SMITHSONIAN CONTRIBUTIONS TO ANTHROPOLOGY

NUMBER 15

Biesterfeldt: A Post-Contact Coalescent Site on the Northeastern Plains

W. Raymond Wood

SMITHSONIAN INSTITUTION PRESS

City of Washington

1971

SERIAL PUBLICATIONS OF THE SMITHSONIAN INSTITUTION

The emphasis upon publications as a means of diffusing knowledge was expressed by the first Secretary of the Smithsonian Institution. In his formal plan for the Institution, Joseph Henry articulated a program that included the following statement: "It is proposed to publish a series of reports, giving an account of the new discoveries in science, and of the changes made from year to year in all branches of knowledge not strictly professional." This keynote of basic research has been adhered to over the years in the issuance of thousands of titles in serial publications under the Smithsonian imprint, commencing with *Smithsonian Contributions to Knowledge* in 1848 and continuing with the following active series:

Smithsonian Annals of Flight
Smithsonian Contributions to Anthropology
Smithsonian Contributions to Astrophysics
Smithsonian Contributions to Botany
Smithsonian Contributions to the Earth Sciences
Smithsonian Contributions to Paleobiology
Smithsonian Contributions to Zoology
Smithsonian Studies in History and Technology

In these series, the Institution publishes original articles and monographs dealing with the research and collections of its several museums and offices and of professional colleagues at other institutions of learning. These papers report newly acquired facts, synoptic interpretations of data, or original theory in specialized fields. Each publication is distributed by mailing lists to libraries, laboratories, institutes, and interested specialists throughout the world.

S. DILLON RIPLEY
Secretary
Smithsonian Institution

Official publication date is handstamped in a limited number of initial copies and is recorded in the Institution's annual report, Smithsonian Year.

LIBRARY OF CONGRESS CARD 76-608033

UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON: 1971

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402 - Price $1.50

ABSTRACT

Wood, W. Raymond. Biesterfeldt: A Post-Contact Coalescent Site on the Northeastern Plains. *Smithsonian Contributions to Anthropology,* number 15, 109 pages, 1971. Biesterfeldt is a fortified village of about sixty earth lodges on the Sheyenne River in eastern North Dakota. A large central earth lodge faces a central plaza, with dwellings randomly set elsewhere in the village. The site setting, village plan, and structures are like those of historic Mandan and Arikara villages. Pottery attributes are well within the range of sedentary Missouri River groups, and only a few elements distinguish Biesterfeldt pottery from that of the Arikara. The site is dated about 1750 to 1790, when trade goods had displaced many native tools of bone and stone. In the thirty years since W. D. Strong dug the site, new data have accumulated which require revisions in the interpretation of the Biesterfeldt component: the artifact complex conforms to that of Post-Contact Coalescent sites of the Plains Village pattern in the Missouri River trench to the west.

The identification of Biesterfeldt as Cheyenne is based on circumstantial evidence; its occupants are uncertain, but the Cheyenne provide the most economical hypothesis. The Cheyenne migration from the Minnesota area was by individual groups, not as a tribal body. Sedentary villages on the Minnesota River and on the Missouri were coeval with the village (or villages) on the Sheyenne River. The latter river valley was occupied after 1700, perhaps by 1724, and was abandoned about 1790.

Present data suggest the Sheyenne-James region was a marginal one in the Northeastern Plains sub-area. It was not occupied by groups moving from the Missouri valley; rather, horticultural groups in the Northeastern Plains may have been subjected to cultural processes analogous to those which were responsible for the development of the Coalescent tradition in the Missouri valley. Thus, they participated in the development of the Plains Village pattern in an area well removed from the Missouri River, where the Coalescent tradition reached its fullest expression.

The Missouri River was crossed by some Cheyenne in the 1600s, and the last of them abandoned it about 1840, providing about two centuries for the tribe as a whole to abandon a settled horticultural way of life. A review of purported Cheyenne sites along the Missouri River reveals that none of them are clearly identifiable as such. Only three of these village locations are not now flooded by the Oahe Reservoir: one of them is near the Heart River, and two are on the Grand River. The Cheyenne movement onto the High Plains was motivated by settling an area advantageous for trade purposes, rich in bison, and temporarily removed from military pressure by the Dakota.

Preface

During the summer of 1938, a joint Columbia University-State Historical Society of North Dakota expedition conducted excavations at the Biesterfeldt[1] or Sheyenne-Cheyenne site, a protohistoric Indian earth lodge village in southeastern North Dakota. This work, carried out during a 20-day period from July 8 through July 28, was directed by William Duncan Strong, and was the last field work in the Plains which he personally and individually directed.

The only account of the work was published in 1940 by Strong, who summarized the excavated features and cultural material from the site, and sources for its possible identification as a village of the formerly semi-sedentary Cheyenne, in a review of archeological finds in the Northern Plains up to 1939 (Strong, 1940, pp. 370–376).

In a footnote on the title page of this paper, *From History to Prehistory in the Northern Great Plains,* Strong acknowledged his indebtedness to the work of Joseph Jablow and other graduate students then in the Department of Anthropology, Columbia University. Parts of Jablow's studies of the Cheyenne Indians, later published in his doctoral dissertation (Jablow, 1951), were incorporated into Strong's summary. Jablow had accompanied Strong to the site as a member of the 1938 field party, which also included Robert A. Elder, Jr., Nathan Hauben, Edward A. Milligan, Arnold Mitchell, Martin Osborne, Sigmund Sameth, Carlyle S. Smith, and Clarence W. Weiant. George F. Will and Russell Reid of Bismarck, North Dakota, also assisted in the excavations during occasional visits to the site.

The twenty days in 1938 devoted to the excavation of this site began with the establishment of a tent camp on the banks of the Sheyenne River, not far from the site. Strong was in direct charge of the excavation and most of the notes on the work, and a field diary, were composed in a spiral notebook under his hand. The following extracts from his diary will serve as background information on the progress of the field work. The diary was written in off moments, usually at the end of a hard day's work. These extracts, therefore, have been heavily edited, since they consisted largely of disconnected notes; no purpose would be served by presenting them in their original form.

Friday, July 8

Up at 7:00. Breakfast in camp. Spent the morning finishing camp, rain trenches, etc.... Went to work at 1:00. Began palisade Trench 1, the cross section of House 23, and Cache 1 near House 23.... The pottery so far obtained is grit-tempered, and while it has a distinctive look, it is quite similar to Mandan-Hidatsa, etc., ceramics from the Missouri River. Rather surprising in light of traditions. Grooved mauls and very heavy mussel shells are quite abundant. Smith and Mitchell checked the Libby-Stout 1908 map of the site and found it quite accurate.

Had a splendid swim in the evening—the beach is hard and the water about six feet deep. Clear. Nice evening in camp around the fire. Weather fine. River rising.

Saturday, July 9

Had a swim just before a shower this evening. To Lisbon after dinner.

[1] The site was on the farm of Mr. Louis Biesterfeld, but, through an error, a terminal "t" was added to a map and notes made in 1908, and this error has persisted through the years. The terminal "t" is retained here as is conventional except in reference to the former landowner, with apologies to the present owner (Ruth Johnson) and operator (Irwin Johnson), Mr. Biesterfeld's heirs.

Wednesday, July 13

Warm day, but a strong wind took the curse off. Work was interrupted by Mr. Biesterfeld . . . who feared the other heirs would object to our work, thinking it would ruin the site. We showed him the nature of our work, and arranged to get assurances of its scientific value from Reid, etc. Can go on with work already begun but not start new excavations. Went to town in the afternoon and called Will, arranging for a letter and for a later visit. Hope all goes well, as this is one of the prettiest excavations I have seen for a long time. Given two more weeks we can do a beautiful job.

Thursday, July 14

Good day. Smith making a map of House 4. . . . House 23 was smoothly opened on the upper floor level and then, since we couldn't find the postholes, we had to chop the floor down looking for them. By evening we had two center posts and other features.

Friday, July 15

Hot day. Got permission to extend the excavations today after Will's letter arrived. Cleaned up and mapped House 23. . Opened several "caches," one or two of which were duds. Caught up with cataloging and numbering. Went to Milnor[a nearby town] tonight. Saw a fine display of Northern Lights.

Sunday, July 17

Hot day, mostly spent in camp, with letters, notes and visitors. Played a ball game with local nine in the afternoon. Fred Diertt pitched for us. Led in the first half of the 9th, 15–14, but they swamped us in the last, 15–24. Good game.

Tuesday, July 19

Will and Reid arrived just before noon, and showed them around the site. In the afternoon the whole crew was in House 16, since it is too complex to have two houses under excavation at the same time.

Sunday, July 24

It was overcast last night but did not rain. Mitchell's car broke down last night on the way back from Fargo, and they had to sleep in the car. I met them being towed into Lisbon.

Monday, July 25

Went over to see Mr. Biesterfeld this evening. We may get permission to look for burials when he comes over Wednesday morning. Washed and cataloged this evening.

Tuesday, July 26

I talked to the Kiwanis Club at Fisher today.

Wednesday, July 27

The outline of House 16 is that of a conventional earth lodge except that the distance between the wall posts is a little larger than usual. . . . I went in today to talk to the Lisbon newspaper man.

Biesterfeld was here before noon, but will not give permission to investigate the burial ground in his pasture. Too bad, but that's that.

Thursday, July 28

Dr. Libby was here this afternoon, and seemed much interested in the site. A local collector took us up to see some mounds on the rim of the Coteau des Prairies, about two miles southwest of here. They are very impressive, with numerous large ones and many small ones hidden in the tall grass of the unbroken prairie. Went up again after supper, and saw a circular area or fort surrounded by a deep ditch. There is much work to be done here.

Until 1955, Strong's 1940 paper on the Northern Plains was the only existing statement on the Biesterfeldt site, and was used as a basic source by everyone concerned with Cheyenne culture history. In 1954, during my association with the State Historical Society of North Dakota, I discovered the specimen material from the site in storage in the Society's Museum in Bismarck, North Dakota. Pottery types from various village sites in the Dakotas had begun to appear by this time, and a formal description of the Biesterfeldt material seemed a necessary step in more fully assessing Northern Plains culture history. Reassembling the pottery and other tools from storage and display areas, I made a ceramic analysis which was published the following year (Wood, 1955), with Strong's permission and that of Russell Reid, then Superintendent of the Society. Preliminary studies were also made of other artifacts, but lack of time and other duties interrupted this task.

In spite of the accelerated excavation and publication program carried out in recent years by numerous federal and state agencies in the Dakotas, no new data on closely comparable sites had come to light as late as 1966. Arrangements were thus made to reassemble the site material at the University of Missouri in Columbia for a final and detailed report. By this time, not only the data but the participants in this excavation were widely scattered, and Strong himself was gone.

All of the artifacts from Biesterfeldt were sent to the Museum of the State Historical Society of North Dakota after they were studied by Jablow and Strong, and they were accessioned as part of their permanent collection on 16 September 1940. Since that time the collection had largely remained in dead storage, although parts of it were on display. James E. Sperry, then Research Archeologist at the Society, and Norman Paulson, Museum Curator, undertook the task of seeking out and reassembling the scattered artifacts in the museum. This involved a great deal of time and effort, and they were successful in locating all but a very small part of the material. Their cheerful cooperation in carrying out this disagreeable job is warmly and gratefully appreciated. Permission to study this material was generously granted by Ray Mattison, then Superintendent of the Society. These collections were sent to me in Columbia, Missouri, for study.

All of Strong s known field notes and maps from the site were obtained by the Smithsonian Institution, United States National Museum, after Strong's death in 1962. I am deeply grateful to Dr. Waldo R. Wedel for his efforts in locating these data among Strong's effects in the National Museum, and for his assistance in making them available to me. Copies of these documents were obtained through the courtesy of Dr. Richard B. Woodbury, then Chairman, Office of Anthropology, Smithsonian Institution.

At the time this study began, the field photographs from Biesterfeldt were on file in the Department of Anthropology, Columbia University, New York City. Dr. Ralph Solecki assisted in providing prints of these photographs and, later, in providing enlargements for use as illustrations herein.

Dr. Carlyle S. Smith, a member of the 1938 expedition, made several of the field maps for Strong, and conferences with him relating to the field work materially clarified many of the problems involved in writing up the field notes of another archeologist. The assistance of many other people who contributed, in one way or another, is gratefully acknowledged. Among those I wish to thank for professional help are Drs. Richard A. Krause, Donald J. Lehmer, and Waldo R. Wedel. I am also indebted to Marc D. Rucker and Alan R. Woolworth for ethnohistorical assistance. The responsibility for typing and proofreading the manuscript was shouldered by Mrs. Betty Gay Graham, who cheerfully performed these tedious tasks through many revisions.

Financial assistance from the Wenner-Gren Foundation for Anthropological Research, Inc., is gratefully acknowledged. This assistance provided for manuscript preparation and underwrote field work in the summer of 1967.

This study is based directly on Strong's original field notes and data. The present product, however, is undoubtedly not the kind of statement Strong might have prepared himself were he doing it today. No effort has been made to duplicate his style, for my personal contact with him was limited to two brief and casual meetings at Plains Conferences. New data have necessitated new interpretations, and the present synthesis differs in many details from that which he offered in 1940. I sincerely hope these changes would have been acceptable to him.

WRW

University of Missouri
Columbia, Missouri
1 December 1969

Contents

Tables

TEXT

APPENDIX

Illustrations

FIGURES

PLATES

Biesterfeldt: A Post-Contact Coalescent Site on the Northeastern Plains

Introduction

No adequate nor honest introduction to the archeology of the Biesterfeldt site and its significance can be offered without acknowledging, once more, the very great debt Plains prehistory owes to William Duncan Strong. Without doubt, Strong is best known for his work in Nebraska and for his *Introduction to Nebraska Archeology* (Strong, 1935), a work which set the stage for systematic archeological research in that state and adjoining states.

From this standpoint, the brief summary he prepared in 1939, "From History to Prehistory in the Northern Great Plains" (Strong, 1940) is fully as significant. This article was a logical extension of the work he began ten years earlier in Nebraska, and in this essay he successfully placed the three Plains village tribes of that area (Mandan, Hidatsa, Arikara) in a more realistic frame of reference than they formerly occupied. More to the point here, however, are the consequences this article had on our conceptions of the culture history of the Cheyenne Indians while they were a horticultural, sedentary village tribe in eastern North Dakota. Strong identified the Biesterfeldt site as a late 18th-century Cheyenne village site, an identification which is questioned here on both empirical and theoretical grounds.

Nevertheless, Strong's impact on our present concept of the Plains, and his emphasis on historical studies, are still very much with us today. It was Strong who successfully challenged Wissler's statements relating to the recency of occupation of the Plains.

> In 1907 Wissler states that "the peopling of the Plains' proper was a recent phenomenon due in part to the introduction of the horse and the displacement of tribes by white settlements." He continues: "The solution to this problem must depend in part upon research following the methods of archaeology." In 1908 he reemphasized this point, stressing the fact that practically all the peoples occupying the Great Plains in historic times could be traced beyond its borders, and pointing out the need for archeological research in the central part of the area to establish links between history and prehistory. Despite the great ethnological activity in the region following this pronouncement, active historical archeology in the central Plains did not actually begin for some 20 years. . . .
>
> Strange to say, in the northern Great Plains accomplishment preceded theorizing. In 1906, stimulated by Dixon, two of his then students, Will and Spinden, produced the first anthropological study of the area coordinating all that was then known concerning the history, ethnology, linguistics, physical anthropology, and archeology of a single tribe. It has not, as yet [even in 1971], been followed up by fuller and more intensive coordinated studies of a similar nature despite the fact that the importance of the method employed must be manifest to all (1940, pp. 353–354).

The lack of the archeological research he deplored has been rectified, in large part, by the recent systematic investigations of institutions cooperating with the National Park Service in the Inter-Agency Archeological Salvage Program, including the Smithsonian Institution. Bowers' (1950; 1965) studies of Mandan and Hidatsa social and ceremonial organization have contributed significantly to our knowledge of the "broken but culturally important sedentary tribes." The "markedly distorted picture of one of the most interesting culture areas in the New World" has thus, to some extent, been modified. But it is still a fact that the demands of salvage archeology, and the now all but extinct interest in "memory cultures" by ethnologists have contributed to a markedly one-sided picture of the culture history of the area.

Even at this date, it is not unreasonable to suggest that were Strong reviewing the progress made since 1940, he might repeat his statement that the present

> state of affairs may be corrected by a return to the coordinated or creatively historical method originally advocated by both Dixon and Wissler (1940, p. 354).

Until 1945, when the Smithsonian Institution established the River Basin Surveys, little archeological work had been published for the Northern Plains since Will and Spinden. By 1940, several sites had been dug in the Dakotas by Strong or his students, but

Associate Professor of Anthropology and Director, River Basin Archaeology, 15 Switzler Hall, University of Missouri, Columbia, Missouri

none of them were yet reported. Between 1906 and 1940, the State Historical Society of North Dakota, the South Dakota Historical Society, Logan Museum of Beloit College, the Bureau of American Ethnology, and Columbia University all carried out some archeological research in the area.

In addition to the intensive ethnological attack on the area, sponsored by the American Museum of Natural History, there has also been a vast amount of scattered ethnological and linguistic research accomplished by other institutions. Only physical anthropology seems recently to have been completely neglected. With increasing amounts of historic and prehistoric skeletal material becoming available, this neglect of a rich field becomes more and more inexcusable (Strong, 1940, p. 354).

Physical anthropology has attracted the attention of several specialists, notably Bass (*e.g.*, 1964) and his students, but work is still rare for the Northern Plains.

The volume of new data which has accumulated since 1940 is difficult to estimate, but it is staggering. "To attempt to sum up even the published material on the northern Plains" in 1940 was impossible in the brief essay Strong wrote; needless to say, it is more difficult today. Nevertheless, following the "creatively historical method" of working from the historic known to the prehistoric unknown, Strong established historic criteria for the Mandan, Hidatsa, Arikara, and Cheyenne, and outlined them in his 1940 article. For the Mandan and Arikara, his "historic criteria" have held up rather well; those for the Hidatsa remain to be appraised; and those for the Cheyenne are the subject of this paper.

The Cheyenne may be fairly readily isolated from the somewhat homogeneous group of tribes which constituted the "typical" historic equestrian Northern Plains nomads. Of these groups, only the Cheyenne, Arapaho, Blackfoot, and Gros Ventre (Atsina) are Algonquian-speakers, among the predominantly Siouan-speaking Plains Indians. They are not, however, known to be biologically distinctive; by the historic period they had thoroughly mixed with Dakota, Arapaho, Pawnee, Kiowa, Ute. and white American. Nothing is known of their early historic, not to mention protohistoric, population characteristics. A number of elements of Cheyenne culture do clearly set them apart from their neighbors: their political organization (specifically the Council of Forty-four), two of their important ceremonies (Medicine Arrows and the Suhtai-derived Buffalo Cap), and their very intense in-group sentiment—even though they absorbed another tribe, the Suhtai, and later split into Northern and Southern divisions. The interactional patterns of the group were nevertheless strongly knit, yet they were accustomed to very rapid culture change.

Strong's work at Biesterfeldt led him to appreciate the rapid changes the Cheyenne had undergone. He commented to this effect in the following words:

In regard to the Cheyenne, we are . . . fortunate since direct archeological research has recently verified and extended the legendary and scant historical data concerning their recent westward movement and former horticultural mode of life. From the valley of the Minnesota the Cheyenne are believed to have moved westward into the Red River valley, occupying at least one village on the Great Bend of the Sheyenne River . . . This village . . yielded much new data on their basically sedentary life in the period circa 1750. Within the next 50 years the bulk of the tribe became fully equestrian, completely nomadic, had abandoned agriculture and were ranging far west and south of the Missouri River (Strong, 1940, p. 359).

It was Mooney who most persuasively commented on the significance of the study of Cheyenne history, when he pointed out that they

are of special interest to the ethnologist as a rare instance of a sedentary and agricultural people cut off from the main body of their kindred and transformed by pressure of circumstance within the historic period into a race of nomad and predatory hunters, with such entire change of habit and ceremony that the old life is remembered only in sacred tradition and would seem impossible . . but for the connected documentary proof of the fact (Mooney, 1905–07, p. 361).

He further points out that

The most salient fact brought out by a study of the Cheyenne is that of the newness of everything which they have, with the single exception of the Sacred Arrow cult. In the comparatively short space of two centuries, . . they have shifted their habitat by nearly a thousand miles, from the sheltered timber country to the open plains, have so completely lost their old life, and have borrowed so much from the tribes of their new surrounding, that if it were not for their Algonquian speech and the known facts of history, we should fail to recognize in the roving buffalo hunters of the upper Arkansas the same people who once planted corn, fished in the lakes, and built their earth-covered lodges at the head of the Mississippi. Their great Sun Dance came from one tribe; their council system from another, the Omaha dance, Ghost Dance, and Peyote rite from others; their warrior organization as they now have it, their shield system, their whole equestrian habit, their tipis and their tipi life, are all of recent adoption and development. . Their very blood has changed and become dilute with wholesale incorporation of captives and intermarriage with entirely alien elements—Sioux, Ute, Kiowa, and Pawnee. Their existing customs and ceremonials are under constant change, and are not now what they were even ten years ago (Mooney, 1905–07, pp. 420–421).

