tongue. A triangular piece of white metal is suspended to the lower edge by a circlet of wire (Fig. 11, a; and Fig. 13, a-b).

Dangles (3 specimens)

Tubular pieces of white metal, apparently a silver alloy, are probably ornaments, perhaps earrings. Each is pierced at one end, and one of them (Fig. 13, d) has a loop of wire of white metal through the hole.

Ornaments (2 specimens)

These objects are bands of thin white metal bent into loops. No function is here suggested for them (Fig. 13, c).

TABLE 8

Provenience of Trade Goods: Brass or Copper Objects (Cont'd)
and Objects of White Metal

X Unit or Feature	Depth (feet)	Brass or Copper			White Metal		
		Bracelets	Gun ornament	Cartridge case	Pin brooches	Dangles	Ornaments
X101	1.7-2.5		1				
X131		4					
F274		4					
F279		4					
F283		1					
F286		2					
F297					2		
F302		4					
F315		3			4	3	2
Surface				1			
Provenience unknown		5					
TOTALS		27	1	1	6	3	2

GLASS TRADE BEADS

Three forms of trade beads are in the collections. (1) Small "seed" or "pound beads," which were ordinarily used in the ornamentation of clothing and moccasins, (2) tubular beads, which were probably used in the same manner as seed beads, and (3) large, ovoid "barrel" beads, which were usually strung serially and used in necklaces. The method of manufacture is generally visible as a spiral structure on the exterior of the larger beads (and less commonly on the smaller ones) which resulted from the rotary motion used in handling viscid glass. The terminology used below is that of Beck (1928), as used by G. H. Smith (1953).

Seed beads (3526 specimens)

The transverse section is ordinarily greater than the length. The beads are regular, their shape being a simple geometric outline, while the transverse section is generally circular. In longitudinal section they are oblate spheroid or sub-rectangular in form. Surface finish is dull, and many specimens are coated with a fine white patination (Table 9).

Tubular beads (263 specimens)

These beads are sections of colored glass tubing, broken into lengths several times the diameter of the tube. The ends of the beads are not generally smoothed, and are often sharp and irregular (Table 10).

TABLE 9

Seed beads described*

Color	Width	Length	Number
White, milky, translucent; cores are white, chalky, opaque	1.8 - 2.5	2.8 - 3.2	770
	2.6 - 4.5	2.5 - 4.6	2235
	4.4	5.2 - 5.8	2
	5.2 - 6.5	3.1 - 4.0	8
Subtotal, white			3015
Blue, bright, translucent	2.0 - 2.5	2.7 - 2.9	100
	2.6 - 3.3	3.0 - 3.5	360
Blue, bright, transparent	2.1 - 2.8	1.9 - 3.5	13
Subtotal, bright blue			473
Blue, dark, opaque	1.0 - 1.8	2.0 - 2.2	16
	2.0 - 3.5	2.5 - 3.1	11
Subtotal, dark blue			27
Red, opaque; cores are green, opaque	5.0 - 5.5	2.8	2
Subtotal, red/green			2
Yellow, amber, translucent	6.2	4.0 - 5.0	9
Subtotal, yellow			9
GRAND TOTAL, ALL COLORS			3526

* Measurements are in millimeters.

TABLE 10

Tubular beads described

Color	Width	Length	Number
White, milky, translucent; cores are white, chalky, opaque	2.0 - 3.0	2.5 - 5.0	58
	3.1 - 4.0	2.5 - 11.8	122
Subtotal, white			180
Blue, bright, transparent	2.6 - 3.5	3.2 - 12.0	40
	2.8 - 4.8	1.8	12
Subtotal, bright blue			52
Blue, dark, opaque	3.0 - 3.5	3.1 - 7.1	12
	3.6 - 4.0	2.2 - 2.9	18
Blue, dark, translucent	3.0	4.0	1
Subtotal, dark blue			31
GRAND TOTAL, ALL COLORS			263

TABLE 11

Barrel beads described

Color	Width	Length	Number
White, milky, opaque	3.7 - 4.0	6.1 - 7.2	3
	5.0 - 6.4	6.1 - 8.6	14
	7.5 - 8.0	9.8 - 14.0	3
Subtotal, white			20
Blue, dark, opaque	3.5	6.1	1
	4.1	8.8	1
Subtotal, dark blue			2
GRAND TOTAL, ALL COLORS			22

Barrel beads (22 specimens)

These specimens are circular in transverse section and ovoid, or "barrel-shaped" in longitudinal section. The ends are irregular in form.

Of the three forms of beads, the seed beads are most common (92%), followed in rank by tubular beads (7%) and the barrel beads (1%). Color preference is as follows: white (84%), bright blue (13%), dark blue (2%), and yellow and red/green (1%). Illustrations of the beads, unfortunately, are not provided, but the specimens are on file at the Department of Anthropology, University of Nebraska.

PERISHABLE REMAINS

Seeds (19 examples)

Fourteen kernels of charred corn have a hole in the flat part of the kernel at the germ. One kernel retains part of a vegetal cord drawn through the hole. One charred bean seed and one maple tree seed also are present.

Leather

Small pieces of leather, probably buckskin, may originally have been from hide clothing.

Fabric

Charred pieces of a closely woven fabric, perhaps calico.

Cord

Short lengths of vegetal cord are made of two strands of twisted vegetal fiber (Z twist). The strands are twisted 6 to 8 times per centimeter.

Bark roll (1 example)

A strip of bark, probably maple, 90 mm. wide, is rolled into a cylinder 40 mm. in diameter.

Twined (?) mat (7 pieces)

"Fragments of a twined (?) mat. Warps about 21 mm. apart; wefts 10 mm. wide made of a flat material. Warps have a counter-clockwise twist (Z). Thought at first this was a sewn mat but evidence of pressure on exposed weft surfaces on border suggest twining" (L. S. Cressman, personal communication to Robert L. Stephenson, dated May 12, 1954).

UNMODIFIED BONE AND RAW MATERIALS

Dog maxillae (2 examples)

One of these consists of the right and left maxillae of an adult dog. The other is the left maxilla of an adult dog.

Turtle carapace (7 fragments)

These fragments are from the carapace of the Box Turtle (Terrapine ornata).

Scoria (3 pieces)

These irregular pieces of scoria are unmodified, but the material elsewhere has been used for abraders and may have been collected for that purpose. It is often to be seen floating down the Missouri River from sources in the Dakotas.

Chalk (2 pieces)

Small, irregular pieces of soft, white chalk may have served as the base for a white pigment.

Catlinite (5 pieces)

These consist of pieces of unmodified catlinite, and fragments of worked catlinite that probably represent reject material from the manufacture of other items.

Dog tibia (1 example)

The proximal end of the bone is transversely cut, and the distal end shattered.

Elk metapodial (1 example)

This bone was found together with the calcaneum, astragalus, and the intervening small bones. The bone is chopped along one side of the shaft, and apparently is a fleshing tool in an early stage of manufacture.

Antler (11 fragments)

Nine deer antler fragments are charred and splintered; two of them retain the proximal end intact. The two fragments of elk antler are splintered.

TABLE 12

Provenience of perishable remains, unmodified bone and raw materials

X Unit or Feature	Depth (feet)	Perishable remains						Unmodified bone and raw materials							
		Seeds	Leather	Fabric	Cord	Bark roll	Twined (?) mat	Dog maxillae	Turtle carapace	Scoria	Chalk	Catlinite	Dog tibia	Elk metapodial	Antler
X101	0.3-0.85												1		4
X101	2.5										1				
X108	4.0									2					1
X131		1	x		x		7					1			
X131	1.0		x									1			
X133	0.85											1			
X134															1
F28															1
F29											1				1
F47		18													
F283				x											
Surface										1				1	1
Provenience unknown						1		2				3			
TOTALS		19	x	x	x	1	7	2	7	3	2	5	1	1	9

Human Remains

The partial remains of forty-three individuals were found at the site, according to the field notes. Burials were consistently placed in pits in hummocks outside of the fortification ditch. Forty-two of the burials were in pits in these hummocks, while only one was inside the ditch, in X134. The type of deposition, pit form, associated artifacts and field estimations of age and sex are given in Table 14. This table was compiled from field notes and does not include data from the laboratory analysis, since it was impossible to correlate the burial numbers with the remains in the collections. All burials were in pits; fifteen individuals were in bell-shaped pits, two were in straight-sided pits, twenty-two were in irregularly-shaped pits, and one was in a pit of unspecified form.

Analysis

The analysis is based on all remains returned from the site. The determination of age was based on the extent of ossification of bones and epiphyses, the appearance and ossification of the pubic symphysis in mature individuals, the eruption of teeth, and upon the degree of cranial closure (Hooton, 1946: 720-723). The determination of sex was also based on the criteria reviewed by Hooton (1946: 718-719, 731). A preliminary analysis of the skeletal material was made in

about 1939 by a Works Project Administration worker associated with the University of Nebraska, and this analysis was checked with independent observations. Table 13 presents cranial measurements of the twelve complete adult skulls. The measurements given are not exhaustive, and primarily give measurements from which facial indexes may be computed, and from which a partial description of the face may be derived. All measurements are metric.

Physical characteristics

Twelve adult skulls are complete enough to measure. Six of them are male (Figs. 17-18) and six, female. The cephalic index varies from 83.2 to 94.2. Four individuals are brachycephalic; two are males and two are females. Six individuals are hyperbrachycephalic; four are males and two are females. Two females are ultrabrachycephalic. The average cranial index for the group is hyperbrachycephalic, and is probably due in part to the use of the cradle board, since the occiputs of several skulls are somewhat flattened. The facial indexes are dominantly euryprosopic, or broad faced (six individuals), and one individual is mesoprosopic. The overall average for the group is euryprosopic. The nasal index for all individuals is below 46.9, and is leptorrhine, or narrow nosed.