Strong summarized this probably overenthusiastic statement as follows:

The "fighting Cheyenne" have always claimed that they were formerly horticulturalists living in settled villages. Yet, in history, they are famous as warlike, equestrian nomads. . . . The evidence [obtained from Biesterfeldt] thus revealed amply testified to the truth of Cheyenne tradition and indicated how amazingly rapid and complete their cultural transformation into a "typical" Plains tribe had been (Strong, 1940, p. 370).

The widespread acceptance of Biesterfeldt as a

Cheyenne village of the late 18th century has reinforced a general belief that non-Plains groups could and did adapt their lifeways to the distinctive Plains environment almost overnight—within a generation, at least. This belief has colored the thinking not only of ethnologists, but of archeologists. There is often the tendency, when links in an archeological sequence are weak or lacking, to point to the example of the Cheyenne to explain this; that is, cultural adaptation to the Plains may have been so rapid that we might not find transitional sites because of their rarity. For these reasons it is imperative that we know and understand Cheyenne culture history. We do not deny that peoples moved into the Plains and adjusted rapidly to this new environment. But the movements and consequent adjustments must be firmly documented before we use their example to support other inferences —and we lack firm documentation for the Cheyenne, a "type tribe," in the purported rapidity of their adjustment to the Plains.

Environmental Setting

The Red River, which flows north into Lake Winnipeg and then, via the Nelson River, into Hudson Bay, forms the entirety of the eastern border of the State of North Dakota and part of the western margin of Minnesota. This river, sometimes referred to as the Red River of the North (to distinguish it from the river of the same name in south-central United States), is fed by a number of tributary streams originating in both North Dakota and Minnesota. One of the major streams contributing to its flow is the Sheyenne River, the headwaters of which lie in central North Dakota.

The Biesterfeldt site is on the right bank of this stream in Ransom County, some seventy kilometers southwest of the city of Fargo, and eighteen kilometers east of the town of Lisbon, in southeastern North Dakota. This part of the Dakotas is within the Central Lowlands province (Fenneman, 1938), which extends to the west as far as the Coteau du Missouri, which forms the boundary between this province and the Great Plains province (Figure 1). The entirety of the Central Lowlands in the Dakotas has been glaciated, and this fact is responsible for the major topographic features in this area. The topography here is influenced only slightly by the contours of the bedrock surfaces, for bedrock is blanketed by either glacial drift or vast sheets of alluvium.

The site itself is on the boundary between two major subdivisions of the Central Lowlands: the Red River valley and the Drift Prairies. This boundary consists of an escarpment 100 to 150 meters high, which once formed the western shore of a glacial lake. The site is on the south bank of the Sheyenne River at the point where the river emerges from its incised trench through the Drift Prairies and spills out into the Red River valley.

The Drift Prairies, west of the site, consist of gently rolling to hilly plains with poorly defined drainage, the result of glacial drift deposited on a nearly level erosional plain. The preglacial topography here is all but smothered by glacial drift or till, only the major rivers having penetrated this deposit. This area has changed only slightly since the glaciers receded, for drainage patterns have not yet had time to reestablish themselves. The major physiographic features are oriented north and south in the Drift Prairies: the irregular ground moraines (formed near the base of moving glaciers) with gently undulating surfaces, and the linear belts of end moraines, with their hilly topography, where marshes and lakes abound in undrained depressions.

There are only three major river systems in southeastern North Dakota. The Red River flows north through a former glacial lake bed; and the Sheyenne and James rivers flow south through valleys deeply incised into the Drift Prairies. In its meandering through the Drift Prairies, the Sheyenne has cut a valley averaging about 70 meters deep, and from 1.5 to six kilometers in width, although it averages about two kilometers wide (Plate 3*a*). The valley walls are generally steep, dropping rapidly to gravel-capped terraces. Since the Sheyenne valley was formed as a glacial outwash channel, various stages of downcutting are recorded: there are four terrace levels along the valley walls. Many of them are capped by coarse gravel, but others are eroded into bedrock or drift by glacial melt water (Kelly, 1966). The next major drainage to the west, the James River, flows south and empties into the Missouri, ultimately to flow into the Gulf of Mexico. The divide between the streams entering Hudson Bay and the Gulf of Mexico lies between these two river systems.

The view to the east of Biesterfeldt consists of a flat and monotonous plain, the floor of the glacial Lake Agassiz. During glacial periods the streams flowing into Hudson Bay were ponded, and flooded thousands of square kilometers of Minnesota, North Dakota, Manitoba, and Ontario, forming a lake larger than the combined existing Great Lakes, and about 150 meters deep. Lake Agassiz overflowed to the south through a pass along the present course of Lake Traverse and Big Stone Lake, then down the Minne-

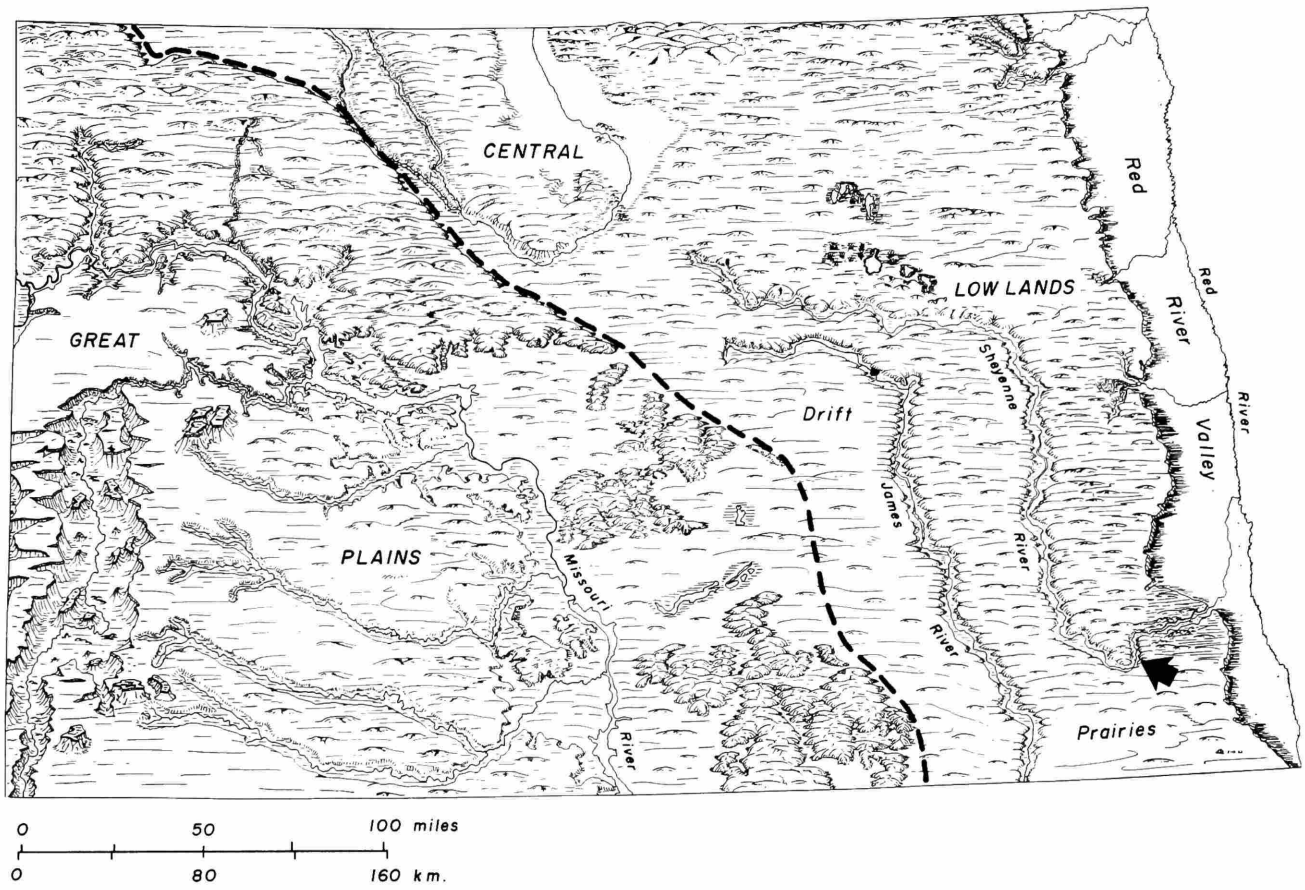

FIGURE 1.— Physiographic diagram of North Dakota (copyright 1952 by L. R. Goodman). Arrow depicts the location of the Biesterfeldt site.

sota River valley. When this outlet was abandoned, side streams such as the Sheyenne continued to drop their silt into the valley. Overlying this is some alluvium of recent streams, which is responsible for the vast and very flat topography for which the valley is famous. The Sheyenne and other rivers built extensive sand deltas where they flowed into the lake. The delta of the Sheyenne (on which the Biesterfeldt site is situated) covers some 2000 square kilometers.

The low gradient of the Red River to the north is responsible for the elaborate meanders of its channel. Throughout most of the lake bed erosion has not yet begun, and much of the area is swampy. As the lake receded to the north, the mouth of the Sheyenne and of other streams followed the retreating shore, thus forming the prominent bends that characterize the tributaries of the Red River.

The rich bottomlands of the Red River valley have been heavily cultivated for a very long time, and the lower reaches of the Sheyenne River—before it breaks out into the Red River valley—have been significantly, but not profoundly, altered by cultivation. Nevertheless, it is not too difficult today to envision the terrain as it was before 1800, and in this effort we are greatly indebted to Alexander Henry the Younger, who penned a fairly vivid word picture of the valley during his travels in the Red River valley in 1800—at a time when the Biesterfeldt site had probably been abandoned for no more than a decade.

> [The Sheyenne River] takes its water out of a large marsh and some small lakes about 15 leagues from the Missouri, where there are no woods—nothing but a few willows. It runs E. within a few miles of Lac du Diable [Devil's Lake], opposite which it begins to have well-wooded banks; and as it increases in size, the valley spreads and the banks are high. This branch is navigable only for small canoes, in the spring, when the water is high. Beavers are more numerous than elsewhere; grizzly bears are to be seen in droves; and it may be called the nursery of buffalo and red deer [elk] (Coues, 1897, vol. 1, p. 145).

No systematic compendium of the fauna in this area is necessary here, since faunal remains were not systematically saved at Biesterfeldt. Henry's journals for the winter of 1800–1801, however, amply charac-

terize the native fauna in the Red River valley. Henry was enthusiastic about the large numbers of bison, elk, moose, bears, and raccoon he and his companions saw and killed, especially near the mouth of Park River, which empties into the Red River about 160 kilometers north of the mouth of the Sheyenne River.

> The entrance of [Park River] is frequented by buffalo, red deer [elk], moose, and bears; indeed, it appears that the higher we go, the more numerous are red deer and bears. On the beach raccoon tracks are plentiful. Wolves are numerous and insolent (Coues, 1897, vol. 1, p. 90).

Bison (*Bison bison*) were present in vast numbers, as well as elk (*Cervus canadensis*). Henry constantly comments on their quantity, as they "were everywhere in sight, passing to and fro" (Coues, 1897, vol. 1, p. 94).

> The few spots of wood along [the Park River] have been ravaged by buffaloes; none but the large trees are standing, the bark of which is rubbed perfectly smooth, and heaps of wool and hair lie at the foot of the trees. The bare ground is more trampled by these cattle than the gate of a farm-yard (Coues, 1897, vol. 1, p. 99).

The large droves of elk and bison provided abundant and easily obtained game, but moose (*Alces americana*), black bears (*Euarctos americanus*), and raccoon (*Procyon lotor*) were also common and popular food animals.

> Bears make prodigious ravages in the brush and willows; the plum trees are torn to pieces, and every tree that bears fruit has shared the same fate; the tops of the oaks are also very roughly handled, broken, and torn down, to get the acorns. The havoc they commit is astonishing; their dung lies about in the woods as plentiful as that of the buffalo in the meadow (Coues, 1897, vol. 1, pp. 101–102).

In view of this abundance of game, it is expectable that "wolves are numerous and insolent" and "go in large droves, and keep up a terrible howling, day and night" (Coues, 1897, vol. 1, pp. 90, 112).

Fur-bearing animals such as otter (*Lutra canadensis*), fisher (*Martes pennanti*), and beaver (*Castor canadensis*) were present, as well as red fox (*Vulpes fulva*) in some number. Grizzly bears (*Ursus horribilis*) were not very common along the Red River, but abounded near Devil's Lake and on the upper Sheyenne River—in an area which was "a frontier of the Sioux, where none can hunt in safety, so they breed and multiply in security" (Coues, 1897, vol. 1, p. 121). Lesser mammals which annoyed Henry must have proved equally troublesome to the Indians:

> We are plagued by great numbers of mice, which destroy almost everything but metals; our strouds and blankets are nearly all damaged, and they even carry off our beads. At night we see them running in droves over the floor. (Coues, 1897, vol. 1, p. 135).

Wild rice and other attractions in the swamps and wooded river margins proved irresistible lures for swans (*Olor columbianus*), heron (*Ardeidae*), geese, and ducks of various kinds, as well as white and gray cranes (Coues, 1897, vol. 1, p. 84) Other birds mentioned by Henry include eagles and ruffed grouse or "pheasants" (*Bonasa umbellus*). The Ojibway along the Red River obtained, often with nets, numerous species of fish: sturgeon (*Acipenser* spp.), catfish (*Ictalurus nebulosus*), mooneye herring or "lacaishe" (*Hiodon tergisus*), pike (*Esox lucius*), walleye perch (*Stizostedion vitreum*), freshwater drum (*Aplodinotus grunniens*), sunfish or "bream" (*Lepomis* spp.), and other species.

How closely this picture of abundance tallies with the situation at the time Biesterfeldt was occupied is not clear, but it is reasonable to assume that conditions had not altered radically since its abandonment. Little wonder, then, that Henry commented:

> This is a delightful country, and, were it not for perpetual wars, the natives might be the happiest people upon earth (Coues, 1897, vol. 1, p. 99).

The Biesterfeldt Site

SITE DESCRIPTION

The Biesterfeldt site is on a high river terrace near a now-abandoned bend in the river channel, with a steep bank on the north side adjoining the former channel of the Sheyenne River. The site is at an elevation of 325 meters above sea level, and approximately ten meters above the present channel of the river, now some distance to the west. The legal description is the northwest quarter of Section 28,

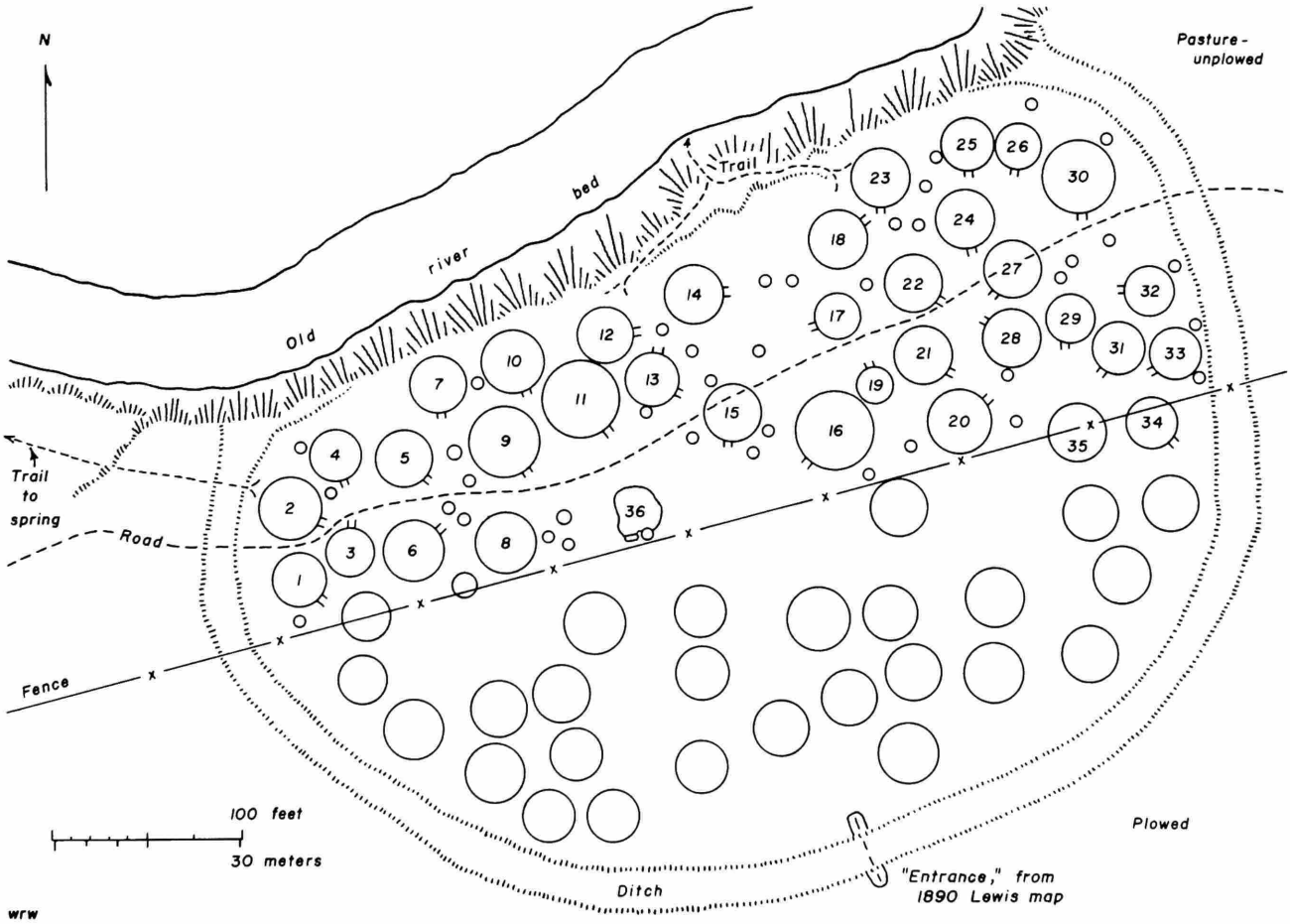

FIGURE 2.—The 1908 Libby-Stout map of Biesterfeldt, with some features from the 1890 Lewis map and from Strong's excavations.

Township 134 North, Range 54 West.

The site was first surveyed by Orin G. Libby and A. B. Stout on 17 June 1908. Their map, the only detailed plat of the site on record, was used by Strong and is the base for the present maps (Figures 2 and 3) Maps prepared by Libby and Stout have been found to be generally accurate for other sites in the Dakotas, so there is no reason to feel that their map of Biesterfeldt is anything other than a reasonable plat of what actually existed there in 1908. Donald J. Lehmer and I chained the diameter of the site along the fence line in 1967, and found it to be 170 meters. The general accuracy of their map may be readily checked by reference to the modern aerial photograph (Plate 1).

The village was on the farm property of Mr. Louis Biesterfeld, and was partly cultivated in 1908. A fence line, bisecting the site along a roughly east-west axis, divided the cultivated south half from an undisturbed pasture adjoining the former river bank. The Libby-Stout map shows thirty-seven house depressions wholly or partially in the uncultivated area, and twenty-five depressions in the cultivated part. Surface evidence of houses in the latter area has been obliterated by continued cultivation, but Will (1914, p. 74) noted that not only the ditch but the house depressions in this area were discernible on his visits to the site.

I am not sure why Strong (1940, p. 371) asserts there were rings of about seventy houses within the ditch, when the map he accepted as "essentially accurate" clearly shows only sixty-two of them. The esti-

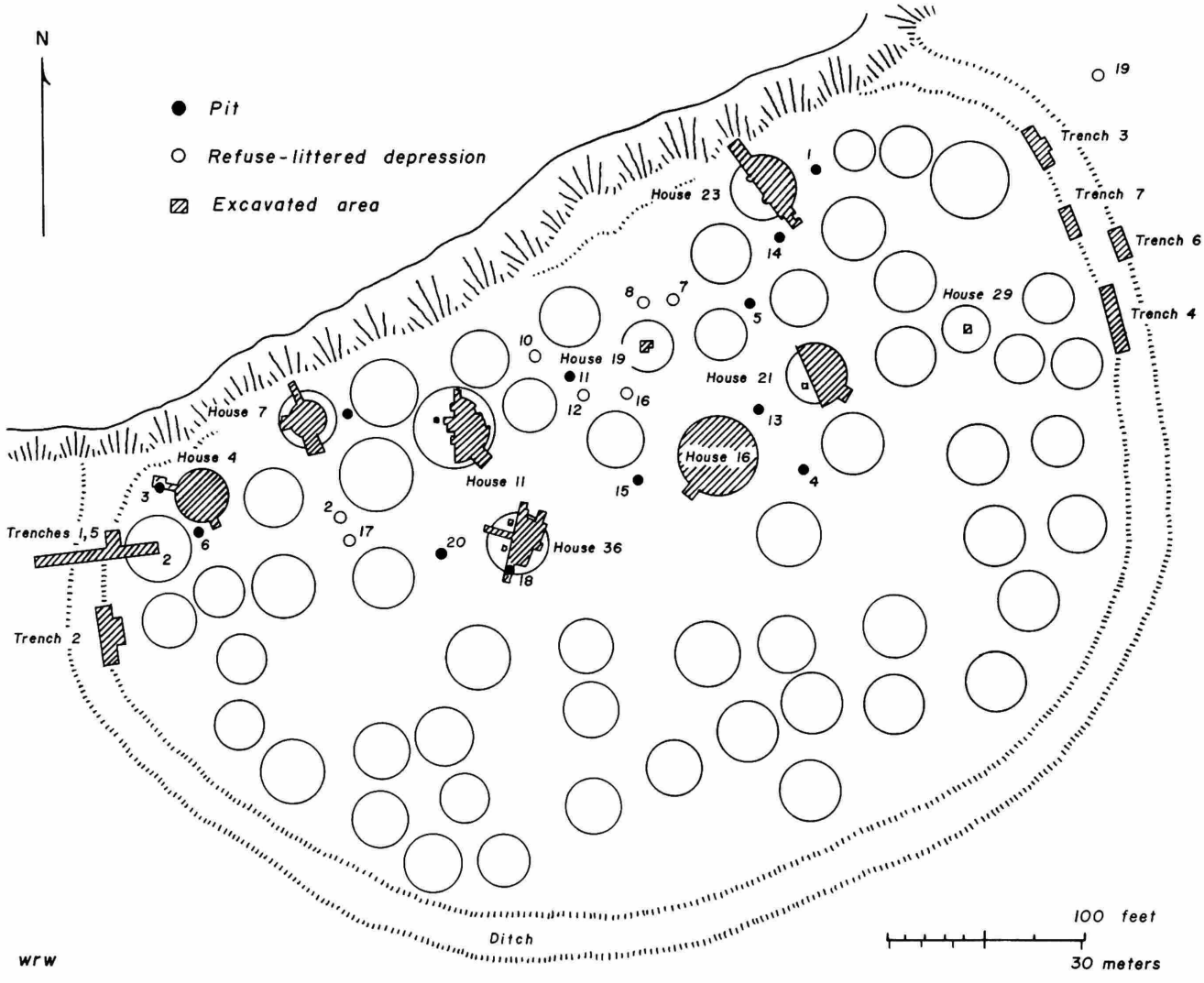

FIGURE 3.—The 1908 Libby-Stout map of Biesterfeldt, showing the 1938 excavations.

mate of seventy houses is certainly not unreasonable, for not only is there room within the ditch for at least eight more dwellings without encroaching on the open "plaza" near the village center, but Strong did find one house (House 19) where Libby and Stout recorded a "cache pit."