Pathologies

Two middle aged adults, one male and one female, have dental caries in the third molar of the left mandible. The

TABLE 13
Cranial measurements

Specimen No.	S15	S16	S18	S19	S20	S21
Sex	M	F	M	F	F	M
Age	60- 75	40- 50	45- 55	23- 33	25- 35	35- 45
Glabello-occipital length	170	171	175	167	161	173
Maximum width	148	161	146	139	142	151
Cephalic index	87.1	94.2	83.4	83.2	88.2	87.3
Basion-bregma height	143	126	127	121	132	121
Minimum frontal diameter	97	93	94	85	96	100
Maximum diam. bi-zygomatic	147	135	140	134	--	136
Menton-nasion height	110	---	118.5	97.2	93	99.8
Total facial index	74.1	---	84.6	72.5	--	73.3
Prosthion-nasion height	57.7	54	68	56.7	53.5	70.5
Basion-nasion	101	100.2	98	95	98	94
Basion-prosthion	95	95	85.3	88	96	86
Nasal height	44.2	--	49.5	43.5	39.8	43.3
Nasal breadth	17.5	15	15	17	14.4	13.5
Nasal index	37.4	--	32.5	39	36.2	31.1
Orbits-height, left	24.8	20	27.2	30	25.2	28
Orbits-height, right	25.3	27.5	28.1	31	25.8	25.5
Orbits-breadth, left	28.1	26.4	29.3	34	28	29
Orbits-breadth, right	30	28	30	32	28.5	29.2
Interorbital breadth	15.2	13	16	14	11	15.8
Palate-external length	36.5	38	38	35.2	35.7	40
Palate-external breadth	33.5	35	33	35.5	31	34

TABLE 13 (Continued)

Specimen No.	S22	S24	S37	S47	S49c	S51
Sex	M	F	M	M	F	F
Age	25- 35	25- 35	40- 50	40- 50	32- 42	15- 25
Glabello-occipital length	171	165	165	183	172	160
Maximum width	148	146	138	159	142	150
Cephalic index	86.6	88.5	83.7	86.3	82.5	93.7
Basion-bregma height	127.2	123	128	114	129	117
Minimum frontal diameter	96.5	97	87.6	90	93	92
Maximum diam. bi-zygomatic	143	--	135	146	128	--
Menton-nasion height	---	106.5	---	101	105.9	97
Total facial index	---	--	---	69.1	82.8	--
Prosthion-nasion height	64.8	58	57	60	63.8	52.2
Basion-nasion	100	95	99	102	100.2	89
Basion-prosthion	89.5	78.9	83	91	90.2	81
Nasal height	47	42.5	40	47	41	37
Nasal breadth	15	17	13	16.5	17	16
Nasal index	31.9	30	32.5	35.1	41.6	43.2
Orbits-height, left	26	27	24.5	25	26.2	26.3
Orbits-height, right	26.3	29.8	25	26.8	26.3	27.2
Orbits-breadth, left	28.4	--	25.5	30	27.5	28.2
Orbits-breadth, right	30.5	--	27	29.5	28	28.8
Interorbital breadth	12.3	--	12	16	12	13.3
Palate-external length	40	--	--	39	--	--
Palate-external breadth	32.2	34.9	30.7	31.5	33.1	31.3

only other dental pathology consists of a supernumerary incisor between the first and second incisors in the left mandible of a middle aged male.

In an old adult male, the left tibia and the fibula are fused to the calcaneum and astragalus. This ankylosis may be the result of arthritis.

The entire surface of the right tibia of a mature individual is raised and rough, with horizontal vascular markings indicative of osteomyelitis. Other bones of the same individual are not similarly affected.

The skull of a young adult male has a hole in the right parietal 8 mm. in diameter. The hole is symmetrical and the surrounding bone is not shattered. The right half of the cranium reveals flaking of the plate which may have been due to syphilitic lesions or to ulcerations of the bone. Of two explanations for the hole, perforation by a bullet or ulceration of the bone, the latter suggestion is favored.

Cuts occur on the right and the left sides of the frontal bone of a young adult female. The lines are vertical and approximately parallel, and are less than 1 mm. deep. Neumann (1940: 287-289, Pl. XIV) and Snow (1942: 398-400, Pls. 36-37) describe horizontally cut skulls that suggest that the owners were scalped. In the skull from Ponca Fort, however, the cuts are vertical rather than horizontal, and the depth of the incisions does not approach the conditions described by Neumann and Snow, where the cuts may extend into the cancellous bone

and to the ventral compact bone layer of the frontal. The cuts on the Ponca Fort skull are short, vertical, and shallow; while they may represent another technique of scalping, there is equal possibility that they resulted from some other activity. They do not appear to be post-mortem.

Associations

Trade goods, native items, and native goods made from items of trade were found with the burials. The majority of grave furniture found at the Fort was trade goods, and which is identical to trade goods from within the fortification ditch. Trade goods were associated with all types of burials in each of the cemetery areas (Table 14).

Summary

The people who lived at Ponca Fort buried their dead in low hummocks outside the fortification ditch. The population appears to have been of medium stature, with broad faces and narrow noses. Crania are dominantly hyperbrachycephalic, with some brachycephalic individuals. The high cranial indexes may result, at least in part, from the use of the cradle board.

Two instances of dental caries, one instance of a supernumerary tooth, one case of ankylosis of the tibia and fibula, and one case of osteomyelitis of the tibia are noted. A hole in the parietal of one individual probably resulted from ulceration of the bone. A final case of pathology concerns the skull of a young female who may have been scalped.

Trade goods are present and abundant as grave furniture in most inhumations, and not only suggest that the people were in contact with traders, but that many native artifacts were no longer being made.

Five types of burial deposition are noted (Table 14). Table 14, which presents burial data and associations, should be read with the following facts in mind. "Burial Feature No." refers to the feature number assigned to the burial by the writer while the field notes were being organized. As noted earlier, it was not possible to correlate the skeletal material in the collections with the field notes. "Pit form" refers to the type of pit in which burials were found: "B" represents bell-shaped pits, "S-S", straight-sided pits, "U", undercut pits, and "I", pits of irregular form. "Position" and "Age" are both tabulated on the basis of rather scanty field data, which accounts for the rather inclusive age categories in the table. The remainder of the table should be self-explanatory.

TABLE 14

Burial data and associations

Burial Feature No.	273	281	282	284	285	287	288
In X Unit	115	115	115	115	115	115	115
In F No.	272	279	279	283	283	286	286
Pit form	B	B	B	B	B	S-S	S-S
Position: extended, supine	x	x	x		x	x	
extended, seated							
cranium only							
bundle				x			
ossuary							
unknown							x
Age: infant		x	x				
child-adolescent	x			x	x	x	
adult							
unknown							x
Orientation of skull	S	E	E	?	W	NW	N
Bark-covered burial							
Pottery: smoothed sherd							
Ground stone: mealing slabs							
Work in bone: scapula hoes			1		1	1	
pendant					1		
Trade goods: steel hatchet	1						
shell gorget					1		
shell hair pipe					1		
lead coils			1	5	3		
brass buttons					3		
finger rings	3	1	6	19			
bangles				x	x	2	
bracelets	5	1	4			4	
springs			1				
neck band							
tubular beads				140			
glass beads	x	x	x	x	x	x	
fabric	x			x			
pin brooches							
Dangles							
ornaments							

TABLE 14 (Continued)

Burial Feature No. In X Unit In F No.	290 115 289	293 115 292	298 115 297	300 115 299	304 115 302	305 115 302	306 115 302
Pit form	B	B	B	B	B	B	B
Position: extended, supine	x		x	x			x
extended, seated							
cranium only							
bundle		x			x	x	
ossuary							
unknown							
Age: infant			x				x
child-adolescent	x			x			
adult		x			x	x	
unknown							
Orientation of skull	SW	E	?	N	?	?	S
Bark-covered burial							
Pottery: smoothed sherd							
Ground stone: mealing slabs		2					
Work in bone: scapula hoes		2					
shaft wrench							
pendant							
Trade goods: iron hatchet							
shell gorget							
shell hair pipe							
lead coils	12						
brass buttons							
finger rings							
bangles			8			4	
bracelets						1	
springs				1	1	3	
neck band					1		
tubular beads			17				
glass beads	x						x
fabric							
pin brooches			2				
dangles							
ornaments							

TABLE 14 (Continued)

Burial Feature No.	308	314	316	317	318	320	343	418
In X Unit	115	115	115	115	115	115	130	134
In F No.	307	313	315	315	315	319	343	418
Pit form	B	B	U	U	U	B	?	I
Position: extended, supine		x	x		x			
extended, seated								
cranium only								
bundle	x					x		
ossuary								
unknown				x				x
Age: infant	x		x	x	x			x
child-adolescent		x						
adult						x		
unknown							x	
Orientation of skull	?	NE	NE	?	E	?	?	W
Bark-covered burial	x					x		
Pottery: smoothed sherd	1							
Ground stone: mealing slabs								
Work in bone: scapula hoes								
shaft wrench								
pendant								
Trade goods: iron hatchet								
shell gorget								
shell hair pipe								
lead coils								
brass buttons								
finger rings	4	2						
bangles		3						
bracelets	2							
springs		3						
neck band								
tubular beads								
glass beads					x	x		
fabric								
pin brooches								
dangles								
ornaments								

TABLE 14 (Concluded)

Burial Feature No.	427	428	429	430	431	432	437	442
In X Unit	131	131	131	131	131	131	131	131
In F No.	440	439	439	439	441	441	438	441
Pit form	I	I	I	I	I	I	I	I
Position: extended, supine	x			x		x		
extended, seated		x						
cranium only			x					
bundle							x	
ossuary						12		3
unknown								
Age: infant								x
child-adolescent								
adult	x	x	x	x	x	x	x	
unknown								
Orientation of skull	NE	W	SW	SE	?	NE	?	?
Bark-covered burial	x							
Pottery: smoothed sherd								
Ground stone: mealing slabs								
Work in bone: scapula hoes								
shaft wrench					1			
pendant								
Trade goods: iron hatchet								
shell gorget								
shell hair pipe								
lead coils								
brass buttons								
finger rings								
bangles								
bracelets					3			
springs								
neck band								
tubular beads								
glass beads								
fabric								
pin brooches								
dangles								
ornaments								



Fig. 14. Ossuary burial in F442, X131.