The present area between the terrace edge and the inner rim of the fortification ditch is about 3.5 acres. Accepting the number of houses on the Libby-Stout map at face value (plus House 19), there are sixty-two structures within the fortified area, giving the site a density of about 18 houses per acre. This is a very high density for a site of this sort, except that the houses here are somewhat smaller than their counterparts at many sites on the Missouri River.

Libby and Stout also placed thirty-eight small circles on their map representing small depressions which were distinct enough that they felt justified in identifying them as cache pits. They were one to 2.5 meters in diameter and up to thirty centimeters deep (Will, 1914, p. 74). There were actually more pits than this at the site, as Strong discovered several in his excavations that were not shown on the 1908 map.

The village is on the highest part of the river bank on the south side of an old meander of the Sheyenne, from which the land slopes away in every direction—providing a commanding view of the glacial delta to the south and east (Plate 2*a*). There is a shallow ravine to the east, and a low marshy area just west of the site, where there was a spring not far from the former river bank. The bluff on the north side of the village slopes down to the abandoned river channel at about a forty-five degree angle, and is about ten meters high.

The ditch enclosing the site is oval in plan, with its greatest diameter from east to west, a distance of about 170 meters. The ditch forms an arc enclosing about 3.5 acres, swinging from the bluff edge around the dwellings, and back to the bluff (Plate 2*b*). The ditch line is not complicated by bastions or any other visible features. Will (1914, pp. 74–75) described the ditch as about five to ten meters wide. Where it abutted against the bluff edge it was especially prominent, being nearly a meter deep. Elsewhere (except for the cultivated portion) it was about half a meter deep. He continues:

> The house rings are from 6 inches to 2 feet deep in the unplowed area and from 17 to 42 feet in diameter, the average being above thirty feet [Plate 3*b*]. There are no traces of refuse heaps anywhere. The refuse dump seems to have been almost entirely over the side of the bluff (1914, p. 75).

Strong discovered that all of the houses and caches were just below the present ground level, a few centimeters below the sod. There had been very little deposition since the site was abandoned. The sod, about eight centimeters thick, was nearly black in color. Below it was a dark, humus-laden sandy loam, underlain at variable depths by gray, yellow, and brown clay. The topsoil was easily dug after the sod was removed.

Small soil samples, extracted from cavities in many of the bone artifacts, provided the soil pH for the fill in houses and cache pits. Implements from many different parts of the site were checked, and yielded soil which provided a pH of 6.5 to 7.0. Bone preservation at the site was consequently excellent.

FIELDWORK

The 1938 excavations sectioned the fortification ditch and explored the ditch margins for a palisade or stockade line in seven excavation units; fully exposed or tested ten of the dwellings and other major structures; and sectioned or excavated nineteen exterior features, most of them cache or refuse pits (Figure 3).

Fortification System

The site was enclosed by an oval ditch except on the side facing the former river channel. There were no bastions or other special features visible from the surface or revealed in the excavations. The dimensions of the ditch in the single excavation which cross sectioned it, Palisade Trench 1, were: width, 3.35 meters; depth, 1.20 meters. The ditch walls were sloping and the floor was nearly flat (Figure 12, *c-d*).

A few irregular holes that may have been post holes were noted in four of the five trenches along the inner side of the ditch (Palisade Trenches 2–5), but there was no evidence for an even, regular palisade line in them. Field notes written by crew members list the diameters and depths of "features" they identified as post holes, and Strong's field notes mention that "numerous soft places occur in the palisade trenches, but there are only a few definite post molds." Elsewhere in his field notes, he states that there were no definite posts, although there were a number of soft spots on the excavation floors. His final and published judgment was that there was no positive evidence for a regular palisade in any of the seven palisade trenches, either inside or outside the ditch (Strong, 1940, p. 371)

The fact that excavations elsewhere in the site did not yield these ambiguous soft spots suggests that they may, in fact, represent a palisade of some sort. They were, after all, present in the very areas where one would expect a palisade line. The soft spots in Pali-

sade Trenches 2–5 are hardly regular, and scarcely compare with the even, neatly spaced palisade posts usually found in fortified earth lodge sites along the Missouri River.

Perhaps the soft spots represent post holes which supported some form of wall other than a post palisade, but the cross section of the ditch (Figure 12, *c*) reveals nothing which suggests an earthen embankment on either side of the ditch. Since it was such a common Plains village pattern to supplement a ditch with some form of palisade, I feel that Strong's assertion that "no positive evidence" of a palisade was present may be technically accurate, but—at the risk of disagreeing with the excavator regarding his own field data—that it is open to serious question.

Palisade Trenches 1 and 5

FIGURES 4, 12

Trench 1 was an excavation 16.0 meters long and 1.50 meters wide, oriented nearly east and west. It was dug across the fortification ditch to the center of House 2, and was designed to section the ditch and locate the palisade post line. Trench 5 was a unit dug to the north near the center of Trench 1. It was 2.60 meters north and south, and 1.20 meters east and west.

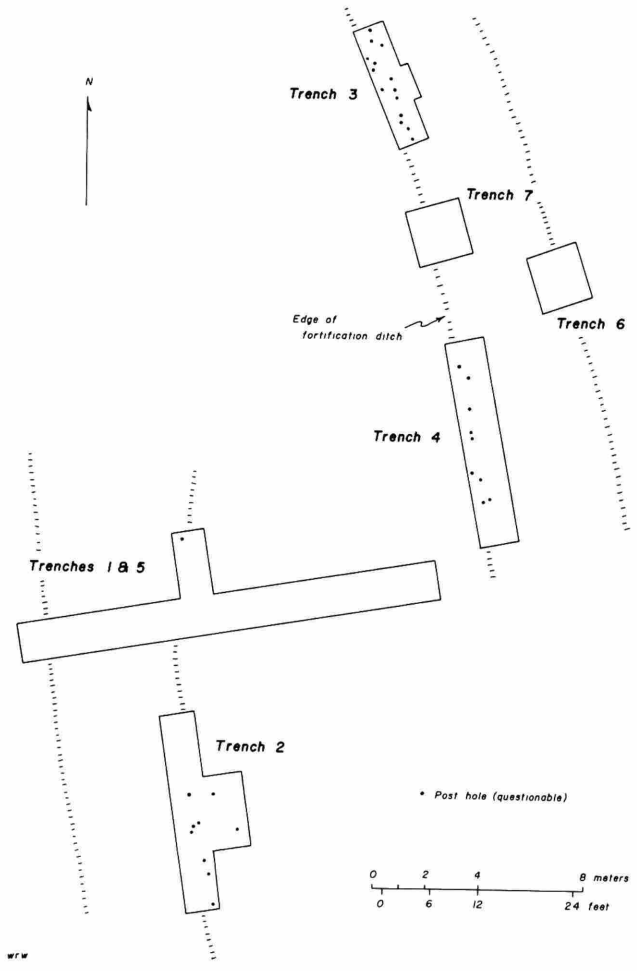

FIGURE 4.—Excavations along the margin of the fortification ditch.

The fortification ditch originated at a level very near the ground surface, with only a thin layer of sod over its margins. It was 3.35 meters wide at the top, and sloped down to an irregular floor about 1.80 meters wide; depth from the surface was 1.20 meters. The ditch fill consisted of dark earth, with lenses of mixed clay; the smaller ditch exposed on the north profile ditch was filled with water-laid yellow and brown clay and black sand (Plate 5*b*).

Only one possible palisade post was in the two units, in Trench 5, although the main trench passed directly over the area in which a palisade line might be expected.

Significant finds in the trenches included numerous sherds, a hammerstone, a few pieces of broken bison bone, and some stone—but no chipped stone tools, or even flakes. Relative to other parts of the site it was a very sterile area. Refuse must have been thrown in pits or over the river bank.

Palisade Trench 2

FIGURE 4

This excavation was south of Palisade Trench 1, and west of House 1, on the inner slope of the ditch. It consisted of a north-south trench 7.50 meters long and 1.20 meters wide, with a rectangular extension on its east wall 2.90 meters long. The pit was dug to a depth of 18 cm on the west wall, and to a depth of 38 cm on the east wall, the difference in the depth of the level floor due to the fact that the ground sloped up to the east.

Excavation was carried down into a black humus containing pockets of sand. Use of a probe led the excavator to feel that some of these pockets may have been shallow post molds, although the "molds" formed no regular pattern. Only those indicated on the excavation map (Figure 4) had sufficient definition and arrangement to even consider as posts; they averaged 9 cm in diameter and 10 cm in depth. The unit contained some broken bone.

Palisade Trench 3

FIGURE 4

This north and south trench, along the inner slope of the northeast end of the fortification ditch, was northeast of House 30. The maximum depth of the trench was 33 cm, near the center of the unit. It cut

through a black humus mixed with sand. The horizontal floor of the excavation extended to the ground surface on the east side. Most of the "post molds" were discovered by probing; a few were well defined. They averaged 13 cm in diameter and 18 cm in depth. A few sherds were in the unit.

Palisade Trench 4

FIGURE 4

One trench was dug along the inner slope of the ditch on the northeast margin of the site about 10 meters north of the fence line. The trench, 7.90 meters long and 1.20 meters wide, was dug to a depth of about 20 cm on its west edge, through a black humus mixed with sand. The level trench floor extended to the surface slope on the east side of the unit. The post molds were fairly well defined, most of them occurring in pairs. All except one of the molds were discovered by probing. This mold contained a stone and a twig (?) in the brown-stained fill. Average depth and diameter, 11 cm.

Palisade Trench 6

FIGURE 4

A small trench, dug on the outer slope of the ditch on the northeast margin of the site, was northeast of House 32 and north of Palisade Trench 4. Its long axis was parallel to the midline of the ditch, and was dug to a depth of 20 cm into soft black sand; it was 2.20 meters long and 2.0 meters wide. A yellow gumbo-like soil was near the surface, at a depth of about three inches. The entire area was full of burrows, but no possible post holes were identified.

The more significant finds included a shell knife or scraper, a "snub-nosed" arrowpoint, and a group of sherds at a depth of 15 to 20 cm. A piece of "coal-like substance" was found just below the sod, but it unfortunately is not now in the collections.

Palisade Trench 7

FIGURE 4

This excavation was on the inner slope of the ditch on the northeast margin of the site, between Palisade Trenches 3 and 4. There are no notes on the unit, so it apparently contained nothing of significance.

Houses

Seven structures in the village were largely or completely excavated, and limited tests were made in three others. All houses were mapped using a plane table and leaf alidade set in the house center over the fireplace; features were measured using a steel tape.

All of the houses investigated were circular in outline, as the surface depressions indicated. The general pattern of these structures can be briefly summarized:

Each house had a central fireplace, circular or oval in outline, containing ash and underlain by burned earth.

Each structure adequately tested had four center posts set in the form of a square around the central fireplace; these posts were oriented approximately to the four cardinal points.

Covered entrance passages were noted in four of the houses; the evidence was equivocal in House 7 (a very small structure); and in two houses the excavations were incomplete. Except for the large House 16, the entry to which opens southwest upon an open area or "plaza," the house entrances were directed to the southeast.

None of the houses contained any definite cache pits, although Houses 11 and 16 contained some shallow pits.

Many posts were braced in position with bison or other large bones or with stones. Some of the post holes contained wood in good condition.

All houses had burned, and charred beams or charcoal were on the floors of all of them.

Characteristic furnishings in all houses were numerous large and small stones, many of which had well-used grinding surfaces.

Strong described three house types from the site, but these three forms can be resolved into two basic architectural styles:

House 16, the largest and best preserved of those dug, conforms to the common historic Plains earth lodge pattern, and does not differ significantly in plan from those of the Mandan, Hidatsa, and Arikara. From its location in the village, it may well have been a ceremonial lodge or center. This structure had four center posts, eight (or perhaps nine) vertical wall posts, and a shallow trench around the edge of the house floor in which the butts of the leaner posts were rested. Details of the roof supports and the roof covering can be inferred from the detailed description of Hidatsa lodges provided by Wilson (1934).

Three of the dwellings (Houses 4, 7, and 36) had four center posts, but lacked vertical wall posts. The butts of the rafters or leaners rested on the pit edges or on an elevated border around the lodge, and their tops leaned against stringers which connected the four center posts. These houses are directly comparable to dwellings at Spotted Bear, Demery, and Fire Heart Creek on the Missouri River (Hurt, 1954; Woolworth

and Wood, 1964; Lehmer, 1966). Three other structures (Houses 11, 21, and 23) had four center posts, the rafters or leaners set in shallow post holes or in a shallow trench around the margin of the house floor. Again, the tops of the leaners rested against stringers which connected the four center posts. These structures appear to be elaborate models of the kind of shelter described (Wilson, 1934, pp. 411–415) as hunting lodges for the Hidatsa.

House 2
FIGURE 12

Surface indications: A circular depression in the sod, about six meters in diameter and about 30 cm deep.

Floor: The house floor level was about 20 cm below the ground level. It was littered with yellow and black sand, brown clay, burned clay and charcoal—including several small charred beams lying horizontally on the floor.

Fireplace: A hearth exposed in the east end of Palisade Trench 1, which sectioned the ditch and this house, is probably the central fireplace. It was about 1.45 meters wide and was filled with gray-white ash.

House 4
FIGURE 5

Surface indications: A circular depression in the sod about twelve meters in diameter and 30 cm deep.

Roof supports: Four center posts in which the wood remained. The posts were wedged into the holes with large pieces of bison bone.

Fireplace: Circular in outline and 70 cm in diameter. It contained 5 cm of ash, underlain by 8 cm of burned earth.

Entrance: Directed to the southeast, lined by large and distinct post holes; it was 9.75 meters long and a meter wide. Its surface was packed with hard, fired soil, and sloped up from the general house floor.

Floor: A shallow, dish-shaped pit about seven meters in diameter, with a distinct rim. White clay on the floor made the floor level simple to define.

Leaners: The butts of leaner posts rested directly on the edge of the house floor rim, 18 cm below the surface. Numerous charred leaners lay on the floor, all of them pointing to the house center, with several of their ends resting on the house rim.

Floor features: A layer of ash on the northwest edge of the house was about 3 cm thick.

Comments: This house had burned, with many charred leaners and much burned yellow clay on the floor. The structure was completely excavated.

House 7
FIGURE 6, PLATE 6*b*

Surface indications: The saucer-shaped house depression was about seven meters in diameter and 45 cm deep. Relative to other houses it was small and deep.

Roof supports: Four hard-packed center posts only, set about 1.5 meters apart.

Fireplace: The top of this feature was 30 cm from the ground surface. Diameter, 64 cm; it contained 8 cm of ash, and was underlain by 5 cm of burned earth.

Entrance: There was no definite entrance passage, although Strong felt it was to the southeast. Testing in this sector of the house exposed a large patch of ash, but no entry features.

Floor: The floor was sharply dish-shaped; it was irregular and not well defined. Patches of yellow clay were present on the floor, but not as marked as in some houses. Assumed depth of floor level, 40 cm. The actual floor perimeter was probably beyond the excavation limits. Estimated floor diameter, about five meters.

Leaners: Not exposed or detected in the excavations.

Comments: This house had burned, since charred beams were on the floor. It was not completely excavated. Strong thought it may have been a "menstrual hut" or the lodge of an old woman.

House 11
FIGURE 7

Surface indications: The house was marked by a distinct basin-shaped depression 13.40 meters in diameter.

Roof supports: Four clear center posts were exposed. Center post IV was 45 cm in diameter. There were no definite vertical wall posts, although careful skimming was carried out looking for them.

Fireplace: The central fireplace was oval in plan, with a maximum north and south diameter of 1.35 meters; it was exactly in the center of the square formed by the four center posts.

Entrance: Extended to the southeast for a distance of three meters from the line of leaners; it was 1.50 meters wide.

Floor: About twelve meters in diameter, the margin being clearly marked by a trench containing occasional butts of leaner posts.

Leaners: A shallow, narrow trench around the house edge contained rare evidence of leaner posts. It was badly rodent-pitted, but contained a few definite posts.

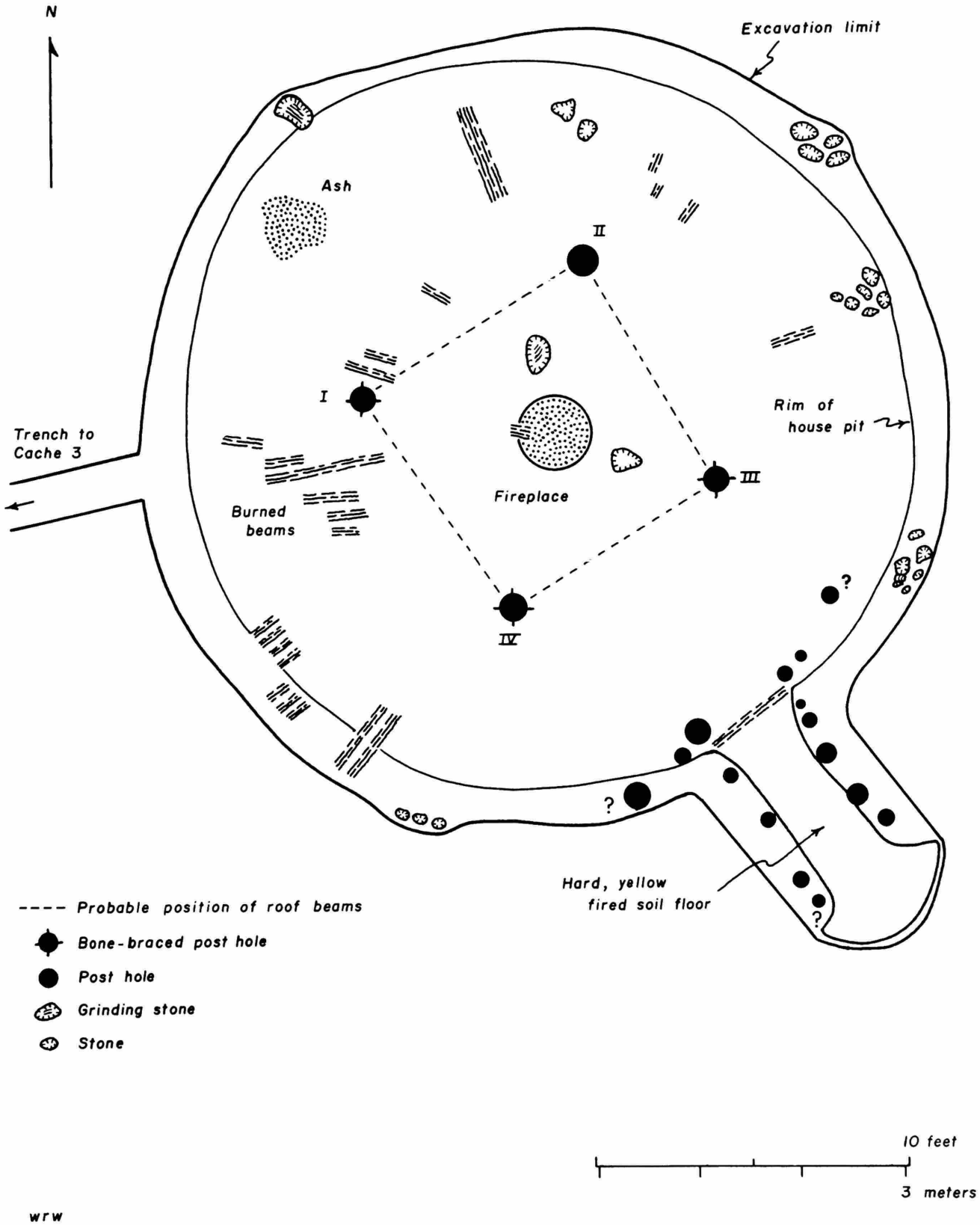

FIGURE 5.—Ground plan of House 4.