Fig. 15. Seated burial with extended legs in F439, X131, wearing brass or copper bracelets.



Fig. 16. Detail of burial in F283, with shell gorget, hair pipe, and tubular metal beads.



a



b



c



d

FIG. 17. Skulls S-21 and S-47 (Male).



a



b



c



d

Fig. 18. Skulls S-22 and S-18 (Male).

ETHNOHISTORIC DOCUMENTATION

A primary objective of the 1936 and 1937 archaeological field work by the University of Nebraska was the excavation of a Ponca Indian village, and the delineation of the culture complex of that socio-linguistic group. To date, however, the Ponca Fort is the only Ponca village that has been found and tested. The lateness of the site makes the direct historical approach difficult, since trade material had already reached the village and profoundly modified the aboriginal cultural patterns. The Ponca Fort site does provide a link for tracing the Ponca back in time, but validation of the identity of the site is necessary before the site data may be used to suggest Ponca prehistory. Historical records relating to the area that is now north central Nebraska note the presence of four tribes that must be considered as possible producers of the Fort. The Omaha, Ponca, and Iowa Indians lived in the region, and the Dakota Indians are also reported in the area in historic times.

Three historic Omaha sites, 25DK2, 25DK5, and 25DK10, have been identified in Dakota County, northeastern Nebraska. Site 25DK5 is the "Large Village" of the Omaha, and 25DK2 and

f

25DK10 are cemeteries associated with that village (Champe, 1949: 14-15). These two cemetery sites contain Great Oasis pottery (Wilford, 1945: 35-36) and, since none of this pottery was found in either the Ponca Fort or its cemetery areas, an identification of the site as Omaha is not probable. The Ioway, who migrated down the Missouri River with the Omaha and Ponca, might also be considered as possible builders of the Fort. But a carefully drawn ethnohistorical study of the Ioway identifies this tribe with sites of the Orr Focus, Oneota Aspect, in northwestern Iowa and southern Wisconsin (Mott, 1938: 289-304). The shell-tempered Oneota pottery as described for the Orr Focus differs strikingly from the Ponca Fort ceramics and renders an Ioway identification of the site impracticable. The historic Dakota in north central Nebraska were nomadic groups rarely remaining long in any locality, and there are no records that they built sites with encircling ditches. A Dakota occupation of the Fort is therefore not probable.

The presence of Stanley Braced Rim Ware sherds at Ponca Fort suggest that the Arikara were responsible for the site, since sherds of this ware are generally acknowledged to represent Arikara pottery of the late 18th century. In addition to the Stanley Ware are a few cord-impressed rim sherds similar to sherds I have recovered from sites in central South Dakota in which Stanley Ware is the predominating pottery. Only a handful of Stanley Ware sherds were found at the Fort, however,

and there are no records that the Arikara were near the mouth of the Niobrara at the turn of the 18th century. The Pawnee, close relatives of the Arikara, are shown on the 1718 Delisle map (Tucker, 1942: Plate XV) at the confluence of the Platte and Loup rivers well to the south of the Niobrara. Records after 1718 do not reveal any Pawnee near the mouth of the Niobrara, and Gene Weltfish (personal communication) informs me that the Pawnee have no traditions of having lived in that locality.

The data are thus consistent with the identification of the site as Ponca, and this identification is in agreement with documentary and cartographic evidence, and with the internal evidence. Ponca Fort is the only fortified site now known in north central Nebraska. This fact is relevant to the identification of the site, since a fortified village was noted by a series of early explorers on the Missouri River. In 1823, Paul Wilhelm, Duke of wuerttemberg, noted " a most remarkable fortification" near the mouth of Ponca Creek:

. . . belonging to a nation long extinct, of whose history we know nothing. On a conical elevation are breastworks in the form of a circle. This circle is more than 100 paces in diameter (Wilhelm, 1941: 386).

Although Wilhelm was not aware of the identity of the occupants, Maximilian, Prince of Weid, identified them nine years later, commenting in 1832 that the Fort was built "At the time when the Puncas separated from the Omahas . . ." (1906, I: 291). During his travels in the west in 1839, Thomas Farnham also

noted a fortified village which he identifies as Ponca:

. . . Having been nearly destroyed by the Sioux, they removed to the west side of the Missouri River, where they built a fortified village, and remained some years (Farnham, 1906, I: 147).

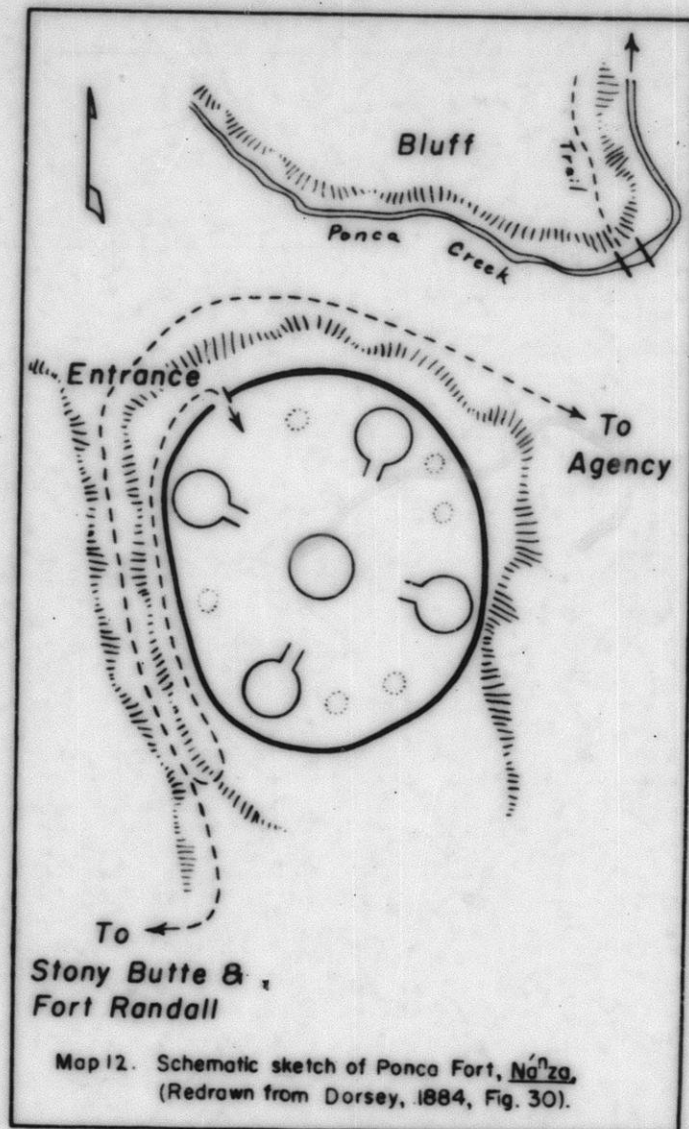
These references clearly show that early travelers were aware of Ponca Fort, but their descriptions of the village are invariably brief. The site was more fully described by J. O. Dorsey in 1884:

186. Old Ponca Fort. --At the old Ponca Agency, in what was Todd County, Dakota Territory, may be seen the remains of an ancient fort, which the Ponkas say was erected over a hundred years ago by their forefathers. J. La Flèche saw it many years ago, and he says that the curvilinear intrenchments used to be higher than a man; i.e., over six feet high. Many earth-lodges used to be inside. At the time it was built the Yanktons were in Minnesota, and the tribes who fought the Ponkas were the Rees, Cheyennes, and the Pádañka (Comanches). Then the only Dakota out of Minnesota were the Oglala and the Sitcaⁿxu or Brulés. The former were on the White River and in the region of the Black Hills. The latter were in Nebraska, at the head of the Platte.

The fort had but one entrance. The situation was well chosen. The embankment occupied the greater part of a semi detached bluff. In front, and at one side, was the low bench of land next to the Missouri; at the rear was a ravine which separated it from the next bluff, and the only means of approach was by one side, next the head of the ravine. Then one had to pass along the edge of the ravine for over 200 yards in order to reach the entrance. The following sketch was drawn from memory, and Mr. La Flèche pronounced it substantially correct: (Dorsey, 1884: 315-316).

Dorsey collected these data from Ponca informants in the years 1871 - 1873, while he was on the old Ponca reservation in north central Nebraska. He lived only a short distance from the Fort and often visited it (Dorsey, 1886: 220).

"Over a hundred years ago" suggests a date of about 1770 or a little earlier, although the data reviewed below suggest that this date may be somewhat too early. Dorsey illustrated the Fort with a sketch map (1884: 316, Fig. 30, and 1886: 221), but comparisons with 20th century maps show that his figure is inverted: north on his map is toward the bottom of the page. A corrected version of his map is given here as Map 12.



Dorsey illustrated only four earth lodges on his map and he seems to have conventionalized the internal features. The physiography of the locality is shown rather accurately despite vagaries in scale, but evidence for the entrance, the earth lodges, and several undefined features (perhaps cache pits) were no longer observable on the surface of the site by 1936-37. Cultivation has undoubtedly obscured many details since the 1870's, and it is probable that Dorsey was able, on his several visits to the site, to observe earth lodge and cache pit depressions, as well as the entrance. At least one, and possibly two protrusions are visible on the west side of the fortification ditch in an aerial photograph taken in the late 1930's by the United States Department of Agriculture (Wood, 1959: Plate 1). These protrusions roughly correspond to the position of the entrance on Dorsey's map, and they may be bastions for the defense of a gap in the fortification created by the entrance.

The identification of the site as Ponca is substantiated by other accounts which were probably unknown to Dorsey. The first known reference to the site is by Jean Baptiste Truteau, who headed the first trading expedition of the Company of Explorers of the Upper Missouri, and spent the winter of 1794-1795 near Ponca Creek. In 1796 Truteau wrote that:

The Ponca nation has its habitations placed at two leagues higher than the Niobrara's mouth. Their huts are built on a hill at the edge of a great plain about a league from the Missouri. The

buffalo, the deer, and beaver are common in this Place (Nasatir, 1952, II: 490).

Truteau entered a Ponca village on March 26, 1795, stating that their lodges were built about half a league from the Missouri (Nasatir, 1952, I: 293). The mouth of Ponca Creek is six miles up the Missouri from the mouth of the Niobrara (Map 1), and Ponca Fort is on the south side of Ponca Creek about a mile and a quarter from the Missouri. Documents relating to the journey of James Mackay in 1797 show that the location of the Ponca village of Truteau had not been moved:

River and village of the Ponca . . . Upon the south bank, at a league and a half from the Missouri. There is a large island in front of the village (Nasatir, 1952, II: 490).

This description corresponds in most particulars to that of Truteau's Ponca village of 1794. A large island, "Ponca Island," is at the mouth of Ponca Creek today (Map 1), suggesting that the major features of the Missouri River channel here have not changed significantly since the 1790's.

I am indebted to James H. Howard for the following data relevant to Ponca Fort. He informs me (personal communication) that the name of the Fort is pronounced by the Ponca historian Peter Le Claire and other Ponca as Náⁿza, and called my attention to a statement from Le Claire's Ponca History:

Near Verdel, Nebraska, there is a dirt fort (Na-za) where a battle took place 600 years (ago) or better. The tribe they call Pa-du-kah. They were from the south. They fought these Pa-du-kah four times . . . (Howard, n.d.)

The "Pa-du-kah" in this account are Lipan Apache, rather than the "Camanche," as Dorsey stated, whose archaeological remains occur to the west and southwest in Nebraska, Kansas, and Colorado in sites of the Dismal River Aspect (Champe, 1949b). A more complete account of Náⁿza was given Howard by Le Claire. It was, he said, built by the Ponca, who used it as a refuge when attacked by their enemies. One year when the Ponca returned from the summer bison hunt they found the "Pa-du-kah" in possession of the Fort. The Ponca met these Lipans in battle four times, and finally drove them from the country. Le Claire added that the ruins of another Ponca fort are said to be located west of the town of Ponca, Nebraska. Although the fort was never completed, Le Claire had heard of it from the late Northern Ponca chiefs Whiteshirt and Birdhead. The town of Ponca is near the Missouri River in Dixon County, about seventy miles east and south of the site of Náⁿza. Nothing further is known of this second fortified village.

Judging from unpublished data accumulated by John L. Champe (personal communication), it appears probable that in 1700-1702 the Omaha and Ponca were on the Big Sioux River north of present-day Sioux City, Iowa (Thwaites, 1902: 190; also, the Delisle 1702 map). From this location they moved to the mouth of the White River in present-day central South Dakota about 1715, where the Ponca traditionally split away and moved into the Black Hills. This split may have found expression on the

1718 Delisle map (Tucker, 1942: Plate XV), on which two "Maha" groups are depicted. The Ponca later returned to the mouth of the White River, and about 1735 the Omaha moved to Bow Creek, near present-day Wynot, Nebraska, location of the "Bad Village" (Dorsey, 1884: 211-213). This village on Bow Creek was the scene of a schism in the tribe, and it may have been here that the Ponca made their final break with the Omaha. The latter moved on down the Missouri River, leaving the north central Nebraska area. Since the first known contact of Whites in this area, the valley of Ponca Creek has been the home of the Ponca tribe. The tribe continued to occupy this area until 1877, at which time a large part of the Ponca were removed to Indian Territory in what is now Oklahoma.

Several maps are relevant to the Ponca occupation of the valley of Ponca Creek from 1796 to 1804: those of the cartographers and travelers Guillaume Delisle in 1718, Mitchell in 1755, Gen. George H. V. Collot (published in 1826, but referring to 1796), Perrin Du Lac in 1802, John Evans in 1797, Lewis and Clark in 1815, and Stephen H. Long in 1819.

James H. Howard reminds me that the 1718 Delisle map depicts "Les Maha," further identified as a "Nation errante," or wandering Indians. This group, shown well to the north of the Omaha, or "Maha" near the mouth of the Big Sioux River, may well be the Ponca. The Mitchell 1755 map (Fite and Freeman, 1926: Map 47) also shows the wandering "Mahas," although the map appears to be a copy of the 1718 Delisle map.

The Collot 1796 map (Collot, 1924) is the earliest map to show the "Poncas nation." Collot locates them on a stream north of the Niobrara River. In 1802 Du Lac shows a "Village des Poncas" on the south side of Ponca Creek in a locality that corresponds to that of Ná'n'za (Du Lac, 1807). The historian Aubrey Diller, however, has reviewed evidence that credits John Evans and James Mackay with the authorship of the Du Lac map. According to Diller, Mackay's "Table of Distances" (Abel, 1924) and an unpublished manuscript map in the Nicollet collection in the War Department in Washington are in substantial agreement with each other and with the Du Lac map; these data substantiate the authorship of Evans and Mackay (Diller, 1946: 513-514). Since these two explorers actually ascended the Missouri River, and since Mackay himself explored the lower Niobrara valley, the Du Lac 1804 and other copies of their map probably reflect with reasonable accuracy the features observed by Evans and Mackay during 1795-1797.

John Evans original map of 1796-1797 appears to have been published by R. G. Thwaites in the atlas volume of the original journals of Lewis and Clark (1905, III: Maps 5-11) and mistakenly attributed by Thwaites to Clark. Diller has demonstrated his point by a detailed examination of internal evidence in the maps (1949: 303-304). On the Evans map the "Ponca R. & village" is indicated by three symbols on the north side of Ponca Creek a short distance above its confluence with

the Missouri. Since Náⁿza is on the south side of Ponca Creek, this map conflicts with the occupation of the Fort in 1796-1797, but it is the only contradictory data yet encountered. It does, however, support the locality of the Fort as the residence of the Ponca during that time.

The Lewis and Clark 1815 map (1815: I) shows the Ponca a short distance above the mouth of Ponca Creek, but the text of September 5, 1804, states that there was a Ponca village "situated in a handsom Plain on the lower side of this Creek about two miles from the Missouri" (1904: I, 140). The specific reference to a "Plain" shows that the Ponca were then living on the river terrace below the Fort. Later data show that the Ponca moved below the mouth of Ponca Creek. In 1811 the traveler John Bradbury saw a few Ponca near the mouth of Ponca Creek but saw no villages (1904: 95-96). The Long 1819 map (Long, 1823) shows the Ponca below Ponca Creek, southeast of the location given by Lewis and Clark. Later writers mention the abandoned Fort but no occupation after about 1804. The evidence thus documents Ponca residence on and around Ponca Creek after 1796, but they left this area after 1804.

The internal evidence at Náⁿza is consistent with the documentary dates for the Ponca occupation of the Ponca Creek locality. Pottery is rare and the occupants must have been making extensive use of metallic containers. This circumstance suggests that the site was occupied after 1796, when

we know that the Ponca were acquiring large amounts of trade goods. A gun part from the Fort suggests that the people had only a few firearms, an inference supported by the absence of musket balls and gun flints. Truteau stated, however, that the Ponca had stolen firearms from the traders in 1795 (Nasatir, 1952, II: 289).

The excavation of near-by trading posts could aid in the dating of this and other Indian villages in north central Nebraska by providing trade goods from known time periods which may be compared with those recovered in Indian sites. The material remains at Ponca House, Truteau's winter post of 1794-1795, would provide valuable references to the fur trade period if they could be located and excavated. The excavation of Fort Charles, or Carlos, built by Evans and Mackay in 1795 near the "Large Village" of the Omaha would prove of equal value.

In 1785, an unsigned letter, probably by Esteban Rodriguez Miró, Governor-General of Louisiana, to Antonio Rengel, Commandant of the Interior Provinces of Louisiana, states that "The Poncas have a village on the small river below the River-that-Runs" (Nasatir, 1952, I: 126). This documentary reference, the first to mention the Ponca by that name, places the group in 1785 in the vicinity of the mouth of the Niobrara River, possibly on Bazille Creek. The latter stream is the first tributary of the Missouri of any size below the mouth of the Niobrara.

In 1789, the trader Jean Baptiste Meunier (or Munier) claimed the discovery of the Ponca, and petitioned for and obtained the right of exclusive trade with them. His claim was later proved false, but Meunier traded with the Ponca until about 1795 (Nasatir, 1952, I: 81-82, 88-89). Although it is more than probable that some trade preceded Meunier's monopoly, the known beginnings of trade with the Ponca may be dated after 1789. Documents relating to the years 1795 through 1800 show the extent to which the Ponca had learned to covet trade goods. In 1794-1795 Jean Baptiste Truteau wintered at Ponca House, several miles up the Missouri from the mouth of Ponca Creek, and carried on trade there with the Dakota, Omaha and Ponca. An individual named Solomon Petit was also wintering in the same vicinity, as well as employees of Jean Meunier (Nasatir, 1952, I: 374). After 1795 the Ponca began the practice of stopping and raiding trading craft as they passed up the Missouri. This caused delay in the development of trade on the upper Missouri, not to mention considerable financial loss to the companies involved. Zenon Trudeau, Lieutenant Governor of Spanish Illinois and Commandant at St. Louis, reported that one trading expedition moving up the Missouri was pillaged by the Ponca, the loss amounting to 7000 pesos (Nasatir, 1952, I: 374).