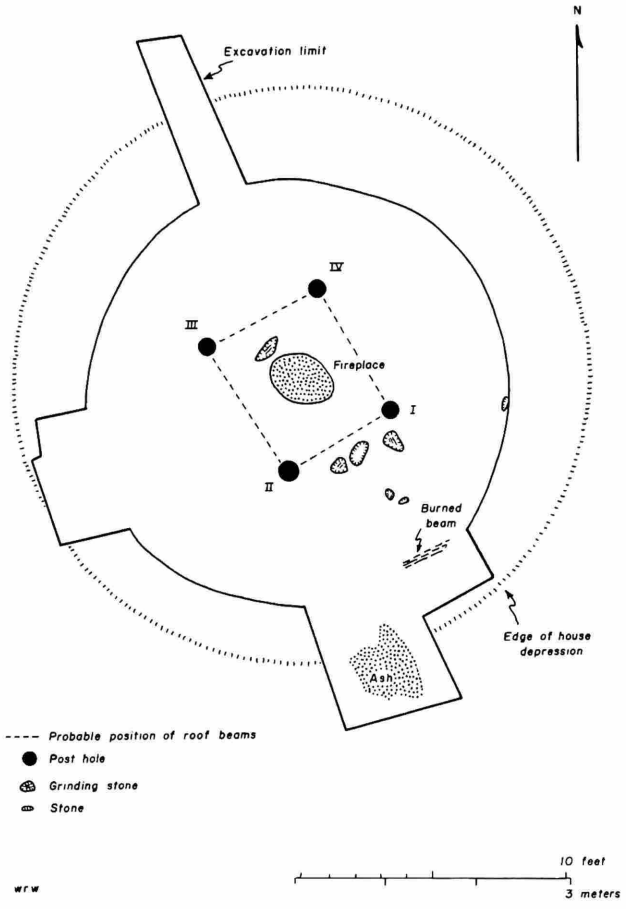

FIGURE 6.—Ground plan of House 7.

Floor features: A few small, irregular basins were present but were not plotted on the house map; there were no other indications of interior pits.

Comments: This house had burned, as evidenced by much charcoal and many burned timbers on the floor; it was not completely excavated. The floor was not as well defined as in some houses.

House 12

Comments: The field notes state that the entry passage of this dwelling was worked out, then testing was begun for the outer wall posts—but no further notes, nor any map of the excavation was apparently made.

House 16

FIGURE 8, PLATES 4, 5*a*

Surface indications: A saucer-shaped depression in the sod 13.50 meters in diameter, one of the larger house depressions at the site.

Roof supports: There were four large, well-spaced center posts, with pointed bottoms an "arm-length down." They had dark fill nearly as hard as the surrounding soil, clearly mixed, and contained wood dust and charcoal hard-packed throughout. Each post was braced with stones and bones. One hole contained the end of a post which was cut in a fashion suggesting cutting with a stone ax. This post may have been oak, but George Will identified most of the wood in the house as ash.

Several vertical wall post holes were between the center posts and the leaners. Most of them were deep, clearly defined, and filled with decayed wood; only one of them, disturbed by an animal burrow, was uncertain.

Leaners: A shallow trench encircled the house floor except for a gap at the entrance. It consisted of a shallow groove in the hard soil filled with decayed wood and charcoal; its softness led to much rodent disturbance. It contained a few definite post holes, but numerous, closely-spaced leaner post butts were the most common features.

Entrance: The entrance was marked by a row of post holes on either side, with those on the northwest side set in a shallow trench. The fine-grained nature of the post fragments in the entry led George Will to believe they were basswood. The top of the roof beams of the entry were about 20 cm below the surface. The entry was about three meters long and 1.80 meters wide.

Floor: The house floor was about 40 cm below the surface. The structure had burned, and there was much charcoal on the floor. The fire had been especially hot on the south side of the house, although all areas were subjected to terrific heat. Burned clay was especially abundant around the entry and fireplace. There were many sherds in some areas, suggesting that beams had fallen on and broken complete vessels. The heat had overfired and split many sherds, and stones on the floor were cracked by the heat.

Floor features: Just west of the square formed by the center posts was an area saturated with red pigment (hematite?) and covered with chokecherry or hackberry stones, wild plum and thorn apple (or rose hips), identified by George Will. A grinding stone was nearby, just west of center post I.

Fireplace: The top of the fireplace was about 40 cm below the sod. It was circular, about 90 cm in diameter, with an extension to the southwest. It contained 15 cm of ash and 13 cm of burned earth.

House 21

FIGURE 9

Surface indications: This house depression is shown on the 1908 Libby-Stout map with two en-

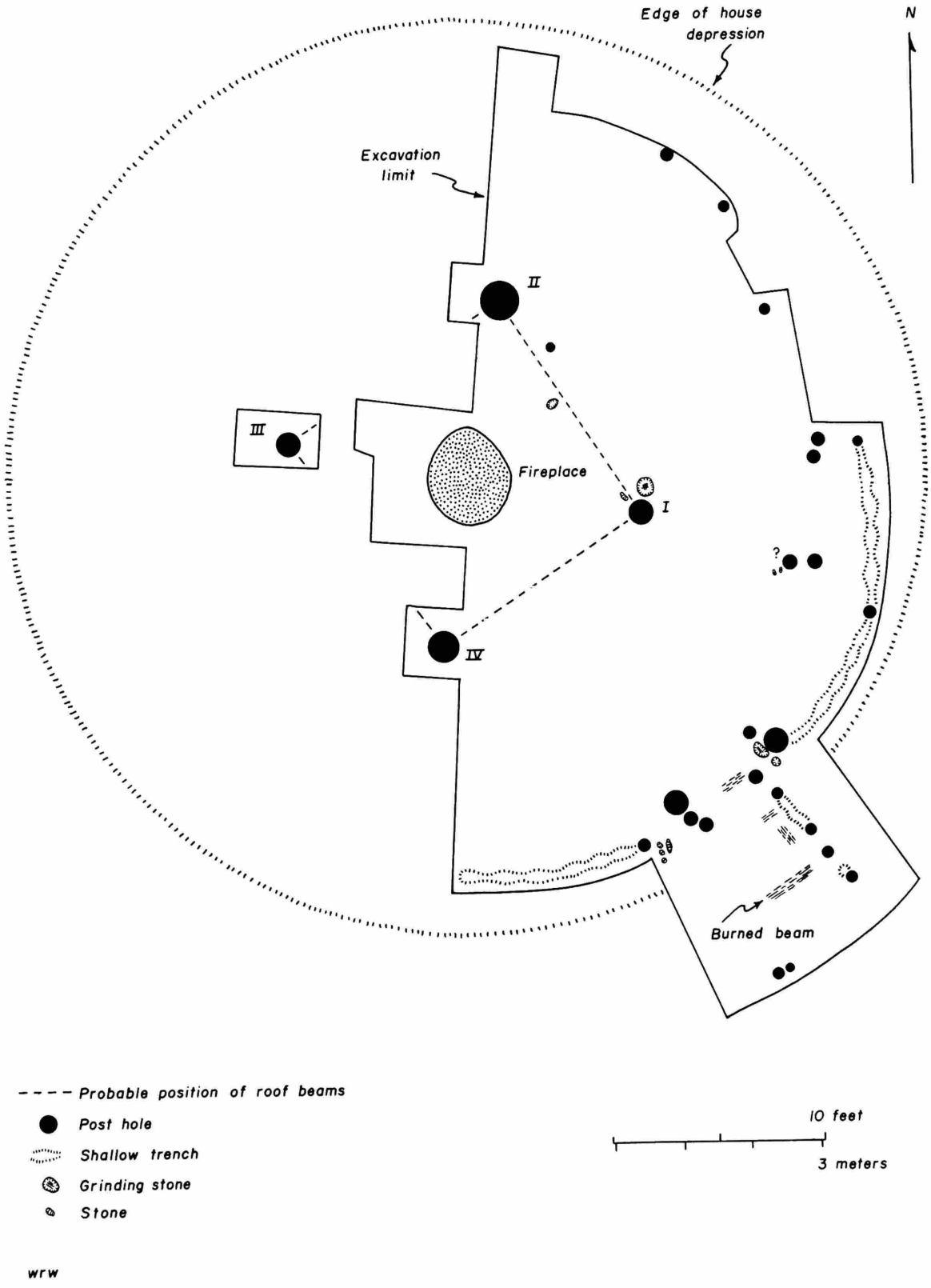

FIGURE 7.—Ground plan of House 11.

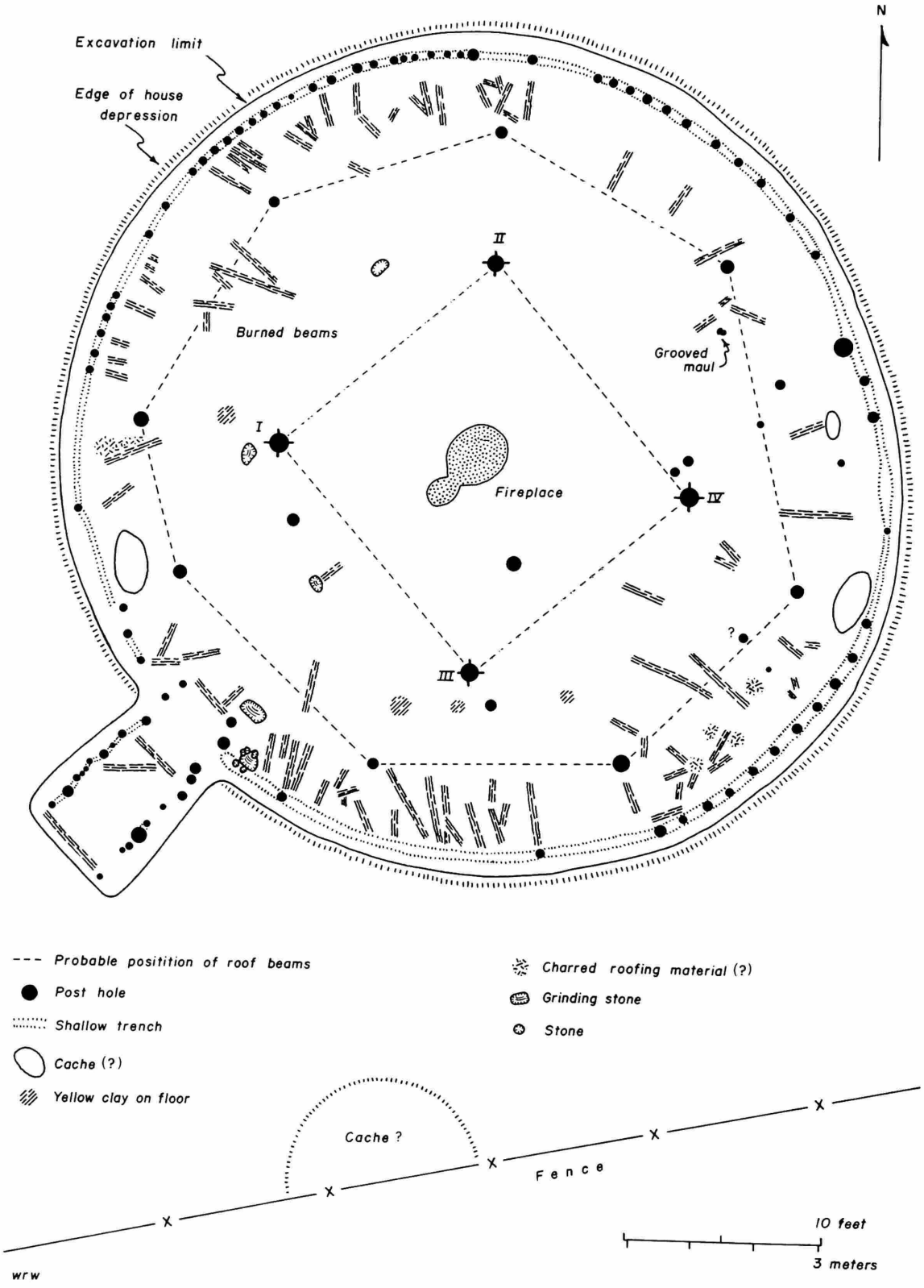

FIGURE 8.—Ground plan of House 16.

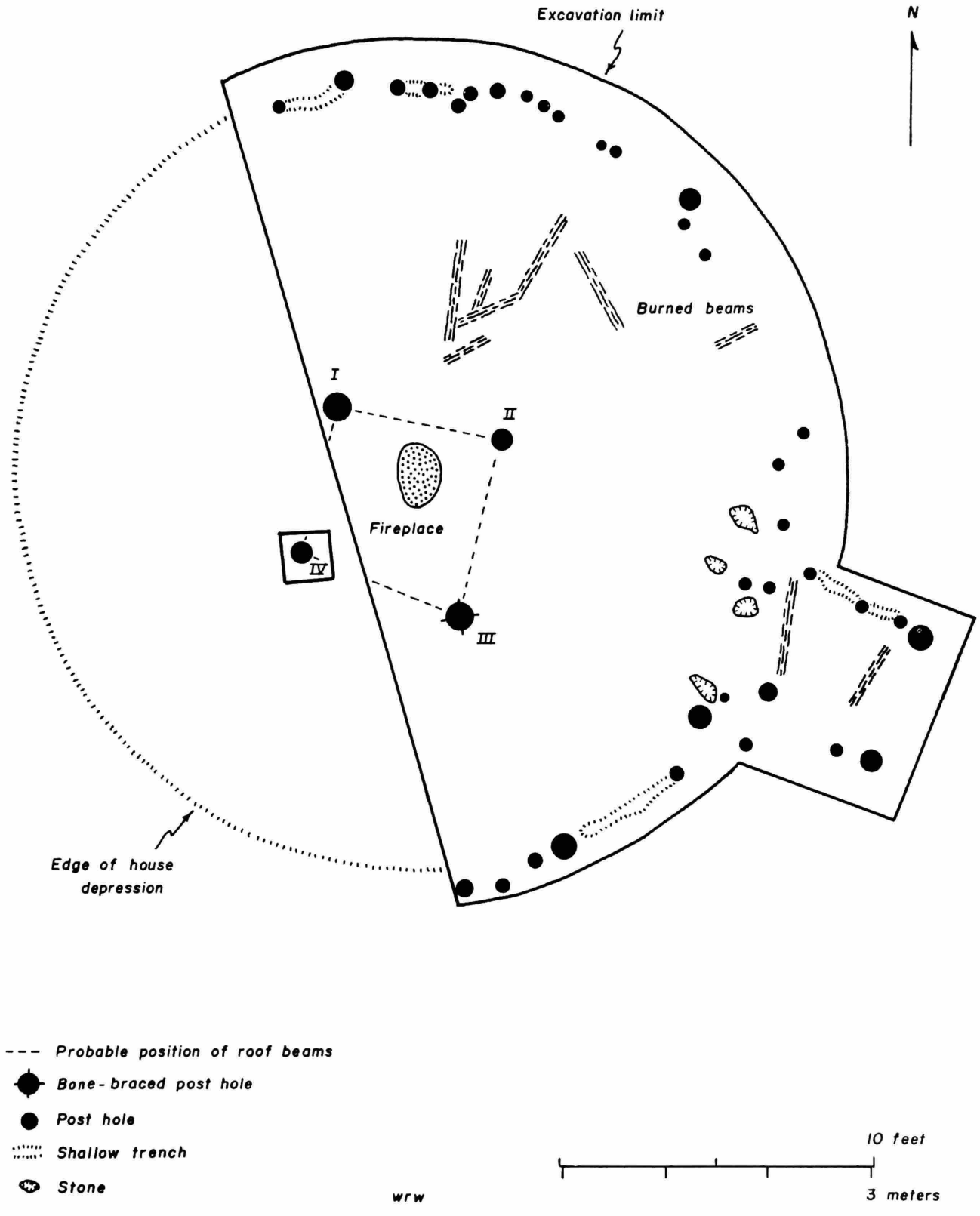

FIGURE 9.—Ground plan of House 21.

trances, but only the southeast entry was verified. The depression was about 7.60 meters in diameter.

Roof supports: Four distinct center posts. Post III was braced with large bones.

Fireplace: The fireplace was deep and oval with a maximum diameter of 76 cm. It contained 15 cm of ash overlying 5 cm of burned earth. The top of the feature was 23 cm below the ground surface.

Entrance: The entry was directed to the southeast; it was 1.80 meters long and 1.50 meters wide. Post butts in the north side were set in a shallow trench.

Floor: The floor diameter was 8.20 meters; its surface was littered with numbers of burned beams.

Leaners: Leaner post butts were set in a shallow trench which was defined for only part of the house perimeter.

Comments: This house had burned; it was not completely excavated.

House 23

FIGURES 10, 12*b*

Surface indications: A circular, saucer-shaped depression in the sod, 8.50 meters in diameter.

Roof supports: Four distinct center posts, two of them (III and IV) with hard-packed fill; diameters, 18 to 28 cm. A number of dubious outer posts are marked by a question mark on the house map—the others contained wood dust.

Fireplace: Circular in outline, measuring 70 cm in diameter; it contained 15 cm of ash, underlain by 10 cm of burned earth. Its top was 20 cm below the surface.

Entrance: Directed to the southeast, but could not be clearly defined in spite of careful search. The suspected area of the entry floor was packed with yellow clay.

Floor: Very shallow, but distinct, with yellow clay and charred timbers resting on it; diameter, 7.30 meters.

Leaners: A few questionable post holes were near the floor edge.

Human remains: A partial bundle burial was west of the entrance area, 1.50 meters south of the house pit rim. This inhumation was exposed at a depth of 56 cm, about 30 cm below the level of the entrance passage. *Burial 1* consisted of a fragmentary skull and numerous long bones, ribs, vertebrae, and foot bones—none complete. *Burial 2* consisted of a skull, 66 cm northwest of Burial 1, with the face up and directed to the south.

House 29

FIGURE 2

Surface indications: A saucer-shaped depression.

Floor: Depth below surface near center fireplace, 23 cm.

Fireplace: Diameter, 66 cm; it contained 5 cm of ash.

Excavation comments: A test pit 1.80 meters north and south, and 2.0 meters east and west was dug in the center of this depression, exposing only the central fireplace.

House 36

FIGURES 11, 12*a*

Surface indications: The house depression as mapped in 1908 by Libby and Stout—and as observed by Strong in 1938—was quite irregular, measuring about 15.0 meters in diameter. There were two depressions near the south margin of the house ring (Figure 2).

Roof supports: Four well-defined center posts.

Fireplace: A circular fireplace, about 74 cm in diameter, was directly centered among the four support posts. It contained 8 cm of ash and some mollusk shells, and was underlain by 5 cm of burned earth. There was much broken pottery around it.

Entrance: Probably lay under the back dirt, which was not moved to search for it.

Floor: Strong felt that it was about fifteen meters in diameter. It was littered with much refuse, especially near the fireplace.

Floor features: A concentration of ash lay on the house floor north of the center fireplace. This feature was plotted on the house cross section (Figure 12), but not on the house map itself. The ash contained much pottery and other refuse.

Associated features: The cross trench (Figure 12) revealed that one of the depressions on the south margin of the house was a pit (Cache 18); this pit, which partially underlay the house margin, contained much stone and bison bone.

Comments: This house had burned. It was not completely excavated.