The materials traded to the Ponca or stolen by them are not itemized in the literature. Truteau's journal of 1794-

1795, however, mentions many of the goods he carried with him as his stock in trade: guns, powder and balls, gun flints and wormscrews; large and small knives, awls, hatchets, pickaxes, hammers, and cooking kettles; medals, flags, tobacco, combs, vermillion, cloth, and white blankets (Nasatir, 1952, I: 259-294). Only a few of these items, specifically guns, hatchets, cooking kettles, and cloth were represented by specimens recovered from the Fort. The annual value of merchandise traded to the Ponca is recorded as 6000 piastres in 1802 by Louis de Vilemont, a Spanish traveler and naturalist (Nasatir, 1952, II: 694); and Pierre Chouteau, a trader on the Missouri River, estimated the Ponca trade in 1804 at \$1500 (Nasatir, 1952, II: 759).

During the voyage of James Mackay up the Missouri River in 1795, the Oto informed him that a piroque under the supervision of one Lecuyer was pillaged by the Ponca. Some quantity of trade goods must have passed into Ponca hands through informal channels; it was said that Lecuyer had no less than two wives while he was with the Ponca, and had wasted a good deal of the goods of the Missouri Company while he was with the tribe. In 1796, Mackay sent a party under John Evans to visit the Arikara, in part to ascertain details concerning a reported outbreak between the Ponca and Arikara (Nasatir, 1952, I: 356-364). We may recall Dorsey's statement quoted above to the effect that one of the tribes who fought the Ponca during their residence at Náⁿza were the Ree, or

Arikara. These facts reveal the extent to which Ponca-Arikara diplomatic relations were strained during the inferred time of occupation of Ponca Fort. These relations should be kept in mind when we recall that there is pottery from Náⁿza of types generally acknowledged to be of Arikara manufacture.

The documents reviewed above establish the fact that at the time the Ponca were near the mouth of Ponca Creek, and either living at Ponca Fort or in the immediate vicinity, large quantities of trade goods were passing into their hands, through theft and favors as well as legitimate trade. Regular trade channels for the acquisition of trade goods by the Ponca were not functioning until 1785-1790, so far as is now known, and the substantial quantities of trade goods found at Ponca Fort suggest that the occupation of the site dates after this period.

RELATIONSHIPS

During the laboratory analysis of the material remains at Ponca Fort it soon became clear that either the occupants of the village were in contact with alien groups and trading with them, or that more than one people had lived there. The mixture of the village detritus, the fact that many distinctive artifacts had been plowed to the surface, and the lack of precision in some of the field notes has made it impossible to clearly identify the find-spots of much of the material. In spite of these handicaps the pottery recovered in the excavations rather certainly demonstrates the presence of two distinct and temporally separate components. The identification and relationships of these two components, designated from early to late as Components A and B, provides the basis for the following discussion.

Component A

Fifteen McVey Plain rim sherds and sixty-six cord-roughened body sherds from the Fort are similar to those from Aksarben Aspect sites (Stephenson, 1954: 19) elsewhere in Nebraska (e.g., Cooper, 1936: 35-37, Plate VII, 7). The uniform absence of trade goods in Aksarben Aspect sites

clearly indicates that this complex pre-dates White penetration of the area, and hence precedes in time the historic Ponca occupation of north central Nebraska.

McVey Plain rim and body sherds were found in X115, a cemetery area at Náⁿza, but none of them were in features that can be directly attributed to an occupation of the site by Aksarben Aspect populations. Table 2 lists the provenience of the McVey Plain rim and associated body sherds: they were found from the surface to a depth of 2.5 feet in X115 (presumably in burial pits), and in F274 and F295, both of which contained trade goods.

Two pottery rim forms occur in the Aksarben Aspect, and these rim forms are described in the St. Helena Focus (Cooper, 1936: 35-40) as Form A and Form B. Form A consists of a simple flared rim, while Form B is thickened at the lip by a fillet. Only Form A rims occur at Ponca Fort.

Aside from the pottery there are no other artifacts which can be definitely attributed to this occupation. Bison ulna picks and the alternately beveled, diamond-shaped "Harahey" knives occur in Aksarben Aspect sites, but they are not diagnostic of sites of this complex and, indeed, persist into historic times in north central and northeastern Nebraska.

The presence of the McVey Plain pottery at Ponca Fort, in the absence of a clearly defined occupation, may be explained most easily by one of two hypotheses. (1) The sherds were picked up by later occupants and carried to the site as curios,

or (2) the pottery was abandoned during a short-term, transient occupation of the site in a locality later used by the Ponca as a cemetery. One fact suggests that the latter hypothesis is more probable: there is a fireplace, F269, in X115 which has no apparent relation to the burials made there. Since it contained no artifacts, it cannot be identified as to age, but it may represent a fireplace predating the cemetery.

The absence of artifacts other than pottery precludes an identification of the component to any of the established Aksarben Aspect foci. Its age may be estimated, on the basis of dates from Ash Hollow Cave (Champe, 1946: 86), as between about 1300 and 1500 A.D.

Component B

This component is identified as historic Ponca on the basis of the majority of the excavated material, historic documentation, and internal evidence. This identification seems conclusive since all lines of evidence are consistent with Ponca authorship of the site. The pottery attributed to this component poses problems of some theoretical interest, however, there is justification for treating this problem at some length.

Twelve rim sherds of Stanley Braced Rim Ware, forty-nine grooved paddle-stamped body sherds and three brushed neck sherds are identical to pottery found in Stanley and Snake

Butte focus sites in central South Dakota, identified as Arikara villages of 18th century date. These foci are grouped together as the Sanish Aspect (Stephenson, 1954: 18). Four unclassified pottery-rims from the Fort, Examples A and C, also resemble minority pottery examples found in Sanish Aspect sites. In addition, the presence of a fortification ditch also suggests Arikara contacts, since many Arikara villages on the Middle Missouri River in the late 18th century were fortified (e.g., Strong, 1940: 380-381). Such villages were further defended by a post palisade inside the ditch -- a feature also present at the Ponca Fort. But this trait of fortifying villages was not restricted to the Arikara, and, among others, the Pawnee in central Nebraska were also dwelling in communities surrounded by a dry moat (Wedel, 1936: 21, 54-55). The Pawnee built a low earthen wall on the inner side of the ditch, but if such a feature is present at Ponca Fort only a hint of it remains (Map 10, X133).

Documentary evidence for the north central Nebraska area gives us no reason to infer an Arikara visit to or occupation of Ponca Fort or its locality. One major Arikara visit to the Nebraska Pawnee is on record in 1794 (Nasatir, 1952, I: 299), but since the Ponca and Arikara were not on friendly relations at this time it is unlikely that they would have included a visit to the Ponca in their Nebraska itinerary. Nevertheless, the sherds of Stanley Ware are apparently contemporaneous with the major occupation of the Fort since they were recovered

from the site area within the ditch, as well as in cemetery areas outside the village (Table 2).

If these Stanley Ware sherds are in fact associated with the Ponca occupation and have not been assigned to the component on a priori grounds, certain problems arise with respect to the identification of sites on the basis of ceramic remains. One might reasonably expect that the remains from Náⁿza would closely resemble those from the "Large Village" of the Omaha, since the Omaha and Ponca are cognate tribes derived from a single source, and with very brief separate histories. Yet the ceramics from the two sites differ radically, and although many of the non-ceramic traits at Ponca Fort and the Large Village are shared, most of these shared traits are common to a number of roughly contemporaneous complexes and are accordingly of little value in tracing specific relationships.

The distribution and provenience of the Great Oasis pottery in the cemeteries of the Large Village and in other sites in northeastern Nebraska identifies this pottery as Omaha. The presence of Arikara pottery in a documented Ponca village thus has a number of implications for Central Plains and Middle Missouri archaeological theory. Pottery in these areas has become a primary, if not the major, diagnostic artifact class used in tracing extra-site relationships, due largely to its abundance and its plastic sensitivity. While other artifact classes and factors are taken into consideration,

the classification and identification of sites is largely based upon ceramic analysis. It is apparent, from the situation at Ponca Fort, that this emphasis on pottery is dangerous in sites where trade goods have modified aboriginal cultural patterns and where the making of pottery has been severely curtailed. Such emphasis is particularly risky when a site has not been described by traders or explorers. Had Naⁿza not been adequately documented by historic records as Ponca, the site would certainly have been classed as an Arikara village using any acceptable comparative technique for determining affiliation. Since there is no reason to assume that the situation at Ponca Fort is unique, it follows that undocumented sites with very small pottery samples must be especially subjected to reappraisal and questioning.

How then is the presence of Stanley Ware at Ponca Fort to be interpreted? Continuing with the assumption that the pottery is associated with the Ponca occupation of the Fort, only two alternatives are possible: (1) Stanley Ware is indigenous Ponca pottery, or (2) it is not. Either alternative argues for close contacts between the Arikara and the Ponca, contacts which could easily have taken place in what is now central South Dakota during the 1700's. Such contacts would explain the presence of a fortified village of a type that does not closely resemble other fortified villages in the Central Plains, but which is similar to late prehistoric and historic villages in the Middle Missouri area, the area in

which the Arikara emerged as a tribe in historic times.