Exterior Pits

Nineteen of the small, shallow depressions in the sod between the houses were tested, usually by trenches dug across their centers. Most of the depressions were from one to 2.50 meters in diameter and about 13 cm deep, containing vegetation which was rather less abundant than on the surrounding soil. Two depressions were rather large: the one which revealed the location of Cache 18 measured 9.50 by 4.60 meters and was 15 cm deep, and the depression of

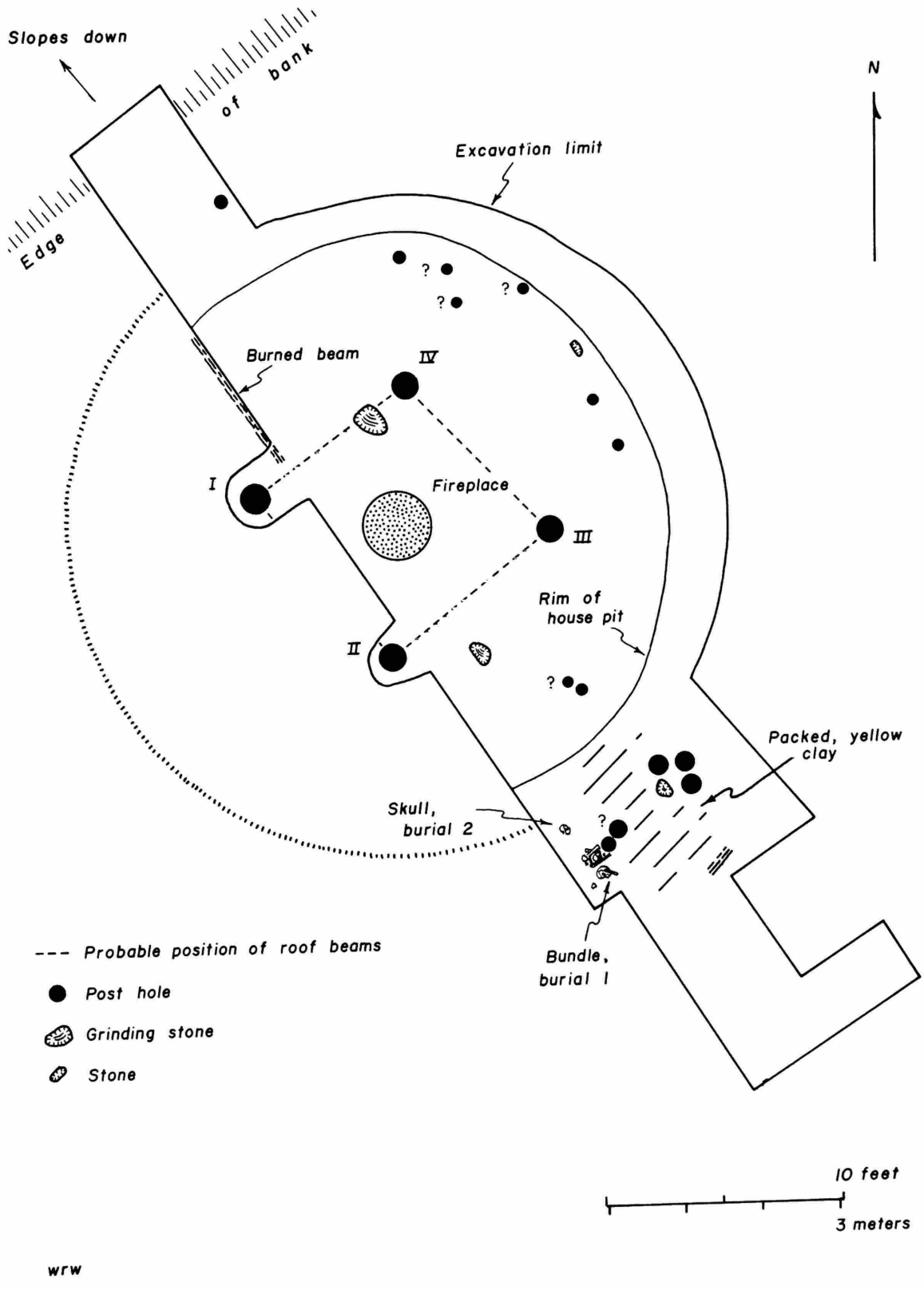

FIGURE 10.—Ground plan of House 23.

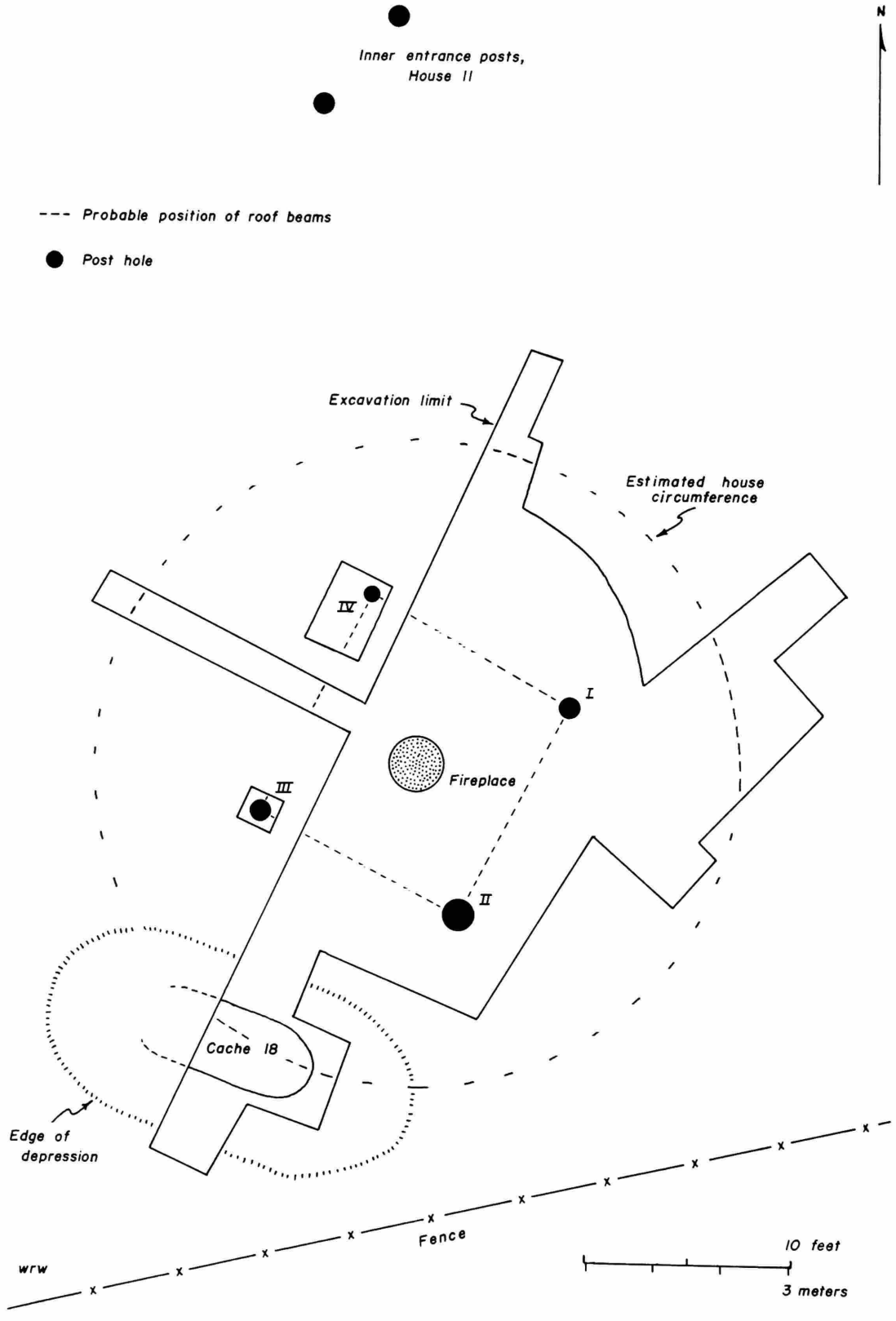

FIGURE 11.—Ground plan of House 36.

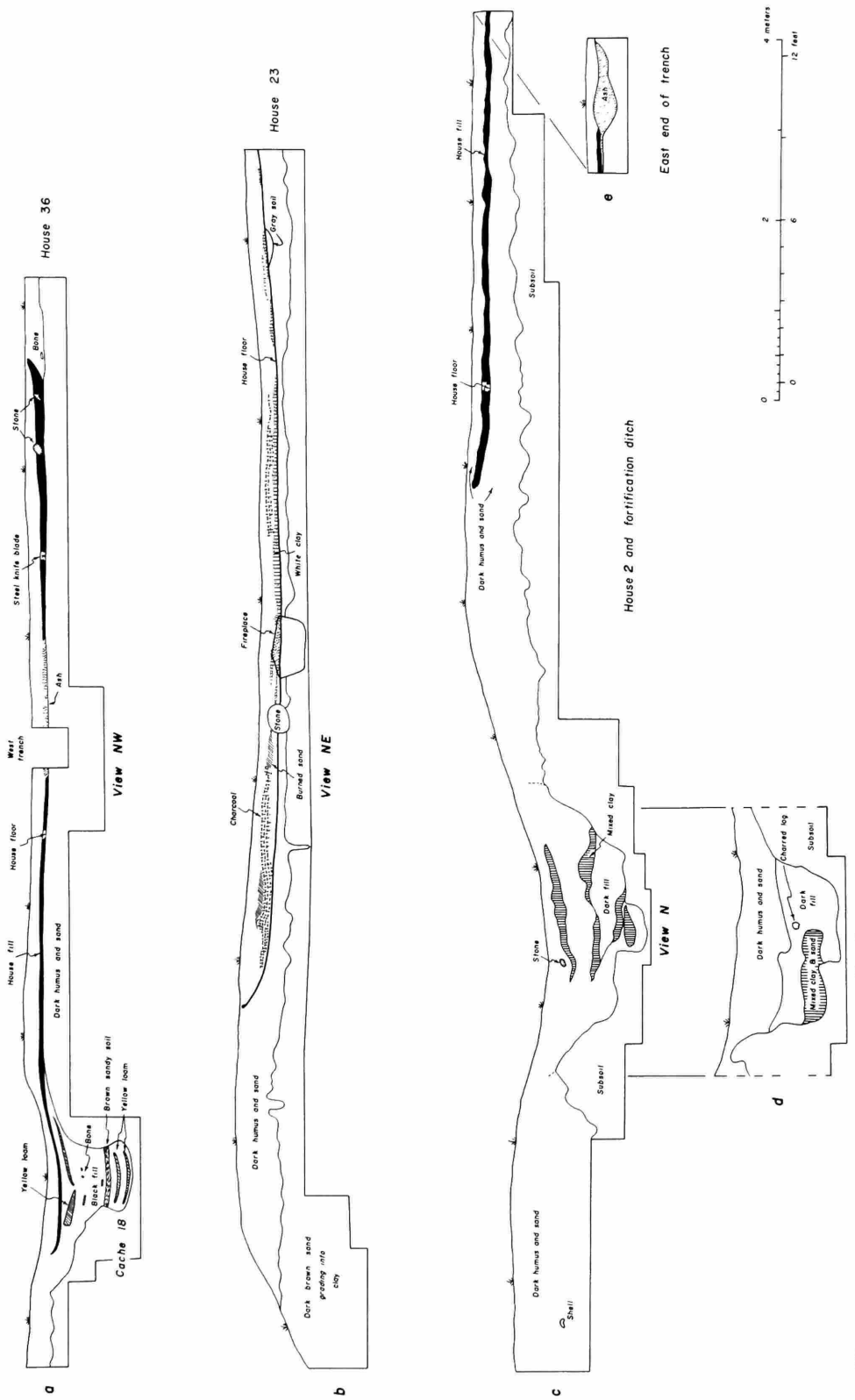

FIGURE 12.—Cross sections of Houses 36, 23, and 2.

Cache 13 was so large that it was designated "House 19" on the 1908 Libby-Stout map.

The cross trenches, from 2.10 to 5.50 meters long, were .60 to 1.20 meters wide and were dug to sterile soil. Twelve of the depressions investigated were caches or other pits having three basic cross sections. Most of them contained ash, animal bone (especially those of bison), large numbers of stones, sherds, and some artifacts. Pit contents were probably more abundant than indicated in Tables 1–6, since the cross trenches which explored features were not always expanded to remove all of the pit fill. Seven features appeared to be simply shallow, refuse-littered hollows in the original ground surface. No large refuse heaps were present, and it is unlikely that much garbage was thrown over the river bank and washed away. The twelve excavated pits are classified according to three basic cross sections, in Groups 1, 2, and 3.

Group 1

Deep, undercut or U-shaped cache pits (Caches 1, 7, 18). These pits have straight to somewhat undercut walls, and flat to dish-shaped floors. They most closely resemble the conventional bell-shaped pit of the Plains, but (perhaps because of the sandy soil) their cross sections are somewhat irregular.

Pit. no.	Diameter (meters)	Depth (meters)
1	.90	.76
7	1.00	.86
18	.76 × 1.5+	.74

Cache 1 (Figure 13): Form—Somewhat undercut walls, with a circular, dish-shaped floor. Fill—Artifacts tended to occur above a layer of crushed bone near the floor of the pit.

Cache 7 (Figure 13): Form—Apparently a deep pit with undercut walls or a U-shaped cross section. Fill—A dark brown to black sandy soil below the sod merged, at a depth of about 80 cm, with brown sandy soil. The lowermost 30 cm of fill was dark brown to black sandy soil. The brown sandy soil near the pit center was nearly sterile, but the fill above and below it contained many broken bones, mollusk shells, and stone, as well as hammerstones and sherds. Many fragmentary bison bones and sherds were near the pit floor.

Cache 18 (Figure 12*a*): Form—About half the pit was excavated, showing that the form was like that of a bath tub, with somewhat undercut walls. Fill—Black earth, with lenses of soil; the fill contrasted strikingly with the subsoil. Refuse consisted largely of bison bone and stone. Comments—This feature underlay the south edge of the wall line of House 36, and was apparently dug and refilled before this house was built.

Group 2

Deep, basin-shaped pits (Caches 3, 4, 5, 6, 9, 15, 20). More shallow than pits of Group 1, having flat to dish-shaped floors and insloping walls.

Pit. no.	Diameter (meters)	Depth (meters)
3	1.47	.61
4	.86	.68
5	1.58	.41
6	1.20+	.79
9	1.20+	.71
15	1.30	.40
20	.89	.43

Cache 3 (Figure 13): Form—A deep, basin-shaped pit, clearly outlined in the subsoil. Fill—Most of the fill was brown to black earth, with several layers of ash. Specimens included fragmentary animal bone, sherds and other artifacts.

Cache 4 (Figure 13): Form—A deep, basin-shaped pit. Fill—A very black earth near the top was underlain by ash and artifacts. The layer of ash was 2 to 8 cm thick. About 30 cm of brown earth with much animal bone underlay the ash, in which was embedded a brass trigger guard pendant (S–42). Two pieces of birch bark were just above the pit floor.

Cache 5: Form—A deep, basin-shaped pit with a relatively flat floor and sloping walls. Fill—Successive layers, from the surface down, consisted of black earth, brown earth, and brown earth with much animal bone. An ash lens 5 cm thick was about 7 cm above the pit floor.

Cache 6: Form—This pit, not fully exposed, had a deeply rounded floor and sloping walls, analogous to those of Cache 3 (Figure 13). Fill—Dark mixed earth, with a layer of clay 25 cm below the surface, and a layer of ash at a depth of 48 cm. Animal bone was confined to the fill beneath the clay, and to the ash. The only artifact was a piece of flaked chert.

Cache 9: Form—A deep, basin-shaped pit with sloping walls and a nearly flat floor, corresponding closely to the cross section of Cache 3 (Figure 13). Fill—Dark earth, with lenses of ash and light buff soil.

Cache 15 (Figure 13): Form—A shallow, basin-shaped pit with a nearly flat floor and gently sloping walls. Fill—Mixed earth, with one thin lens of ash containing sherds, cracked stone and bone, and articulated horse bones.

Cache 20 (Figure 13): Form—A deep, basin-shaped pit, with a convex floor and sloping walls. Fill—Mixed earth, with an ash lens near the pit cen-

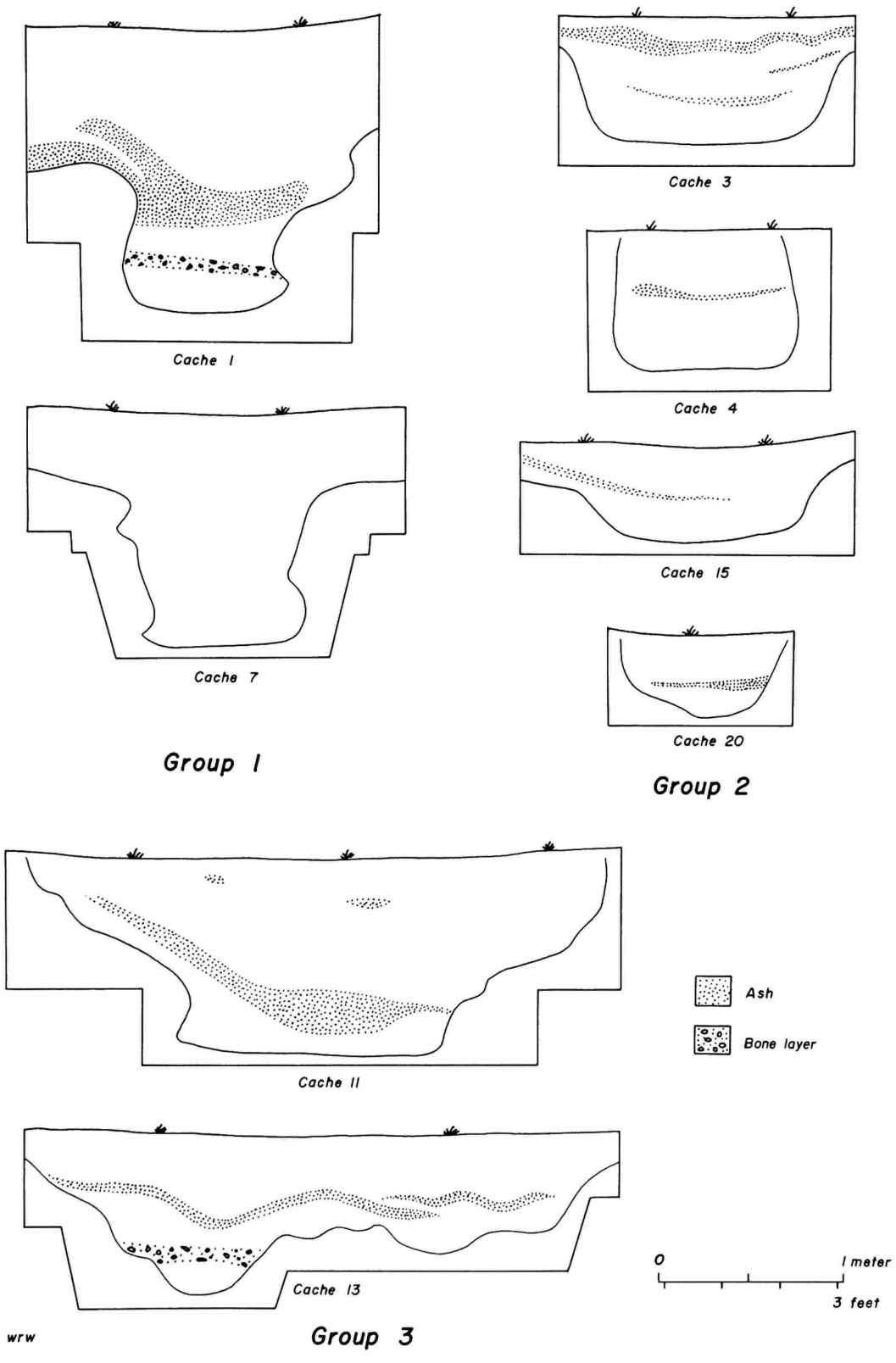

FIGURE 13.—Cross sections of representative exterior pits.

ter. It contained a few sherds, some bones, and a mollusk shell knife or scraper.

Group 3

Broad pits with irregular cross sections (Caches 11, 13). These irregular pits may have been pits of Group 2 which were disturbed by later aboriginal excavations or which caved in, or they may be refuse-filled borrow pits.

Pit. no.	Diameter (meters)	Depth (meters)
11	3.05	.90
13	3.00	.68

Cache 11 (Figure 13): Form—A broad, irregular pit, the center having a flat, circular floor 1.40 meters in diameter. Above this floor the pit walls slope irregularly to the surface. Fill—Largely black mixed earth, containing ash lenses and a layer of gray sandy soil. There were bark fragments just above the pit floor. The fill contained many broken bison bones, sherds, pieces of mollusk shell, bone artifacts, and broken hammerstones.

Cache 13 (Figure 13): Form—A large, irregular pit, the largest at the site. Fill—Consisted largely of mixed humus with several ash lenses, and a layer of bone near the floor. It contained large quantities of broken bison bone and stone, some pottery, a metapodial flesher, and several stones with grinding surfaces. Comments—The original designation for this feature (House 19) was transferred by Strong to a "cache" which excavation showed was a house depression.

Refuse-Littered Depressions

Excavation showed that seven of the small, shallow depressions within the ditch (and one of them east of the ditch) were features other than cache or storage pits. They are recorded in the notes as "cache pits," but after excavation proved them otherwise they were not given other designations. Here, they are simply referred to as features, retaining Strong's field numbers to avoid confusion in the existing catalog and note system. They include Features 2, 8, 10, 12, 16, 17, and 19.

All of them appeared as shallow surface depressions containing some mixed earth beneath the sod. They are probably best interpreted as refuse disposal areas in shallow hollows on the former surface.

Very little in the way of specimen material was in them; most of them contained shallow lenses of ash. Feature 2 contained much animal bone, mostly split bison bone, with hammerstones and "grinders." Feature 8 contained some bison bone. Feature 12 produced abundant animal bone and stone. Feature 16 contained mammal and fish bones. Feature 17 contained a rim sherd with inset white glass trade beads and a "fish operculum pendant." Feature 19 produced some bone and stone.

ARTIFACTS

Pottery

The ceramics described below are all in the collections of the State Historical Society of North Dakota Museum in Bismarck. The sample available in 1967 consisted of 255 rim sherds and 3,105 body sherds: a total of 3,360 specimens. This figure is 407 sherds less than the 3,767 specimens Strong (1940, p. 373) reported from his excavations. This reduction in numbers is a consequence of an intensive effort to fit and glue sherds together. For example, the 292 rim sherds with which the analysis began were reduced to 255 rims in the course of study, with an apparent "loss" of 37 rims.

Catalog numbers cited for the sample denote the following: the prefix "S," that it was collected by Strong in 1938; the number "7993," that the sherds are accessioned as from the site, probably having been collected by George F. Will or Thad. C. Hecker. A few sherds with no catalog number ("No no.") were found with the collections. Although the latter two categories of sherds lack documentation, all of them conform to the classes established for Strong's original material, and there is no reason to believe they are not from the site.

The bulk of this pottery was initially described by Strong (1940, pp. 373–374, pl. 8), and was further discussed (using the descriptions and illustrations published by Strong) in Will and Hecker's study of village sites in North Dakota (1944, pp. 37–39, pl. 17). The last typological study of this pottery (now superseded by the present statement) is that of Wood (1955)

The pottery rims are described here under nine classes, based on decorative elements and on rim form: cord-wrapped rod, bead-impressed, cord-impressed, tool-impressed, plain smoothed, plain brushed, pinched plain, and Examples A and B. Each class is sufficiently distinct that it has been possible to determine approximately how many vessels are represented by the sherds. Each probable vessel has been given a number (1 through 183 inclusive), and selected attributes of each are given in Tables 1 through 3. The total vessel count is probably within five per cent of the actual number, the principal source of error

being vessels which had more than one rim decorative treatment. For example, some of the cord-wrapped rod, cord-impressed, and tool-impressed rims bore both oblique and horizontal elements on different parts on the rim.

The pottery from Biesterfeldt was once (Wood, 1955) defined in terms of wares and types, as those concepts were defined by Lehmer (1954, p. 41). The bulk of the sample at that time was assigned to three wares: Ransom Wedge Rim Ware; Stanley Braced Rim Ware (defined at the Dodd site, 39ST30, by Lehmer, 1951, pp. 4–8, pls. 1–3; and Lehmer, 1954, pp. 42–46, pls. 12–14); and to Talking Crow Ware (defined from the Talking Crow site, 39BF3, by C. S. Smith, 1951, pp. 34–37, pl. 8). All of these wares consist of sherd (not vessel) types. No complete or restorable vessels were recovered at Biesterfeldt; the largest segment of a vessel was a miniature cord-impressed jar.

With a few minor exceptions (Examples A and B—three vessels) the rim forms at Biesterfeldt grade into Stanley and Talking Crow wares. Although some elements at Biesterfeldt are rare or lacking in Stanley and Talking Crow wares (*e.g.*, cord-wrapped rod and bead-impressed rims, and linear check-stamped bodies), the distinctions between Biesterfeldt and Stanley-Talking Crow are not clear enough to justify separating the Biesterfeldt material into distinct wares. On the other hand, the similarities are sufficiently striking that it might be justifiable to assign the Biesterfeldt material to the same wares. Both alternatives, in fact, were recommended by different colleagues. The present descriptions, hopefully, are detailed enough that others can treat the material in any way they see fit. Until larger samples of pottery are available from eastern North Dakota, it seems best to use descriptive classes and eschew named types which have historical connotations which may be misleading.

General Characteristics

SAMPLE: 255 rim sherds, representing about 183 vessels, and 3,105 body sherds. The sample is sufficiently homogeneous that there is no doubt only one major occupation is represented.

PASTE:

Method of manufacture: The vessels were probably modeled, judging from the irregular breakage of the sherds and the lack of coil fractures, and were finished with a paddle and anvil.

Temper: Fire to coarse grit, ranging from 0.5 to 2 mm in diameter. The quartz, mica, and feldspar composition of the grit indicates the use of decomposed or calcined granite.

Hardness: 2.5 to 4.0 (Mohs' scale).

Texture: Fine to medium coarse. Sherd interiors are often crackled, and the majority of them are flaky, with a few sherds that are laminated and tend to split horizontally.

Color: Tones range from light buff to mottled gray and black, with the majority of sherds light buff. Interior surfaces are often coated with carbonized matter, and in about half the specimens the exterior is darkened by fire clouds. Strong mentions a "red slip" on the interior of numerous body sherds, but this simply represents differential firing.

SURFACE FINISH: Two different techniques were used in the final shaping of vessel walls, both of which consisted of malleating or stamping the wall with a paddle. Vessels were vertically or obliquely stamped on the neck and shoulder, and horizontally or in random fashion below the shoulder.

During the final shaping of most vessels, the moist walls were malleated using paddles which created a series of parallel grooves. These *simple stamped* or grooved paddle impressions were sometimes made using large ribs in which parallel lines were cut (Wedel and Hill, 1943), but since no such tools were found at Biesterfeldt, the implements must have been of wood, or the paddle may have been wrapped with thong. The impressions are 1 to 6 mm wide and as much as 30 mm long; they have parallel sides and square ends (Plate 10*o, q, r*).

Another common paddle used to finish vessels was also grooved, but it was so carved that the type of impression that resulted is termed *linear check stamping* in the Southeast, where this treatment characterizes certain pottery types of the early Woodland Deptford period (Griffin and Sears, 1950) No relationship between Biesterfeldt and the southeastern types is implied by this statement—only that the technique used is the same. These stamps are 1 to 4 mm wide and are 4 to 35 mm long (Plate 10*s*).

Many vessels (or parts of vessels) appear to have been originally stamped with a grooved or checked paddle, but these stamps are now obliterated by smoothing. The surfaces of such sherds are even, but are not polished. Any sherd so smoothed that the original stamping technique is indistinguishable is classed as *smoothed.*

The rim is frequently either vertically or obliquely *brushed,* with horizontal brushing common on the inner rim. Any rim exterior which retains clear evidence of having been brushed is classed as such. (Table 4).

No trace of *cord-roughened* rim or body sherds was noted in the sample.

DECORATION: Varies with the individual classes. All techniques were applied to moist paste.

1. *Cord-wrapped rod impressions* result from the application of a stick, dowel, or fibrous bundle of small diameter, tightly to loosely wrapped with a fiber cord. Several plasticene impressions clearly reveal the nature of the different cord-wrapped rods used (Plate 10*a-c*).

TABLE 1.—*Selected attributes of cord-wrapped rod-impressed rim sherds*

Vessel	No. of sherds	Rim form	Wavy rim	Spout	Appendages		Neck		Decoration: Outer rim						Inner rim	Finger-nail impress.	Neck impressions				Cat. No.	Find spot
					Lug	Handle	Br.	Sm.	||	//	\\	Horiz. 2	Horiz. 3	Horiz. 4	//		1	2	3	4		
1	1	d				X		X			X							cwr			S-199	House 36
2	1	d			X			X			X							cwr			S-16A	Cache 1
3	2	i						X			X										S-133	Cache 15
4	1	?						X			X										S-123	House 11
5	3	j		X			X				X		X								S-174,182	"
6	1	b					X				X										S-174,182	"
7	1	e			X		X				X						cwr				S-109	Cache 13
8	1	c						X			X										S-118	"
9	1	l						X			X										"	"
10	1	e						X			X							cwr			S-109	"
11	1	i						X			X						cwr				S-195	"
12	1	d					X				X										S-109	"
13	2	e						X			X										S-161	House 21
14	3	a					X				X										S-163	"
15	4	l		X			X				X		X								S-39	Cache 4
16	1	j					X				X										S-116,123	House 16
17	1	h						X			X							cwr			S-141,125	"
18	5	k		X				X			X		X								S-151,141	"
19	1	f						X			X										S-178	House 21
20	1	k					X			X											S-225	Trench 7
21	3	b					X			X											S-195,118	Cache 13
22	4	k					X			X									cwr		S-109	"
23	2	k						X		X								cwr			S-109,118	"
24	2	l						X		X										cwr	S-109,195	"
25	1	m						X		X											S-84	Cache 11
26	4	e						X		X											S-36,26	Cache 3
27	1	j						X		X									cwr		S-50	Cache 7
28	1	j					X			X											"	"
29	1	e						X		X											S-133	Cache 15
30	1	f		?				X		X											S-141	House 16
31	4	j					X			X											S-141,152	"
32	3	j	X				X			X						X					S-174,209	Houses 11, 36
33	1	m						X		X											S-235	Trench 7
34	1	j						X		X								cwr			7993	Unknown
35	1	j	X					X		X											S-225	"
36	1	d					X			X					cwr						S-26	Cache 3
37	1	f					X		X												S-192	Cache 1
38	2	k						X	X									cwr			S-84	Cache 11
39	1	k						X	X												S-133	Cache 15
40	1	b						X	X												S-164	Feat. 17
41	1	b					X					X									S-192	Cache 1
42	3	j					X					X						cwr			S-109,195	Cache 13
43	1	b						X				X									S-229	"
44	1	e			X		X					X									S-195	"
45	1	d						X				X									S-229	"
46	1	j					X					X									S-139	Cache 16
47	1	j					X					X									S-164	Feat 17
48	2	a			X			X				X					cwr				"	"
49	1	p						X				X									S-123	House 11
50	1	j			X			X				X									S-133	Cache 15
51	1	h					X					X					cwr				"	"
52	1	h						X				X									S-209	House 36
53	1	j					X					X									S-182	"
54	1	c			X		X					X									S-182,209	"
55	1	b					X					X									S-23A	Cache 2
56	1	d					X					X						cwr			S-50	Cache 7
57	1	l					X					X									S-83	Cache 9
58	2	l		X			X					X									S-126,141	House 16
59	1	b						X				X									S-125	"
60	1	h						X				X						cwr			S-141	"
61	1	j		X			X					X									S-126	"
62	1	j						X				X						cwr			S-118 A	Cache 13
63	1	e					X						X								S-16 A	Cache 1
64	1	e			X			X					X		cwr			cwr			S-26	Cache 3
65	2	j					X						X								S-109,118	Cache 13
66	2	j					X						X				S				S-118,109	"
67	1	c					X						X								S-164	Feat. 17
68	1	p	X					X					X								S-123	House 11
69	1	p						X					X								S-174	"
70	1	n						X					X					cwr			"	"
71	1	n		X			X						X								S-126	House 16
72	1	ı			X			X					X								S-141,151	"
73	1	e					X						X					cwr			S-209	House 36
74	1	c					X						X								S-218	Trenches 6-7
75	1	j					X						X								"	"
76	1	l						X					X		cwr		cwr				S-26	Cache 3
77	1	e						X	Uncertain												S-109	Cache 13
78	1	e						X													S-78	House 23
79	1	a						X													S-199	House 36
80	1	e						X													7993	Unknown

2. *Cord impressions* result from the application of a free strand of Z- or S-twisted, 2-ply vegetal cord (Plate 10*g, h*).
3. A single rim is *mat-impressed,* the twine having been Z-twisted. This rim (Vessel 113, Plate 8*a* and Plate 10*f*) is classed as cord-impressed in Table 2, since the distinctive nature of the impressions was not noted until after the table was compiled.
4. *Bead impressions* are the consequence of using a strand of strung glass trade beads in place of the more common free cord (Plate 10*d, e*).
5. *Tool impressions* were made with the sharp to blunt tips of pointed objects, or with the end of a reed.
6. The moist clay of the rim of Example A was *incised* using the tip of some pointed implement.
7. *Brushed rims* were wiped with a tuft of coarse grass or some similar material, resulting in sharp, parallel scratches with irregular edges.
8. A few rims were finger *pinched* in such a way that they have a sinuous appearance when viewed from above.

All of the above techniques were applied to or basically modified the outer rim. In addition, a few rims bear punctates, cord-wrapped rod, or cord-impressed lines on the inner rim near the lip.

Shoulders of a number of vessels are incised with simple to complex abstract geometric patterns (Figure 14, Plate 10*i-n*). Some of these decorations occur together with multiple cord-impressed or cord-wrapped rod impressions around the vessel neck; some of these lines on the neck appear to have been discontinuous (Plate 7*i*). Some of the vessels had oval or elongate punctates along the shoulder below the decorated area. One shoulder sherd (Plate 10*l*) appears to be decorated with cord-impressed lines.

Seven sherds have inset glass trade beads, or retain their impressions. The beads, pressed individually into the moist paste, were partly fused when the vessels were fired. They are 4 mm in diameter; the few beads remaining (many have fallen out) are of an opaque, white, glassy substance.

A single sherd of uncertain provenience (Plate 10*p*) is *dentate-stamped.* I am not certain precisely what Strong had in mind when he stated that in some cases "punch stamps or plaited matting (6 sherds) seem to have been used in surface treatment" (1940, p. 374). He might have been referring to the linear check-stamped sherds, although they are well in excess of 6 sherds. The rouletted sherds he mentions, however (1940, p. 374), are the bead-impressed rims.

FORM:

Overall shape: There are no restored or restorable vessels, but sherds suggest that vessels were globular with wide mouths. Large vessels tend to have rounded shoulders; the smaller ones, angular shoulders. Wall thickness, 2 to 13 mm; mean, 5 mm.

Lip: Usually rounded, although some lips tend to be pointed (Figure 15).

Rim: The most characteristic rim form is one which is beveled outward and down at about a 45° angle, but thickened (or braced) rims are rather common (Figure 15). Rims normally thin somewhat below the lip, and thicken toward the shoulder. Rims are high and are straight to flared, with a constricted neck that usually blends evenly into the shoulder.

Shoulder: Generally rounded or flattened, but some smaller vessels have sharply angular shoulders.

Base-bottom: Apparently rounded, although one basal fragment (not presently in the collections) is said to have been flat (Strong, 1940, p. 373).

APPENDAGES: The 7 strap *handles* are welded to the vessel lip and riveted to the neck or shoulder. They are 20 to 42 mm high and 7 to 40 mm wide; cross sections are oval. Outlines are rectangular to hour-glass in shape. Unless some sherds have been lost, there were not 36 handles as Strong 1940, p. 373) states. There are 18 horizontally-applied triangular *lugs,* and two lugs set vertically on rims.

SPOUTS: Ten vessels have angular, spout-like extrusions on rims, created by pinching out the rim to interrupt the curvature of the orifice. Rim decorative elements often change at this point on the rim (*e.g.,* Plate 8*g*).

COMMENTS: Two elements at Biesterfeldt set this sample apart from other village sites in the Northern Plains, especially from those along the Missouri River: (*1*) The presence of a large number of linear check-stamped body sherds, similar to rare sherds from sites on the Missouri River near Bismarck; and (2) the practice of both impressing individual glass trade beads into the moist paste, and using strands of beads in a fashion analogous to the use of free cord for decorating rims.

COMPONENT CLASSES:

Cord-wrapped rod-impressed rims
Bead-impressed rims
Cord-impressed rims
Tool-impressed rims
Plain, smoothed rims
Plain, brushed rims
Pinched, plain rims
Example A
Example B

NOTE: The rim sherds in Plates 7 to 9 (except Plate 7*i*) are oriented so that the plane of the orifice is at a right angle to the camera lens.

Cord-wrapped Rod-impressed Rims
PLATE 7

SAMPLE: 115 rim sherds, representing 80 vessels (Table 1).

FORM: Fourteen rim forms (Figure 15) are represented in this class:

a–3	f–3	l–6
b–7	h–4	m–2
c–4	i–3	n–2
d–6	j–18	p–3
e–12	k–6	?–1

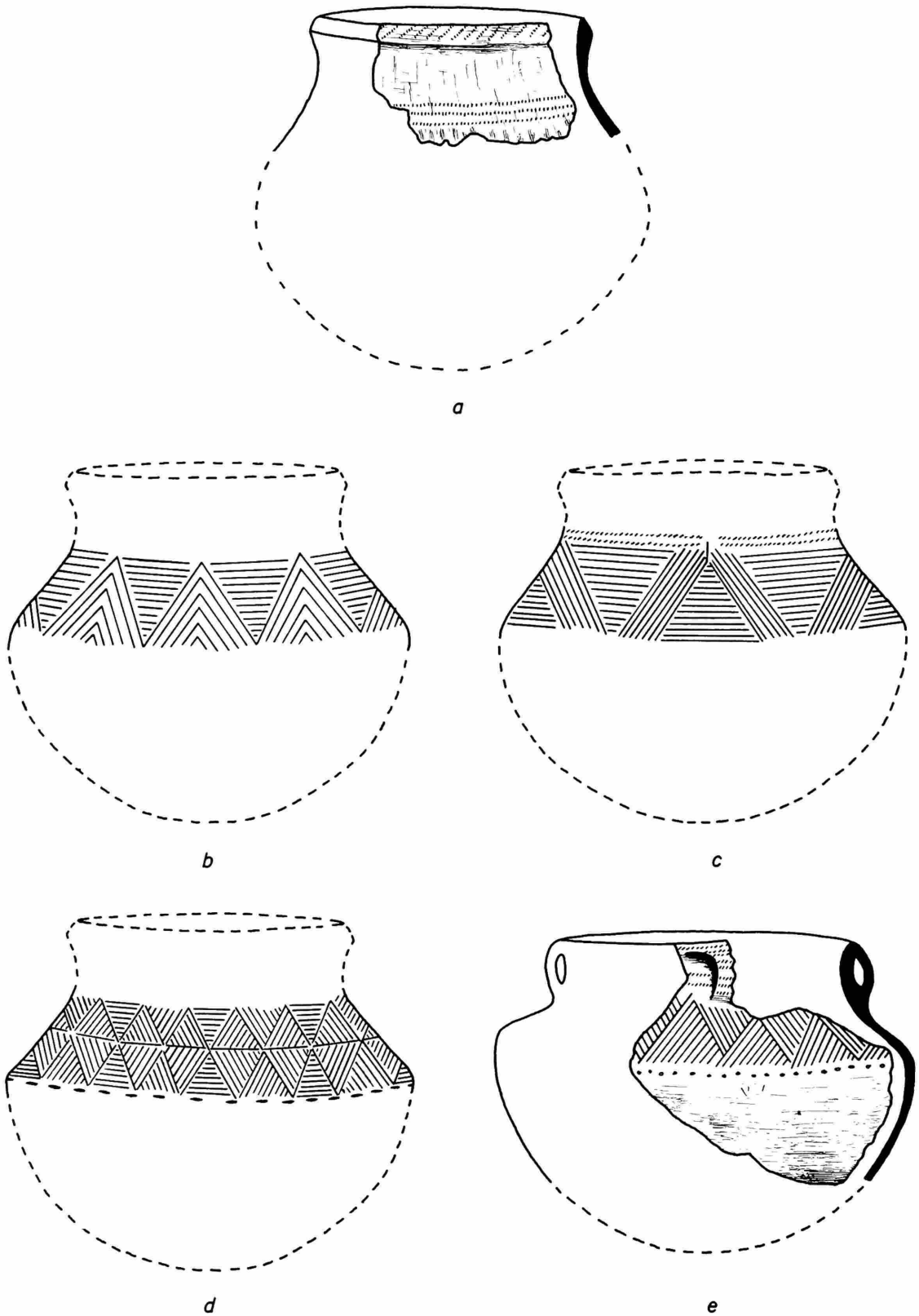

FIGURE 14.—Pottery shoulder patterns, schematically illustrated. *a*, Cord-wrapped rod impressions on vessel neck. *b*, Chevron-filled triangles with horizontally incised pendant triangles. *c*, Pattern similar to Pawnee examples. *d*, Complex pattern. *e*, Alternating triangle. Vessel outlines are hypothetical.