If we accept the alternative that Stanley Ware is not Ponca pottery, we must either assume the unlikely fact that the Ponca did not make, but imported, their pottery; or that Ponca men -- if they did indeed marry outside the tribe -- took to wife only pottery-making Arikara women. Except for the Woodland and Aksarben Aspect pottery in north central Nebraska, and which presumably predates Ponca Fort by several hundred years, the only other local pottery available is that from sites of the recently defined Redbird focus (Wood, 1956, 1957). The suggestion has been made that pottery from certain Redbird focus sites resembles that from Ponca Fort (Bell, 1939: 355-356), but analysis has not confirmed this suggestion. The pottery from Redbird focus sites points to relationships with both the Lower Loup focus of the Central Plains identified as Pawnee, and with the La Roche focus of the Middle Missouri area. The surveys conducted by the Smithsonian Institution, River Basin Surveys, and by co-operating institutions, have located La Roche and similar sites on the Missouri River as far north as the North Dakota-South Dakota boundary; the number and size of these sites is immense, and implies a population greatly exceeding anything suggested for the Ponca. It therefore seems very unlikely that these sites could represent the Ponca at any stage of their history.

Since the Redbird focus sites are in the Ponca Creek and Niobrara River valleys, and hence in the range of the historic

Ponca, the possibility exists that they may be Ponca sites. If they are Ponca, however, the archaeological remains of the tribe are similar to those of the Lower Loup focus, and the Ponca shared a material culture very closely related to that of the historic Pawnee. An identification of the Redbird focus as Ponca is suggested by only one fact apart from its distribution: shell-tempered Oneota pottery occurs in small numbers in two of the sites, 25HT3 and 25KX9 (Wood, 1956). Since the Ioway are known to have accompanied the Omaha and Ponca down the Missouri River, and since Ioway pottery is identified by Mott as Oneota pottery, the possibility exists that the Redbird focus sites are Ponca and they contain a few Ioway trade sherds. This possibility hardly clears the picture, however, for if it is the case, by the late 1700's the Ponca have abandoned pottery making and begun importing either Arikara wives, pottery, or both.

If the reader has succeeded in following the preceding discussion, he will agree that the identity of Ponca pottery is not yet established, and that Ponca pottery, if it has been found, is not recognizable as such. Perhaps he will further agree that the direct historical approach is not always a simple, infallible approach, but one which -- as in this case -- may fail to suggest any specific avenue of research for the solution of the problem of tribal history. It is obvious that the archaeological data from Ponca Fort cannot be easily interpreted in terms of the culture sequence and archaeological

framework now emerging in the Missouri River Basin. More excavation is needed in both the Central Plains and Middle Missouri areas, particularly in the contact zone between these areas in north central Nebraska. Until more data are available the problem of Ponca prehistory must rest, or a more facile imagination should re-examine the data in this study and form independent conclusions.

Other Remains

A residual class of artifacts from the surface of Ponca Fort apparently do not represent occupations by either Component A or B, but they are not numerous enough to class as components in themselves. These artifacts include a catlinite bannerstone, an incised rim sherd, and a brass cartridge case of late date.

Bannerstones have been reported from the surface in the Central Plains, but they have not been recovered, in context, from excavated sites. This artifact class is found rarely in the Middle Missouri area, although a catlinite specimen was reported from the Swanson site, an Over focus site in southeastern South Dakota (Hurt, 1951: 35, Plate VII, 15). The specimen from Ponca Fort cannot be attributed to any known group in north central Nebraska. The incised rim sherd, Example B, is not similar to sherds ordinarily found in the Central Plains. The brass cartridge case was probably dropped

by either a White or an Indian hunter in the late 19th or early 20th century.

These remains suggest that the site of Ponca Fort was used by several groups of people other than those represented by the majority of excavated material, and over a long period of time. The area was rich in game; Ponca Fort is on a high promontory overlooking the Missouri River and Ponca Creek valleys, and it may have been in sporadic use as a hunting camp for successive groups.

INTERPRETATIONS

Drawing upon the evidence presented by the features, burials, and artifacts relating to the Ponca occupation of Náⁿza, the Ponca Fort, it is possible to submit a series of generalizations pertaining to the people who lived in the community. These interpretations are not exhaustive, nor do they pretend to collate site data with the rather extensive literature on the Ponca. This I believe should be done by one intimately familiar with Ponca data. The numbered headings below which organize this section are those of the Behavior Science Outline of the Human Relations Area Files (Murdock, et. al., 1950).

101. Identification

Site 25KX1 is identified as a Ponca community, and is dated between the years ca. 1790 and 1800 A.D. The Ponca are known to have been near the mouth of the Niobrara River in 1785, and it was in this locality that they first came to the attention of traders and Spanish colonial administrators. Between 1794 and 1797 they lived near the mouth of Ponca Creek at the Ponca Fort site. By 1804, however, they had moved to the terrace below the Fort, and after 1804 they

lived below the mouth of the Niobrara River. The cartographic evidence lacks precision, but the valley of Ponca Creek is indicated as the residence of the Ponca from about 1796 to 1804. The amount of trade goods at the Fort makes it probable that it was occupied after the beginning of extensive trade in about 1789.

13. Geography

Ponca Fort is situated on a prominence overlooking the valleys of the Missouri River and Ponca Creek. In aboriginal times this was a rich game area, as well as providing adequate water and fertile soil for horticulture. The Fort lies on the boundary between the heavily wooded alluvial terraces of the river bottoms and the treeless prairies, and both areas were readily accessible for exploitation by the Ponca. The climate of the region is a generally harsh one, but it is adequate for maturing the crops now common to the area, several of which the Ponca grew. Corn and beans are attested by direct remains, and they probably grew squash and tobacco as well. Tillable soil, wood, water, and minerals for paint pigment were readily accessible in the locality of the community. Granite, cherts, chalcedony and other stones are common in the stream beds and valleys, and provided the raw material for many of their implements.

A copy of an original map by J. C. Dorsey in the Nebraska State Historical Society museum bears many Omaha names for

streams and other features in Nebraska. A redrawn section of this map appears here as Map 13: permission to use the map was generously given by Marvin F. Kivett, Museum Director. The Omaha names listed below were known to Peter Le Claire, a Northern Ponca, as Ponca names for the following rivers; Le Claire translated these names for John L. Champe, University of Nebraska, in July, 1954:

Missouri River	Ni šude	
Niobrara River	Niubčāca kē	Changeable Stream
Ponca Creek	Niupū'e kē	Death by Drowning Cr.
Bazille Creek	čāca čē wakiēka té	"Backing up" River
Choteau Creek	Gagēibe kē	Boggy Banks Creek
Redbird (?) Creek	Dajenjahi	

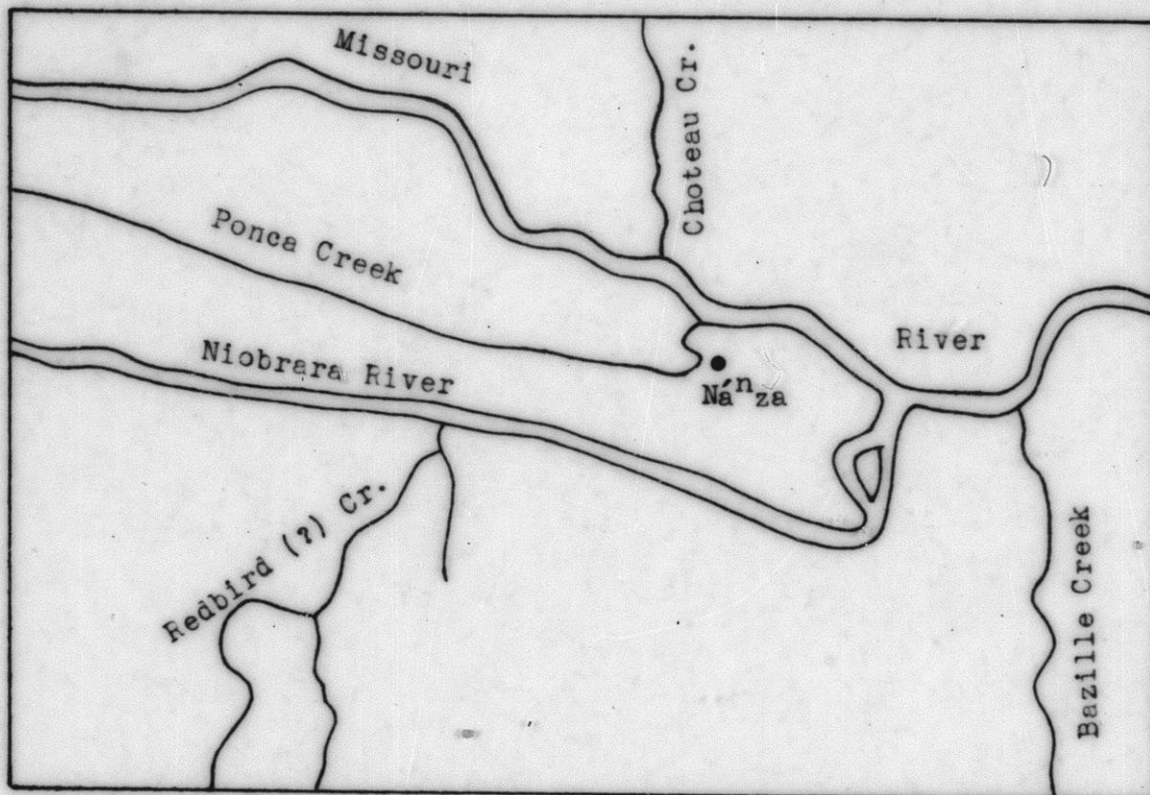


Fig. 13. Vicinity of the lower reaches of Ponca Creek.