TABLE 2.—*Selected attributes of bead- and cord-impressed rim sherds*

	Vessel	No. of sherds	Rim form	Appendages		Neck		Decoration: Outer rim						Inner rim				Finger-nail imp.	Neck impressions			Cat. No.	Find spot
				Lug	Handle	Br.	Sm.	||	//	\\	Horiz. 2	Horiz. 3	Horiz. 4	//	Punct.	Tool imp.	2 Horiz. lines		1	2	3		
Bead	81	2	m			X			X			X						X				S-16A	Cache 1
	82	5	j	X			X				X								bead			S-182,209	House 36
	83	1	j				X			X										bead		S-174	House 11
	84	1	j				X			X												7993	Unknown
Cord-impressed	85	1	?			X				S												S-141	House 16
	86	1	j				X			S												S-199	House 36
	87	1	e				X			S											S	S-50	Cache 7
	88	1	l				X			S												"	"
	89	3	l			X				S												S-109	Cache 13
	90	1	c			X				S												S-96	Unknown
	91	1	g				X	S														S-91	Feat. 12
	92	1	j			X		S														S-133	Cache 15
	93	1	b			X		S					S								cwr	"	"
	94	1	j				X	S														S-38	Cache 4
	95	2	j				X	Z			Z											S-23	Feat. 2
	96	1	j			X		Z														S-36	Cache 3
	97	1	?				?	Z														S-26	"
	98	1	j				X	S														S-118	Cache 13
	99	1	e				X	S													S	S-109	"
	100	2	c	X			X	S				S										"	"
	101	1	e		X		X	Z												cwr		S-174	House 11
	102	1	n				X	Z														S-78	House 23
	103	1	l				X	Z														S-235	Unknown
	104	1	j			X		Z														No no.	"
	105	1	l			X			S													S-109	Cache 13
	106	1	o				X				Z											S-36	Cache 3
	107	1	c				X				S											S-66	House 4
	108	3	j				X				S										S	S-174	House 11
	109	1	e				X				S										S	S-163	House 21
	110	1	e		X		X				S								S			S-199	House 36
	111	5	j				X				S										S	S-182,209	"
	112	6	k		X	X					S											S-109,118	Cache 13
	113	1	m			X					Z			Z								S-116	House 16
	114	3	j				X				Z			Z								S-50	Cache 7
	115	1	k				X					S										S-26	Cache 3
	116	1	k	X			X					S									S	S-13	Trench 1
	117	1	c				X					S										S-183	House 36
	118	1	d				X					S										S-141	House 16
	119	2	j		X	X						S										S-84	Cache 11
	120	2	j			X						S										S-182	House 36
	121	1	l				X					Z										S-118	Cache 13
	122	3	e				X					Z									S	S-199,222	House 36
	123	1	n	X			X					Z			X						Z	S-141	House 16
	124	1	l				X					Z										"	"
	125	1	i		X		X					Z							Z			S-133	Cache 15
	126	3	k		X		X					Z										S-155	House 7
	127	1	j			X						Z										S-152	House 16
	128	1	j			X						Z										S-96	Unknown
	129	1	j			X						Z										7993	"
	130	1	j			X						Z										7993	"
	131	1	j			X						Z										No no.	"
	132	1	j	X		X						Z		Z								S-91	Feat 12
	133	1	h			X						Z				X						S-141	House 16
	134	1	j				X						Z	Z				X				S-109	Cache 13
	135	1	j				X					S		S								S-118	"
	136	1	j	X			X						S									S-199	House 36
	137	1	p				X						S									S-83	Cache 9
	138	1	l				X						Z	cwr								"	"
	139	1	e				X				Z						Z					S-96	Unknown

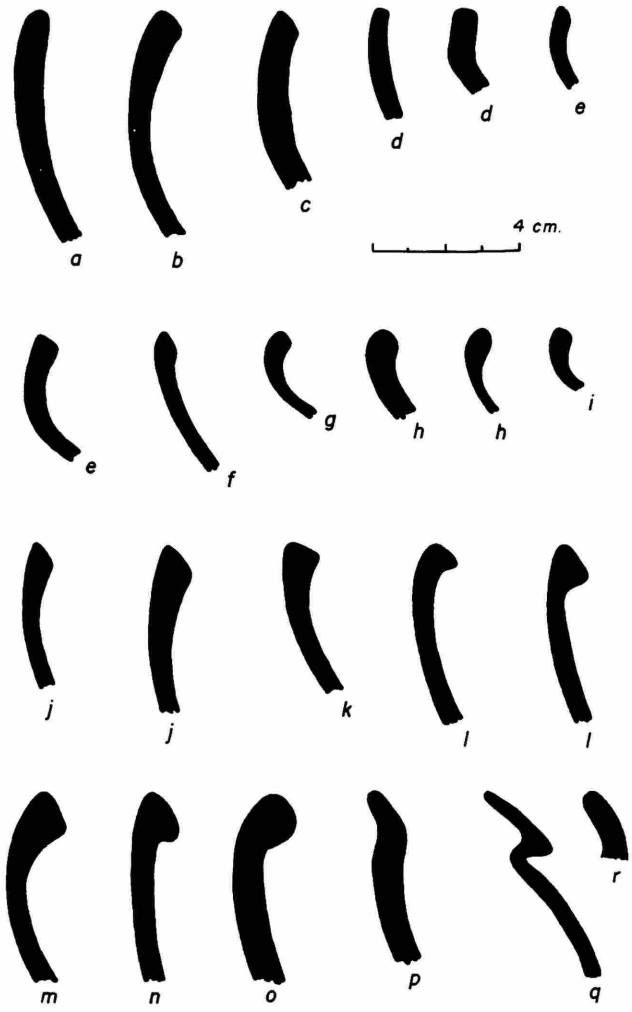

FIGURE 15.—Pottery rim profiles *a-r;* rim exteriors are to the right.

Rim thickness ranges from 5 to 13 mm; mean, 9 mm. Rim height, 10 to 35 mm; mean, 20 mm.

DECORATION:

Rim: Parallel vertical, oblique, or horizontal cord-wrapped rod impressions occur on the exterior rim; four rims have oblique cord-wrapped rod impressions on the inner rim. Horizontal and oblique impressions may alternate on some vessel rims, especially near spouts.

Neck: Two to four horizontal lines of cord-wrapped rod impressions occur on the lower rim or neck of seventeen vessels, superimposed over smoothed or brushed surfaces. Six rims are broken along an impression so that no more than one line remains.

Vertical fingernail impressions occur below the lip of one vessel with a wavy rim.

Other: Four vessels had inset glass trade beads in the lip or shoulder. An indeterminable number of vessels have incised shoulders.

APPENDAGES: One strap handle (now broken off) was on a vessel of this type, which extended from the lip to the shoulder. Horizontally-projecting lugs occur on seven vessels, and one rim has a lug set vertically on the rim.

SPOUTS: Present on rims of at least six different vessels.

PREVIOUS ILLUSTRATIONS: Strong, 1940, pl. 8*c-d, f.* Will and Hecker, 1944, pl. 17*c-d, f.* Wood, 1955, fig. 1*c-e.*

COMMENTS: Members of this class resemble examples of Stanley Braced Rim Ware except for the cord-wrapped rod impressions.

Bead-impressed Rims

PLATE 8*a, b*

SAMPLE: 9 rim sherds, representing 4 vessels (Table 2).

FORM: Three rims of form *j;* one rim of form *m.* Rim thickness ranges from 8 to 12 mm; mean, 10 mm. Rim height, 28 to 30 mm; mean, 30 mm.

DECORATION:

Rim: Parallel horizontal or oblique bead-impressed lines occur on the outer rim; inner rims are all plain. Horizontal and oblique impressions alternate on one vessel with a spout.

Neck: Two rims retain bead-impressed lines on the neck; vertical fingernail impressions occur below the lip of another vessel.

Other: Shoulder decorations, if present, are not detectable.

APPENDAGES: There is one small, horizontally-projecting lug.

SPOUT: One vessel (Plate 8*b*) has a spout, although this is not noted in Table 2.

PREVIOUS ILLUSTRATIONS: None.

COMMENTS: Same as those under Cord-wrapped rod-impressed rims. This rim treatment, as far as I am aware, is not duplicated on rims from any other Plains site.

Cord-impressed Rims

PLATE 8*c–j*

SAMPLE: 78 rim sherds, representing 55 vessels (Table 2.)

FORM: Fourteen rim forms (Figure 15) are represented in this class:

b–1	h–1	m–1
c–4	i–1	n–2
d–1	j–22	o–1
e–7	k–4	p–1
g–1	l–6	?–2

Rim thickness ranges from 5 to 13 mm; mean, 8 mm. Rim height, 10 to 36 mm; mean, 22 mm.

DECORATION:

Rim: Parallel horizontal, oblique, or vertical cord-impressed lines occur on the exterior rim. Nine rims are cord-impressed, cord-wrapped rod-impressed, or tool-impressed on the inner rim. Horizontal and oblique impressions alternate on some vessels with lugs or handles.

Cord impressions were made with 2-ply cords having an S- or a Z-twist.

One vessel, although classed with this group, is impressed with a fabric or mat (Vessel 113, Plate 8*a*).

Neck: Two to four horizontal lines of S-twisted cords (8 vessels); Z-twisted cords (2); or cord-wrapped rod impressions (2) encircle the necks of twelve vessels. Two other rims were broken along an S- and a Z-twist so that no more than one line remains.

Vertical fingernail impressions occur below the lip of one vessel.

Other: An indeterminable number of vessels had incised shoulders.

APPENDAGES: Six vessels each had lugs and strap handles. Both appendages are decorated by 3 to 10 horizontal or oblique cord impressions; one is plain.

SPOUTS: Only one cord-impressed vessel had a spout.

PREVIOUS ILLUSTRATIONS: Strong, 1940, pl. 8*a, b*. Will and Hecker, 1944, pl. 17*a, b*. Wood, 1955, fig. 2*a-e*, fig. 3*b*.

COMMENTS: Same as those under Cord-wrapped rod-impressed rims, except that some of these (*e.g.*, Plate 8*e*) are well within the range of the type Stanley Cord Impressed. At least five rim sherds, representing 4 vessels, can be so classified (Wood, 1955, p. 8).

Tool-impressed Rims

PLATE 9*a, b*

SAMPLE: 11 rim sherds, representing 8 vessels (Table 3).

FORM: Five rim forms (Figure 15) are represented in this class:

e–2	k–1	p–1
j–1	n–2	?–1

Rim thickness ranges from 5 to 11 mm; mean, 10 mm. Rim height, 15 to 32 mm; mean 25 mm.

DECORATION:

Rim: Parallel vertical, oblique, or horizontal rows of tool impressions occur on the outer rim. The impressions were produced by pointed instruments applied to the moist paste at about a 45° angle (punctates); and by pointed tools laid flat against the rim. There is one rim with three horizontal lines of cord-wrapped rod impressions on the inner rim.

Neck: One vessel has two horizontal lines of cord-wrapped rod impressions around the neck.

APPENDAGES: One punctated and cord-impressed rim (with two horizontal rows of Z-twisted cord) has a triangular, horizontal lug; one rim has part of a detached, tool-impressed lug.

SPOUT: One rim bears a spout.

PREVIOUS ILLUSTRATION: Wood, 1955, fig. 1*b*.

COMMENTS: Same as those under cord-wrapped rod-impressed rims, except that some of them (*e.g.*, Plate 9*b*) are classifiable as Stanley Tool Impressed.

Plain, Smoothed Rims

PLATE 9*c, d*

SAMPLE: 15 rim sherds, representing 15 vessels (Table 3).

FORM: Eight rim forms (Figure 15) are represented in this class.

a–1	e–3	i–1
b–1	f–2	j–1
d–5	h–1	

Rim thickness ranges from 5 to 12 mm; mean, 9 mm. Rim height, 12 to 24 mm; mean, 15 mm.

DECORATION:

Rim: Rims are plain, with smoothed surfaces.

Neck: One vessel each is encircled by two lines of Z- and S-twisted 2-ply cord.

Other: One rim has two fused, white trade beads set into the rim near part of a lug or handle.

APPENDAGES: One rim retains part of a vertical lug; another retains part of a lug or handle.

PREVIOUS ILLUSTRATION: None.

COMMENTS: None.

Plain, Brushed Rims

PLATE 9*e–i*

SAMPLE: 12 rim sherds, representing 10 vessels (Table 3).

FORM: Seven rim forms (Figure 15) are represented in this class.

a–3	e–1	o–2
b–1	i–1	p–1
c–1		

Rim thickness ranges from 7 to 13 mm; mean, 10 mm. Rim height, 14 to 34 mm; mean, 24 mm.

DECORATION: Rims are plain; the lower rim is brushed. One rim is pinched (wavy).

APPENDAGES: One rim bears a horizontally-projecting lug.

SPOUT: There is a spout behind the lug on one vessel.

PREVIOUS ILLUSTRATION: Wood, 1955, fig. 3*a, c*.

COMMENTS: Three of these vessels (Nos. 163–165, Plate 9*e, f*) resemble the type Talking Crow Brushed.

Pinched, Plain Rims

PLATE 9*j*

SAMPLE: 12 rim sherds, representing 8 vessels (Table 3).

FORM: Six rim forms (Figure 15) are represented in this class.

b–1	e–1	l–1
c–3	k–1	o–1

Rim thickness ranges from 7 to 12 mm; mean, 10 mm. Rim height, 18 to 22 mm; mean, 19 mm.

DECORATION: None, save for the modification of the rim by finger pinching, consisting of alternating indentations on the interior and exterior surfaces, resembling the treatment on Stanley Wavy Rim (Lehmer, 1954, pp. 43–44, pl. 12).

APPENDAGES: None.

SPOUT: None.

PREVIOUS ILLUSTRATION: None.

COMMENTS: Many of these rims are within the range of the type Stanley Wavy Rim.

TABLE 3.—*Selected attributes of miscellaneous rim sherds*

	Vessel	No. of sherds	Rim form	Appendages		Neck		Decoration: Outer rim				Decoration: Inner rim			Wavy rim	Spout	Neck impressions		Cat. No.	Find spot
				Lug	Handle	Br.	Sm.	II	//	\\	2 Horiz. lines	//	Punct.	3 Horiz. lines			1	2		
Tool-impressed	140	1	k			X			X				X						S-83	Cache 9
	141	1	n	X		X				X	X		X						S-91	Feat. 12
	142	1	p				X	X										cwr	S-109	Cache 13
	143	1	e				X	X			cwr					X			S-174	House 11
	144	1	n				X	X						Z					S-133	Cache 15
	145	1	e				X		X										S-209	House 36
	146	4	j				X		X			X							"	"
	147	1	?	X				X											7993	Unknown
Plain (smoothed)	148	1	h				X												S-23	Feat. 2
	149	1	e				X												S-50	Cache 7
	150	1	d				X											Z	"	"
	151	1	a				X												S-175	House 11
	152	1	d				X												S-141	House 16
	153	1	d	X			X												"	"
	154	1	b				X												S-133	Cache 15
	155	1	d				X												S-209	House 36
	156	1	e				X												S-218	Trenches 6-7
	157	1	j	X			X												7993	Unknown
	158	1	i				X											S	S-23, 116	Fe. 2, H. 16
	159	1	d				X												S-84	Cache 11
	160	1	e				X												S-139	Cache 16
	161	1	f				X												S-133	Cache 15
	162	1	f				X												S-199	House 36
Plain (brushed)	163	1	i	X		X										X			S-50	Cache 7
	164	3	a			X									X				S-114, 174	House 11
	165	1	a			X													S-118	Cache 13
	166	1	a			X													7993	Unknown
	167	1	c			X													S-23A	Feat. 2
	168	1	e			X													S-50	Cache 7
	169	1	o			X													S-174	House 11
	170	1	b			X													S-141	House 16
	171	1	o	X		X													S-188	House 36
	172	1	p			X													No no	Unknown
Pinched plain	173	1	c				X								X				S-23	Feat. 2
	174	1	e				X								X				S-84	Cache 11
	175	1	c				X								X				S-133	Cache 15
	176	2	c				X								X				"	"
	177	1	b				X								X				S-141	House 16
	178	3	l			X									X				S-126	"
	179	2	o				X								X				S-209	House 36
	180	1	k			X									X				S-13	Trench 1
Ex. A	181	1	q				X												S-67	Cache 4
	182	1	q				X		X										S-127	House 16
B	183	1	r						X										S-174	House 11

Example A

PLATE 9*k*, *l*

SAMPLE: 2 rim sherds, representing 2 vessels (Table 3).

PASTE: Same as under "General Characteristics," but somewhat finer than average.

SURFACE FINISH: The rim is smoothed, and the upper shoulder is vertically simple-stamped.

FORM:

Lip: Not present on either sherd.

Rim: Collared, of rim form *q*. Height, indeterminable; thickness, 5 mm.

Shoulder: Rounded.

DECORATION:

Rim: Parallel, oblique incised lines.

APPENDAGES: None.

SPOUT: None.

PREVIOUS ILLUSTRATION: None.

COMMENTS: These two rims are the most atypical at the site, comprising the only two collared examples. They are probably the ones with "overhanging collars" which Strong (1940, p. 374) regarded as probably intrusive. They cannot be duplicated along the Missouri River in North Dakota—nor do they resemble Minnesota types.

Example B

PLATE 9*m*

SAMPLE: 1 rim sherd, representing a single vessel (Table 3).

PASTE: Same as under "General Characteristics," but somewhat finer than average.

SURFACE FINISH: The upper rim is smoothed.

FORM:

Rim: Only the upper rim remains; it appears to be from a vessel with an S-shaped rim (form *r*). Thickness, 9 mm.

DECORATION:

Rim: Oblique cord-impressed lines made with a 2-ply cord with an S-twist.

APPENDAGES: None.

SPOUT: None.

PREVIOUS ILLUSTRATION: None.

COMMENTS: This rim most closely resembles the type "Le Beau S-Rim," found along the Missouri River in central North Dakota (Wood, 1967, p. 67), but the paste suggests that it is indigenous to the Biesterfeldt site.

TABLE 4.—*Body sherd frequencies*

	Simple Stamped	Linear Check-stamps	Smoothed	Decorated	Brushed	Dentate-stamped	Indeter-minable	Total
Trenches 1-5	15	1	1	1				18
Trench 2	-	2						2
Trenches 6-7	30		5	1	2			38
House 4	8	1	1		3	-		13
House 5	1	2	1			-		4
House 7	72	3	8	1	11	-	2	97
House 11	138	3	18	1	15	-	7	182
House 16	339	5	143	1	73	-	36	597
House 21	41	9	1			-	3	54
House 23	53	-	6	2	2	-		63
House 36	319	13	46	11	25		12	426
Cache 1	34	-	13	5	1			53
Cache 3	159	4	22	1	17	-	6	209
Cache 4	37	14		2	8	-		61
Cache 5	2	1	2					5
Cache 7	52	1	15	3	3			74
Cache 9	24	-	6		6		1	37
Cache 11	76	4	16	2	8		3	109
Cache 13	235	32	19	19	26	-	7	338
Cache 15	83	-	20	3	10	-	10	126
Cache 18	2	-				-	-	2
Cache 20	27	2	1		4	-	8	42
Feature 2	45	3	16	3	8		-	75
Feature 8	2	-						2
Feature 12	7	3						10
Feature 16	16	-			3		1	20
Feature 17	18	1	4	1	2		1	27
Miscellaneous	287	3	39	6	56	1	29	421
Total	2122	107	403	63	283	1	126	3105
Percentage	68.3	3.4	13.0	2.0	9.1	0.1	4.1	100.0

Chipped Stone

Arrowpoints

(5 specimens)

Only five of the nine arrowpoints recorded in the Strong field catalog are now in the collections. Each point available was made by removing small pressure flakes from both faces of flakes of Knife River chalcedony; the final products have lenticular or biconvex cross sections. The form and composition of the four missing points is not known, beyond the fact that one of them (S–124) is recorded in the field catalog as a "white triangle." A sketch in the field notes shows that it was a triangular, unnotched point, of about the proportions of the specimen illustrated in Plate 11*c*.

Group 1. Triangular, unnotched points (3 specimens—one missing):

The larger of the two remaining points, measuring 26 by 16 by 3 mm, has a gently convex base, gently convex blade edges, and weighs 1.2 grams (S–65, Plate 11*d*). The smaller one has a nearly straight base and straight blade edges. Dimensions, 17 by 14 by 2 mm; weight, 0.5 gram (S–212, Plate 11*c*).

Group 2. Triangular, notched point (1 specimen):

This point has a concave base, gently convex blade edges, and measures 21 by 13 by 3 mm; weight is 0.6 gram. Blade edges carry small, U-shaped notches (S–115, Plate 11*e*).

Group 3. Triangular, corner-notched points (2 specimens):

One of these points appears to have a purposefully blunted tip; the tip of the other point is missing. Bases of both are gently convex, with straight to convex blade edges. The notches enter the blade so that the tangs merge with the side of the base. The point with the blunted tip measures 20 by 19 by 4 mm; weight, 1.6 grams (S–239, Plate 11*a*). The broken point measures 34 (estimated) by 18 by 4 mm; estimated original weight, 2.0 grams (S–108, Plate 11*b*).

S–65: House 4
S–124: House 16
S–212: House 36
S–115: House 16 (2 specimens; 1 missing)
S–108: Cache 13
S–239: Palisade Trench 6
S–124: House 16 (lost in cleaning)
S–177: House 21 (missing)

End Scrapers

(8 specimens)

All but one of these implements recovered are in the collections. Each is made from a flake of Knife River

chalcedony, and each has a steep working edge on the end opposite the bulb of percussion. All are unifacially flaked. They are plano-convex in longitudinal section, but cross sections are either triangular or truncated triangular. One of them is flaked on the convex surface, but the rest are worked only along the edges. Size ranges from 20 by 15 by 4 mm to as much as 38 by 21 by 5 mm, with a few up to 8 mm thick (Plate 11 *f-m*).

S–15: Cache 1
S–43: Cache 4
S–48: Cache 7 (2 specimens; 1 missing)
S–57: Palisade Trench 2
S–97: House 23
S–210: House 36
S–219: Palisade Trench 7
S–223: House 23

Rectangular Chipped Stone Items

(5 specimens)

These bifacially flaked stone items of Knife River chalcedony are variously identified in the Strong field catalog as "rectangular knives," "scrapers," and as "aboriginal gunflints," although they rarely show battering suggesting the latter function. Sections are lenticular or biconvex, with straight to gently convex edges. Size ranges from 28 by 19 by 7 mm to 32 by 24 by 9 mm (Plate 11*n–q*).

S–120: Cache 13
S–157: House 16
S–208: House 23
S–210: House 36 (2 specimens)

Bifaces

(7 specimens)

One biface, the tip of what may be a well made knife or dart point, is composed of brown jasper. Present dimensions, 48 by 33 by 7 mm (S–59, Plate 12*a*).

Three fragments of tools of Knife River chalcedony may be from implements sometimes designated "narrow knives," which were designed as blades for slotted bone knife handles (S–16, S–49, and S–145). Workmanship is generally poor (Plate 12*b, c*).

One roughly flaked item of Knife River chalcedony, superficially resembling a small chipped stone celt, has a gently convex base and converging, convex edges and a blunt tip. The base is ground smooth; the blade edges are steeply flaked (S–72, Plate 12*h*).

Two other bifaces, also of Knife River chalcedony, may be rough shaped knives. One fragment, measuring 44 by 36 by 10 mm (S–49, Plate 12*i*), is roughly elliptical in outline. The other item, measuring 58 by 31 by 12 mm (Plate 12*j*), has heavily ground edges.

S–59: Palisade Trench 2
S–16: Cache 1
S–145: House 16
S–49: Cache 7
S–72: House 7
S–49: Cache 7
S–122: House 11

Modified Flakes

(9 specimens)

These nine specimens comprise a very small part of the total number of flakes recovered from the site. The reasons for retaining them are not specified in the notes, so that we have no way to determine how representative they are of the original material.

Eight random flakes and one ribbon flake are modified by use retouch along one edge. They include three flakes of Knife River chalcedony (Plate 12*g*); two of a local mottled gray chert (Plate 12*e,f*); one of a local brown chert; one of agate; one of light buff quartzite or silicified sediment; and one of what appears to be pink quartz (Plate 12*d*).