14. Human Biology

The people buried outside the fortification ditch are of medium stature with short, broad faces and narrow noses. Their crania are dominantly hyperbrachycephalic; the base of the occiput is frequently flattened, probably from the use of the cradle board, and this malformation resulted in the high cephalic indexes. In most skulls with permanent teeth the grinding surfaces are considerably eroded and smoothed, and their diet must have contained much coarse grit. The popularity of grinding slabs must be due to the fact that much of the food was prepared on them, and the grit created by the abrading found its way into the food, acting as an abrasive on the teeth.

Two individuals had mild cases of dental caries. One individual with ankylosis of the lower leg apparently suffered from arthritis, and the cranium of another individual is perforated and the plate has peeled. Only one individual suggests violence; a young girl may have been scalped.

16. Demography

It is impossible to estimate the population of the Fort, lacking data on the number and size of dwellings, but the composition of the population is revealed in the interments in the cemetery. The population is basically an adult one, although all age levels are represented in the burials; twelve

infants, seven children or adolescents, twenty-two adults, and two individuals of unknown age.

19. Language

Because of the nature of archaeological data, there are no clues to the language, but the Ponca are known to have spoken a dialect not far removed from that of the Omaha. The Omaha, Ponca, Kansa, Osage, and Quapaw compose the Thegiha group of the Siouan linguistic family.

22. Food Quest

The Ponca were horticultural, living also by hunting, fishing and gathering. Bison, elk, deer, and large birds are animals represented in the modified and unmodified bone and which were taken in the hunt. At least six artifacts relate to hunting activities: the trade iron and brass arrowpoints, chipped flint arrowpoints, a gun part, arrow-shaft wrenches, shaft smoothers, and a "bow shave." The weights of the NBa, NBb2, and one of the SCb2 chipped stone arrowpoints range between 0.7 and 4.6 gms., and these are within the range of the small point tradition (Fenenga, 1953) and are interpreted as arrowpoints. The weight of one SCb2 point is within the range of the large point tradition, and may have been a dart or lance point, or a knife.

Ponca Creek is only a short distance to the north, and the Missouri River is near by, providing a ready water supply.

Evidence for fishing consists of a single charred fish vertebra. Box Turtles may have been collected for use as food or perhaps for ornaments or rattles. Only one domestic animal, the dog, was represented in the animal bone, and it may have served as food as well as a companion. It may be significant that there is no evidence for the horse, although the Ponca had this animal by the late 1700's. Only rarely was there anything but worked bone in the collections horse bones may have been discarded in the field. Animal bone served as the raw material for some of the implements, such as shaft wrenches, fleshing tools, and hoes.

24. Agriculture

Horticultural activities must have been carried out on the adjoining river terraces, and included the cultivation of corn, beans (and probably squash), perhaps in small garden plots. The catlinite pipe may suggest that tobacco was grown, although perhaps this commodity was acquired from traders. Bison scapula hoes, trade steel hoes, and bison ulna picks served as digging tools.

26. Food Consumption

In addition to corn and beans, the diet contained the flesh of bison, elk, deer, and perhaps also Box Turtle, large birds, and the domestic dog. Preservation and storage of food was probably affected by storage in bell-shaped cache

pits of the common Plains variety. One such pit was in the floor of the fortification ditch. Cooking and heating fireplaces are circular or oval in outline, and consist of simple unlined basin-shaped pits, filled with charcoal and ash and lined with burned earth. One fireplace in X115, in a cemetery area, may be attributable to an earlier occupation. A firesteel acquired in trade may have been used to generate fire.

Serrated metal knife blades were used as cutting or slicing tools. Chipped stone knives and flake knives also served as cutting tools, and some of the stone knives may have been set in bone handles. Some food was crushed by percussion, using hafted grooved mauls or unhafted river cobbles as hammers on pitted cobblestone anvils. Other foods were pulverized by abrasion on mealing slabs, using hand stones or mullers. This latter manner of food preparation created grit which entered the food, and these particles resulted in pronounced wear on the grinding surfaces of the teeth. Cooking was probably done largely in metal containers, although some pottery may have remained in use.

26. Leather, Textiles, and Fabrics

Textile industries include the manufacture of twisted vegetal fiber and mats. The basketry mats appear to be twined, with a Z twist in the warp. The flatness of the pieces found suggest a mat rather than a container.

Artifacts pertaining to hide preparation are serrated and beveled elk metapodial fleshing tools. While these implements indicate that hide preparation was still done, chipped stone end scrapers, presumably used in scraping fatty tissue and hair from hides, are extremely rare. Bone awls, for use in piercing the hides, are wholly lacking. The fact that the Ponca were using cloth, at least in part, for clothing is reflected in the low incidence of artifacts usually associated with hide dressing. Fabric recovered from burials suggest that the people were depending upon trade cloth, possibly calico, as well as upon native-tanned hide clothing.

30. Adornment

Items of personal adornment are common, and the most abundant objects of this category are bracelets and glass trade beads. The majority of the bracelets are of brass or copper; two iron objects resembling bracelets may be kettle handles. Conical, twisted brass bangles which were fastened to the hems of clothing are common, and some of them retain the strips of thong upon which they were suspended. Finger rings were popular, and consist of both native-made rings fashioned from short lengths of brass wire, and European-made manufactured band rings. Some of the latter rings have molded glass sets of various colors. One of the three brass buttons is elaborately incised with a geometric design, and

other buttons are represented by lead weights for cloth-covered buttons. Brass tubes, bells, a circular neck band, and springs were also used as items of adornment. One brass spring was used as an earring, but other uses included the removal of facial hair. A trade shell gorget and a shell hair pipe, both fashioned from a marine shell, were found with one individual. The gorget had apparently been suspended from the neck, while the position of the hair pipe makes it likely that it depended from the left ear (for ethnographic examples, see Ewers, 1957).

Beadwork patterns were observed in several adult and child burials. Four types of beads were worn: "seed" or "pound beads," tubular beads, and barrel beads, each of glass, and small tubular metal beads. The glass seed beads are most common, followed in rank by the tubular and barrel beads. The seed beads were used in beadwork on clothing and mocassins, while the barrel beads were probably strung on necklaces. White is the most popular color, followed in order of preference by bright blue, dark blue, yellow, and red/green.

Ornaments of native make include a bird bone tube, a bone pendant, and several pierced corn kernels. The latter objects were probably strung serially, since one of them retained a vegetal cord through the hole, and used as necklaces. In June of 1955, George Will told me that the Dakota

Indian children on the Standing Rock Reservation in North Dakota used to make corn necklaces in the fall. Several pieces of white chalk may have been used as pigment for paint.

36. Settlements

Náⁿ za was a fortified community situated on a high promontory in an admirable situation for defense against hostiles, and was enclosed by a circular dry moat that encircled the apex of the hill. The ditch ranged from 2.2 to 2.9 feet deep, with a minimum width of 10.5 feet and a minimum width of 5.5 feet. In cross-section it either has sloping walls and a flat bottom or is broad and U-shaped. A post stockade inside the ditch has widely spaced posts, and may have been reinforced by interlacing branches and logs. One and possibly two bastions appear to have defended the entrance on the west side of the village.

To the north and east the land drops away from the site in a steep bluff, and ravines to the south and west separate the Fort from land equally as high. Deprivations by the Arikara, Lipan Apache, Cheyenne, and Dakota led the Ponca to adopt this defensive feature.

The ditch and stockade must have required a considerable expenditure of communal labor. This time-consuming operation would not be practical unless the site were intended to be permanent. Excavation failed to find earth lodges, but the

early travelers and Dorsey's Ponca informants are uniform in their statements that the Ponca lived in earth lodges here.

A midden area was noted in the field notes in the north central part of the fortified area. This feature was not excavated, unfortunately, for the site sample would have been considerably enriched if it were in fact a refuse midden. If it is correctly identified, the Ponca may have deposited their refuse in specific localities. This possibility is heightened by the fact that refuse is not abundant in the site area in general.

41. Tools and Appliances

Weapons are rare, including iron, brass, and chipped stone arrowpoints and one gun part. The scarcity of gun parts may indicate that the Ponca were still weak in firearms, and this suggestion gains credence when it is recalled that extensive trade with the Ponca began only after 1789. The rarity of chipped stone points, however, may indicate that guns were more plentiful than is suggested by the remains.

Pottery contemporaneous with the Ponca occupation is identified as an Arikara ware; the problems regarding this pottery have been discussed at length elsewhere. Numerous metal fragments are identified as kettle patches and fragments of metal containers, and two possible kettle handles suggest

that the Ponca had all but abandoned the use of pottery vessels.

43. Exchange

During the time they lived at Ponca Fort the Ponca were in close contact with traders, some of whom seem to have entered the Fort and lived there, and from whom the natives acquired large amounts of trade goods. These contacts disrupted certain aspects of their culture patterns, among which was the substitution of metal containers for native-made pottery.

The Ponca are known to have commenced trade with Spanish fur traders sometime after 1789. The medium of exchange was fur. Beaver were plentiful in the vicinity of the Fort at this time, and was likely the most important of the fur-bearing animals hunted by the Ponca for trade.

The tribe obtained trade goods by two methods. One of these was by legitimate and open trade with the Spanish. Ponca House, several miles to the north on the Missouri River, was in operation in 1795-1796, and several traders were active between 1795 and 1800. The second and perhaps equally as important method was robbing trade vessels as they passed up the Missouri River. The value of stolen goods was high; in one instance it is recorded as 7000 pesos. Thus, through legitimate trade and through theft the Ponca acquired large quantities of trade goods in the late 1700's. The amount

of goods they acquired is reflected in the quantity of trade items buried with their dead.

The principal type of goods traded to them were items of personal adornment, such as bracelets, rings, and beads. Utilitarian objects, including sheet brass and hatchets, were also sought, the sheet brass being made into knives, bangles, and other items. Two distinctive shell trade items occur, a pendant and a hair pipe. Ewers' analysis of the hair pipe in Plains Indian adornment (1957) gives further substantiation to the inferred date of the occupation of the Fort. The manufacture of hair pipes was begun between 1776 and 1798, and Northwest Company traders were offering them to Indians of the Upper Missouri as early as 1805-1806 (1957: 42, 47, 56).

53. Fine Arts

Decorative art is represented in the form of beaded patterns sewn to garments, a geometrically incised brass button, and little else. The beadwork patterns consisted of white, blue, yellow, and red/green glass beads. Metal beads were also used, together with brass bangles and strands of copper beads.

76. Death

Avoidance of the dead is indicated by the fact that the overwhelming majority of the burials were outside the

fortification ditch. Forty-two of the forty-three burials were outside the ditch in cemetery areas, while the remaining burial (an infant) was inside the village in X134. The graves are in low hummocks, and the deceased were placed in pits of varying form: bell-shaped, straight-sided, and irregularly-shaped. Burial in pits in low erosional remnants seems to be characteristic of the Ponca. Several cemetery sites have been excavated in north central Nebraska which contain trade goods but few or no native artifacts, and which appear to be Ponca -- so far as their locality is concerned. These remains, on file at the Department of Anthropology, University of Nebraska, will likely elaborate or information on Ponca burial customs when they are ultimately analyzed.

Grave offerings of trade goods and native artifacts were made, and pieces of fabric and buckskin reveal that burial was made in costume. Bracelets, earrings, beads, rings, shell gorgets and hair pipes were either placed on the dead or remained on the body. Grave offerings placed beside the bodies included an arrowshaft wrench, mealing slabs, scapula hoes, and a bone pendant. Several of the adult crania are stained with red ocher, and red ocher occurs on several of the stone and bone artifacts interred with the recipients.

Both primary and secondary deposition was practiced. The primary burials are extended and supine, and one individual

was seated with the legs extended. The secondary burials occur as bundle burials, as ossuaries, and as individual crania. The bundle burials are probably from individuals who were first placed on scaffolds and allowed to dessicate and deteriorate. The individual cranium might be speculated to have been a trophy skull buried with its owner. Three burials were covered with a layer of cottonwood bark to keep the soil from the body, and the floors and walls of burial pits were commonly bark-lined, for the same reason.

CONCLUSIONS

The purpose of this study has been to describe the remains from Náⁿza, the Ponca Fort, and to assess its position in Plains archaeology. Ethnohistorical identification of the site has been made, and speculative interpretations of the archaeological data were offered. The several lines of evidence suggest several conclusions, all of which are tentative.

1. Ponca Fort is situated on the eastern boundary of the Central Plains, on the bluffs of the Missouri River, in an area well suited for bottomland slash-and-burn horticulture, and with ample opportunities for hunting and gathering activities. The productivity of the region has attracted aboriginal and White occupation of the region for a long period of time.

2. Two distinct and temporally separated components are isolated from the site material. The earliest of these, Component A, is identified on the basis of characteristic pottery rim sherds. Component B is identified on the basis of trade goods, ethnohistorical documentation, and internal evidence.

3. Component A is identified on the basis of rim sherds of McVey Plain, a pottery type occurring in Aksarben Aspect sites elsewhere in the Central Plains, but particularly along the eastern boundary of Nebraska. There are no structures or other features which can definitely be associated with the component. These sherds are thought to represent a short-term, transient occupation of the site.

4. The absence of artifacts other than pottery precludes the identification of the component as a member of an established Aksarben Aspect focus.

5. The uniform absence of trade goods in Aksarben Aspect sites in the Central Plains indicates that the component occupied the site prior to the time of Component B between about 1300 and 1500 A.D.

6. Component B is identified as an occupation of the site by Ponca Indians between the years ca. 1790 and 1800 A.D. This identification is consistent with presently available archaeological and ethnohistorical data.

7. At Ponca Fort the Ponca lived in an earth lodge village fortified by an encircling dry moat. They were horticultural, living also by hunting, fishing, and gathering.

8. During the time they lived at the site they were in close contact with Spanish traders, from whom they acquired large amounts of trade goods. Acculturation was well under way by the time the Ponca abandoned the Fort.

9. Sherds identified as Stanley Ware are associated with Ponca structures and burials, and are regarded as contemporaneous with the Ponca occupation of the Fort. The sherds imply intimate contacts with the Arikara and cannot be regarded as indigineous Ponca pottery with the data at hand.

10. Other remains probably relate to other groups not further represented in the collections. The age of a catlinite bannerstone is unknown; an incised sherd treated with a grooved paddle probably dates after about 1500 A.D.; the cartridge case was probably dropped at the Fort by a hunter in the late 19th or early 20th century.

11. The goal of this study, to provide a sound base from which to extend the history of the Ponca back in time through the application of the direct historical approach does not appear to have been successful. The clues for pursuing Ponca prehistory may be in hand, but they are not yet clear.

12. The following work is recommended when investigations of Ponca archaeology are resumed: (a) a thorough reappraisal of ethnohistorical data to determine the possibility of locating more historic Ponca villages, (b) resuming work at Naⁿza to obtain more concise data, (c) locating if possible the fortified Ponca village near the town of Ponca mentioned by Peter Le Claire, and (d) an analysis of available cemetery sites in north central Nebraska which appear to be the

remains of historic Ponca. When one or more of these objectives has been attained many of the problems posed by the present study should have been satisfactorily resolved.

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MAPS USED

Delisle, Guillaume: 1702

CARTE DE LA RIVIERE DE MISSISSIPPI, Sur les memoires
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(Photostat in the Laboratory of Anthropology,
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Dorsey, Rev. James Owen: 1877-1892

ORIGINAL OMAHA INDIAN MAP, BY REV. JAMES OWEN DORSEY,
1877-1892. (Copy in the Nebraska State Historical
Society Museum, dated 1938, Lincoln.)

APPENDIX

Methods Used in the Analysis of Field Data

When the laboratory analysis of Ponca Fort began, the following field data, exclusive of the material remains, were on hand. (1) Typescript copies of the field notes of Perry Newell, consisting of the original and two carbons. The original 1936-1937 field notebooks could not be located. (2) A photographic record of the field work and laboratory photographs of some of the artifacts and human skulls. The photographs of the human remains were taken by John L. Champe; the others were taken by parties unknown. Photographs had been placed on 5 x 8 inch cards, each bearing an identification of the subject of the photograph. (3) Original field maps of many of the excavations.

Perry Newell had kept a daily log of activities, excavations, significant finds, and other relevant observations as work at the site progressed. The data thus were in chronological order, no individual "Feature Forms," "Burial Forms," or other devices of this nature having been in use. In order to describe and interpret the site material it was first necessary

to organize these voluminous notes according to excavation unit and feature. Fortunately, an excellent technique for ordering data in this chaotic condition was available, a technique devised by John L. Champe, involving the use of Record, or "R" Sheets. An example of a R Sheet appears on page 151, and reference to the form will clarify the following exposition. Since the use of the R Sheet is restricted to Champe, his students and associates, and was used in preparing the data for this study, it will be of general interest to illustrate its application and utility.

About 500 R Sheets were first prepared from a ditto master and were serially numbered. The third carbon copy of the field notes were next taken, and each individual observation upon an excavation unit or feature was clipped from the notes with scissors and stapled to a R Sheet in the order in which they appeared in the notes. The R Sheet headings were filled out with the data appearing on the attached field observation. When the entire body of field notes had finally been placed on R Sheets, these sheets were sorted according to individual excavations and features, and a Summary R Sheet for each was made, the summary sheets being cross-indexed with the photographic record and the observation R Sheets. "Feature Numbers" were then assigned to features according to the numeral appearing on the first R Sheet bearing an observation on the feature. This procedure accounts for the fact that there are apparent "gaps" in the table

LABORATORY OF ANTHROPOLOGY, UNI. OF NEBRASKA. RECORD NO. _____

SITE _____ AREA _____ EXCAVATION _____

1. Subject _____

2. Horizontal location _____

3. Vertical location _____

4. Dimensions _____

5. Associated with _____

6. Discussion _____

7. Sketch by _____ 8. Photograph by _____

9. Photograph Nos. _____

10. Refer to R _____

11. Record by _____ Date _____

describing the features at the site (Table 1, pp. 28-33).

When the summary sheets were completed, the sheets containing the original field observations were checked for accuracy and retired to the files, and analysis was resumed using the compact and more easily manageable Summary R Sheets.

Although the system involved a large amount of paper work, it nevertheless provided a simple technique for reducing a large mass of unorganized data to manageable form with a minimum of complications. While the data could have been placed directly on summary sheets without cutting and stapling the original field notes to the observation R Sheets, the system provided a quick and ready means for checking the summary sheets with the original records by means of the cross references provided by the form. Perhaps no "system" is universally applicable; but after completing the analysis of Ponca Fort (and organizing several hundred pages of field notes for sites of the Redbird Focus for an M.A. Thesis) by this means, I could suggest no improvement on the R Sheet devised by Champe.

The R Sheet is especially useful for organizing data originally recorded on daily logs, particularly when the field work has been done by someone else, as it was in this case, or when sites are being analysed that were dug several years prior to the analysis and the data are "cold." Feature Forms, Burial Forms, Profile Forms, and other devices have gained currency in many institutions in addition to, or

supplementing, the "daily log." These forms are useful and they will undoubtedly be preferred by many archaeologists for field records, particularly when one has become accustomed to their use. But the R Sheet is also an excellent technique for recording data in the field, fully as useful as any with which I am familiar. Perhaps its exposition here will not only explain the manner in which it was used to order the Ponca Fort data, but bring it to the attention of others who may also find it useful.