S–80: House 23
S–144: House 16
S–211: House 36
} Knife River chalcedony

S–22A: Feature 2: gray chert
S–121: House 11: gray chert ribbon flake
S–48: Cache 7: brown chert
S–181: House 36: 2 specimens, agate and quartzite
S–58: Palisade Trench 2: pink quartz

Ground Stone

Strong comments at some length in the field notes on the large number of pebbles and cobbles of different sizes at Biesterfeldt. Many of these are obviously streamrolled; others are as clearly from glacial deposits, having one or more facets with small grooves and scratches. Stones from both sources were usually slightly worked or used, he notes, as grinding or milling stones, manos, and hammerstones. Such artifacts were in all of the houses, with the milling stones near the fireplace and center posts, and with many plain cobbles around the house rim. Stones were often used to brace house posts, and nearly every house contained several grooved mauls of different sizes. Most of the stones unearthed showed some trace of usage, and the volume of such stone led Strong to comment that their abundance seemed to be a char-

acteristic of the site. There were also a number of decomposed stones he felt were probably a source of pottery temper, and he noted a lump of clay with coarse stone temper near the edge of one of the houses.

Grooved Mauls

(11 specimens retained)

Oval granite pebbles ranging in size from stones measuring 72 by 37 by 30 mm to as much as 128 by 111 by 83 mm were grooved for use as mauls. The pecked grooves, varying in depth from 1 to 5 mm, and 12 to 30 mm wide, tend to be offset toward one end, opposite the principal battering end. This end is often broad and flattened from use as a battering tool, with only minimal battering on the opposing end. Other than the grooves and battering the stones are not altered.

Three of them are full-grooved (S–5 and S–1, Plate 13*d,g*), but five specimens have grooves which encircle all but a small fraction of the circumference of the stone, so that they are technically more than "three-quarter" grooved (S–70 and S–138, Plate 13*f,h*). Three specimens are fragmentary.

Full-grooved:
- S–1: House 23
- S–5: House 23
- S–93: House 7

Partial groove:
- S–2: House 23
- S–70: House 7
- S–119: Cache 13
- S–138: House 7
- S–176: House 21

Fragmentary:
- S–14: Cache 1
- S–20: Feature 2
- S–70: House 7

Pitted Hammers

(3 specimens retained)

Two pebbles of granite, and one of gray siltstone, are battered on the ends and on high points on the edges. One granite specimen, measuring 72 by 65 by 49 mm, has two small depressions pecked into the sides (S–3, Plate 13*c*). The other and larger granite hammer (S–69) has a single, shallow pit pecked in one side. This implement also has a partial groove near its midpoint: it measures 92 by 78 by 57 mm.

The gray siltstone hammer is battered for most of its circumference. In addition to a shallow pit in one side, there are two shallow, pecked grooves along one edge. Traces of red stain on one end and on one face suggest it was used to crush pigment. Dimensions, 90 by 76 by 43 mm (S–85, Plate 13*b*).

- S–3: House 7
- S–69: House 23
- S–85: Cache 11

Pebble Hammers

(4 specimens)

These four river pebbles, of siltstone and granite, are unshaped except for battering. Three oval implements are battered on the ends and a few high points on the sides; they are 104 to 120 mm long (S–41, Plate 13*e*). The fourth hammer (S–11, Plate 13*a*) is circular in outline and oval in cross section; it is battered on the edges for the circumference of the stone. Dimensions: 111 by 95 by 46 mm.

- S–11: Palisade Trench 1
- S–41: Cache 4
- S–233: Cache 13
- S–224: Cache 18

Shaft Smoother

(1 specimen)

The convex end of a fine-grained, buff sandstone tool has a shallow, U-shaped groove along one flat side; the opposing side is convex. The specimen was probably originally a boat-shaped block of stone, perhaps one of a pair. Present dimensions: 30 by 38 by 20 mm (S–64, Plate 14*a*).

- S–64: House 4

Sandstone Abraders

(3 specimens)

These pieces of fine-grained, buff sandstone have smoothed surfaces and edges. One nearly complete rectangular piece, measuring 79 by 67 by 14 mm, is lacking one corner (S–82, Plate 14*b*). The other two items are small pieces broken from larger objects. One of these (S–47) is the midsection of an elongated block of smoothed stone; dimensions, 40 by 37 by 17 mm (S–47, Plate 14*c*). These items may have been whetstones.

- S–45: Cache 5
- S–47: Cache 7
- S–82: Cache 7

Grooved (?) Abrader

(1 specimen)

A small piece of fine-grained, buff sandstone measuring 53 by 54 by 22 mm has a shallow, U-shaped

groove on one flat surface. Weathering on the stone precludes identifying this groove as either natural or artificial (S–143, Plate 14*d*).
S–143: House 16

Gaming (?) Stone
(1 specimen)

A flat piece of river-rolled chert appears to have had the edges ground down to provide a roughly circular but flat stone disk. Dimensions, 52 by 49 by 10 mm (S–22, Plate 14*g*).
S–22: Feature 2

Elbow Catlinite Pipe
(1 specimen)

Among the field photographs is one of a catlinite elbow pipe, approximately 55 mm long, purported to have been found on the site by an unnamed local collector (Plate 15*a*). This is probably the object which prompted Strong's (1940, p. 375) comment that there were elbow catlinite pipes at the site, but that they were rare.

Catlinite Pipe
(1 specimen)

Part of the bowl of a pipe, seemingly of cylindrical form, with a wall 2 mm thick, has a thin cake on the inner surface (S–201).
S–10: House 36

Catlinite Items
(2 specimens)

Two pieces of catlinite are shaped, but neither of them is an identifiable artifact. One broken item, having one straight edge and smoothed surfaces, is 3 mm thick (S–149). The other piece (S–214) is a small flake of waste catlinite with cutting or sawing along one edge.
S–149: House 16
S–214: House 36

Pigments
(6 pieces)

There are six small, dense pieces of clay, the largest of which is 65 mm in diameter; the smallest, 21 mm. They may be pigments for an off-white paint.
S–9: House 23
S–21: Feature 2
S–44: Cache 4
S–71: House 7 (2 specimens)
S–170: House 21

River Pebbles
(3 specimens)

Neither of the following stones are identifiable artifacts, but they may have been carried to the site for some purpose. They are river-rolled chert pebbles, two (S–12, S–24) of which are of a size and shape often identified as "polishing stones" (S–24, Plate 14*f*). One of them (accession number 8029) is of red jasper and may have been selected because of its zoomorphic form (8029, Plate 14*e*).
S–12: Palisade Trench 1
S–24: Cache 3
8029: Site general

Glacially Striated Stones
(2 specimens)

Two pieces of granite (S–40, S–41), identified in the Strong field catalog as "rubbing stones," carry surfaces which may have resulted from use as hand stones, but the wear is not distinctive enough to so identify them. The modification which probably prompted their above identification consists of faceted surfaces carrying deep, parallel striations resulting from glacial action. One such stone, not now in the collections, is illustrated from a field photograph by Strong (Plate 15*b*)

Milling Stones

Houses and other features contained a large number of stones with a gently concave, ground surface. None of these are now in the collections, but two are illustrated from a field photograph by Strong (Plate 15*c,d*).

Manos

Numerous stones, not now in the collections, appear from field photographs to be manos. They are not illustrated.

Pitted Field Stone

One stone, again not in the collections, is illustrated from a field photograph by Strong (Plate 15*e*). It is roughly rectangular, and about 300 mm wide. One flat surface bears several shallow pits.

Worked Bone

Scapula Hoes
(9 specimens)

These digging implements are fashioned from bison scapulae; all are fragmentary. The most nearly complete tool (S–61, Plate 16*c*) is probably representative

of the other specimens. The articular end is retained, but it has been reduced on this and other tools so that the end may be nearly rectangular (S–135 and S–226, Plate 16*d,e*). The spine and posterior border were removed by some heavy metal tool (perhaps a hatchet) which left prominent marks, although their edges are ground nearly smooth on some specimens. There is occasional notching along the edges near the mid-blade. The bit was sharpened by grinding the blade end on the side bearing the spine. Seven of these implements carry Strong field catalog numbers; one fragment bears Biesterfeldt site accession number 8002; and one blade (lacking the glenoid) is unnumbered, although it has been modified by some metal tool.

S–10: House 23
S–61: Palisade Trench 2
S–135: Cache 15
S–167: Feature 17
S–171: House 16
S–197: Cache 13
S–226: Palisade Trench 7
8002: Site general
One unnumbered specimen

Squash Knife
(1 specimen)

A nearly rectangular segment of bone cut from the thin part of a scapula, probably of bison, has one convex margin ground to a sharp edge. Dimensions: 133 by 71 by 5 mm (S–87A, Plate 16*a*).

S–87A: Cache 11

Bison Humerus Abrader
(1 specimen)

The broad cap on the proximal end of a bison humerus was removed, and the cancellous tissue on the side opposite the articulating surface was smoothed to provide a hide grainer or thinner. Edges were also smoothed. Dimensions: 90 by 64 by 43 mm (S–231, Plate 16*b*).

S–231: Cache 13

Bone Scoop
(1 specimen)

A segment of the wall of a large long bone, probably of bison, was shaped into a tool by fashioning a beveled, somewhat dull cutting or working edge on one end, and by trimming and smoothing the edges. Surfaces are lightly polished. The end opposing the working edge is broken or was unfinished. Dimensions, 265 by 52 by 8 mm (S–28, Plate 17*a*).

S–28: Cache 3

Polisher
(1 specimen)

The designation given this implement is suggested by the very blunt but highly polished tip on a short segment of split bison rib. Length was originally more than 92 mm (S–52, Plate 17*b*).

S–52: Cache 7

Shaft Wrenches
(4 specimens)

These implements are made from ribs of animals large enough to be bison; all of them are broken. Three of them are from tools having had at least two perforations. The edges of holes on two specimens are beveled in such a way that a pencil, inserted in the holes and inclined along the long axis, lies flush on the beveled edges on opposing sides of the hole. Lengths are indeterminable, but the largest fragment is from a tool originally more than 107 mm long. The edges of each specimen are ground down so the tool edges are parallel. One implement (S–227) is embellished (S–227 and S–51, Plate 17*c,d*).

S–51: Cache 7 (2 specimens)
S–74: House 7
S–227: Palisade Trench 7

Slotted Knife Handles
(11 specimens)

These implements are made from large ribs, probably of bison, or from spines of bison thoracic vertebrae. The seven specimens of rib are fragments and consist of rib sections as much as 212 mm long, into one side of which is cut a narrow slot near one end 105 to 148 mm long. The side of the rib was first modified by trimming it down to the cancellous tissue by the use of a metal tool, then excavating a slot 1 to 2 mm wide into the cancellous tissue. None of them is embellished, although a few have shallow cuts perpendicular to the long axis of the bone, perhaps butchering marks (S–140, Plate 17*f*).

Four of these tools, two of which are nearly complete, are of vertebral spines. The proximal end of the bone, severed from the vertebrae above the body, served as the handle. The knife slot, prepared in the same way as those made in ribs, was in the posterior margin of the bone. Lengths, 201 to 336 mm; the slot was 1 to 2 mm wide and 165 to 180 mm long. The lengths of the slots are indicated by the dashes to the right of the illustrated specimens (S–103, Plate 17*e*).

S–34: Cache 3
S–55: Cache 7

S–131: Cache 5 (2 specimens)
S–140: House 16 (2 specimens)
S–86: Cache 11
S–103: House 23
S–168: Feature 17 (2 specimens)

Serrated Fleshers
(7 specimens)

Six of the seven elk cannon bone fleshers in the Strong field catalog are present. Although such implements often retain the ankle bones as part of the handle, the only bone remaining in articulation was a tarsal which was fused or ankylosed to the cannon bone (S–35). The center of the shaft was so cut that it formed a beveled, wedge-like cutting edge, the blade of which was serrated. The proximal end of the five specimens retaining this part of the bone was reduced in diameter on the shaft below the articular swelling by chopping with some metal tool, perhaps a hatchet. The shafts of the bone are often polished, including those chopped areas near the articular end (S–110, S–134, and S–35, Plate 17 *g–i*).

S–17: Cache 1
S–18: House 7
S–35: Cache 3
S–98: House 23
S–110: Cache 13
S–129: House 11 (missing)
S–134: Cache 15

Bone Bracelet
(1 specimen)

About half of this specimen is gone, if we assume that it was designed to be worn on the wrist. It was made from a long, rectangular piece of shaped bone now measuring 67 by 34 by 3 mm. Two small holes pierce the intact end, and surfaces and edges are evenly smoothed. Shallow engraved lines and conical pits provide embellishment on the convex surface (S–53, Plate 18*a*).

S–53: Cache 7

Fox Mandible Pendant
(1 specimen)

The left mandible of a Swift Fox (*Vulpes velox*) was pierced through the thin-walled part of the ramus for suspension. The bone is highly polished, and 77 mm long (S–27, Plate 18*b*).

S–27: Cache 3

Bevel-tipped Tool
(1 specimen)

This small tool was made from the wall of a long bone of some animal larger than a deer. The end remaining consists of a rectangular plate of bone with smooth and polished surfaces and edges, the cancellous tissue having been all but obliterated. The beveled, nearly straight cutting edge bears light striations. Present dimensions: 49 by 12 by 3 mm (S–87, Plate 18*c*).

S–87: Cache 11

Bone Pendant
(1 specimen)

A thin, oval plate of bone has a small perforation near one edge. Surfaces and edges are evenly smoothed, and the convex face is lightly engraved with parallel lines. Dimensions: 41 by 32 by 1 mm. It is identified in the Strong field catalog as of turtle shell, but its size and conformation suggest that it was cut from the blade of a scapula from an animal about the size of a deer (S–166, Plate 18*d*).

S–166: Feature 17

Shaped Bone Item
(1 specimen)

One end of this item, made from part of the wall of a rather heavy long bone (perhaps bison), is gone. The end remaining has been cut nearly straight across, leaving in place a small bony prominence which has been largely broken away. The item is identified in the Strong field catalog as a "pottery marking tool." Surfaces are smooth and polished, most evidence of the cancellous tissue having been removed. Dimensions, 79 by 17 by 7 mm (S–196, Plate 18*e*).

S–196: Cache 13

Spatulate
(1 specimen)

This badly burned and fragmented item is cut from the wall of a mammal bone large enough to be from bison or elk. The item is part of a nearly parallel-sided bone tool with a plano-convex cross section. The straight edges taper gently toward one end. Surfaces and edges are smooth and polished, the cancellous tissue being all but obliterated on the concave surface. Present dimensions: 55 by 25 by 5 mm (S–150, Plate 18*f*).

S–150: House 16

Bone Beads
(2 specimens)

Both beads are cut from the shafts of long bones about 7 mm in diameter by first sawing around the shaft, then snapping off the articulating ends. The shorter specimen, 51 mm long, is polished and lightly burned; it may be a bird bone (S–215, Plate 18*g*). The other bead, 55 mm long, was cut from a bone about the size and proportion of a raccoon tibia, although the lack of landmarks on the bone precludes identification (S–203, Plate 18*h*).

S–203: House 36
S–215: House 36

Bone Whistle
(1 specimen)

The tibio-tarsus of a large bird (perhaps Whooping Crane, *Grus americana*) was made into a whistle by cutting a V-shaped notch in one side of the shaft near the distal end of the bone, and by making an opening in the proximal end. One end of the whistle is missing. Present length, 199 mm (S–101, Plate 18*i*).

S–101: House 23

Fish Bone Artifacts
(2 specimens)

Two elements registered in the Strong field catalog are missing. One of them (S–88) is logged as a "drilled fish (?) bone," the other (S–99) as a "bone awl? (catfish spine)."

S–88: Cache 11
S–99: House 23

Needle (?)
(1 specimen)

Strong refers to a needle tip in the field notes, but it is not so identified in the field catalog, and it is not now in the collections.

Miscellaneous Cut Bone Fragments
(13 pieces)

All of these items are fragmentary tools, either made of bison thoracic vertebrae spines or from ribs. Some of them are probably now-unidentifiable parts of shaft wrenches or slotted bone knife handles. Several pieces are cut square on ends, and the ends are excavated; these may be the items Strong (1940, p. 375) refers to as "rib end-scraper handles."

S–29: Cache 3
S–54: Cache 7
S–75: House 7
S–89: Cache 11
S–92: Feature 12
S–111: Cache 13
S–128: House 16
S–136: Cache 15 (3 specimens)
S–156: House 7
S–194: Cache 1 (2 specimens)

Worked Shell

Shell Scrapers
(51 specimens)

Heavy fresh-water mollusk shells are common scraping implements, the shell having been used so that the posterior segment of the shell, and the dorsal part of the shell behind the umbo, formed the working edge. Not all of the shells reveal scraping edges, but this part of the shell is lacking on *every* shell in the collection. Some of the shells are relatively complete (S–154 and 7772, Plate 14 *h, i*), but others (S–217 and 232, Plate 14*j*) have been worn down so that scarcely more than the umbo remains. Margins of the shell between the umbo and the posterior edge, or the edges around the umbo, are usually smoothly worn—although some are "flaked" in such a manner that they may also have been used as a rough scraping tool.

S–62:	Palisade Trench 4	2 specimens
S–117:	House 11	1 specimen
S–154:	Cache 20	1 specimen
S–185:	House 36	1 specimen
S–204:	House 36	2 specimens
S–217:	House 36	3 specimens
S–221:	Palisade Trench 6	1 specimen
S–232:	Cache 13	1 specimen
Other:	Site general	39 specimens

Trade Goods

Glass Seed Beads
(1 specimen)

Only one bead was recovered that was not inset into pottery as decoration. It is of blue translucent glass which, although patinated, is bright blue when moistened. Length and diameter, 3 mm (S–132, Plate 19*a*). Beads were also inset into at least seven rim sherds from the site, some of which are white in color (S–118A, S–159, S–230, Plate 7*b, c*). Most of these beads are now missing, but their molds suggest they were of the same size as the blue one illustrated.

S–132: Cache 5
S–118A: Cache 13 (2 rim sherds)
S–159: House 16 (1 rim sherd)
S–230: Cache 13

Glass
(1 fragment)

This small piece of glass is 4.2 mm (about 3/16 inch) thick. If it was originally a mirror, any trace of silvering has vanished. Paul Perrot and Kenneth Wilson (Corning Museum of Glass) have examined the piece and it is their impression that it may very well be later than the major occupation of the site. If it is window glass it is rather unlikely that such a heavy material occurred as early as 1790. Since the sample is from the fill of Cache 13, they suggest it may be a very early example for the Western Hemisphere. Judging from its surface there is no question that the piece is old.
S–234: Cache 13

Teacup Handle
(1 item)

Arnold R. Pilling has examined this specimen (S–19, Plate 19*b*) and offers the following observations: it is an earthenware, with the moulded decoration suggesting a date from the 1870s to 1900. He knows of no ironstone teacup handles as early as 1850, with no real evidence of them before the 1870s. From his information, the common cup had no handle as late as 1840. The cream paste means that it was probably made in the United States—and is probably not an Army issue. In view of Pilling's comments, there is little doubt that the specimen is intrusive.
S–19: Feature 2

Brass Trigger Guard Pendant
(1 specimen)

This is the forepart of a brass trigger guard, or finial, of an unidentified early firearm, from which the guard itself was removed. The hole in the specimen was not in the guard in its original form, but was placed there aboriginally (S–42, Plate 19*c*). The specimen is identified as a pendant since the field notes specify that a "skin knot" was tied in this hole when it was discovered, although it has since been lost. Carlyle S. Smith has informed me that the pointed end of the item was originally stamped with cross hatches representing a pineapple, but these have been ground off.
S–42: Cache 4

Brass Spring
(1 specimen)

A piece of brass spring, about 3 mm in diameter, has about 48 coils to the inch (compressed). It is now about 46 mm long (S–33, Plate 19*h*).
S–33: Cache 3

Brass Rod
(1 specimen)

This small piece of brass, rectangular in cross section, may be raw material or is part of some larger item. Both ends were broken by metal fatigue induced by repeated bending. Dimensions: 35 by 6 by 3 mm (S–180, Plate 19*d*).
S–180: House 36

Brass Bangle
(1 specimen)

A small piece of rolled brass, probably a bangle, carries Biesterfeldt site accession number 8035, but has no Strong field catalog number. One "copper dangler" is recorded in the field catalog under number S–193 as "from the base of the dirt heap of Cache 1, so was probably just below the sod line." Whether this item is from Strong's work or not is unknown (8035, Plate 19*g*).
8035: Unknown

Shaped Brass Item
(1 specimen)

This small piece of brass, in the shape of a truncated triangle, measures 17 by 18 by 0.5 mm; it has evenly smoothed edges and corners (S–76, Plate 19*k*).
S–76: House 7

Brass and Copper Arrowpoints
(2 specimens)

The brass point has a triangular blade and a stubby rectangular stem with a small hole near the base; it measures 21 by 6 by 0.5 mm (S–94, Plate 19*j*). The copper point is less carefully made but has essentially the same form; dimensions, 22 by 8 by 1 mm (S–6, Plate 19*i*).
Copper: S–6: House 23
Brass: S–94: House 7

Brass and Copper Scrap
(6 fragments)

Four pieces of brass and two small pieces of copper are probably waste or scrap elements, or pieces from now-unidentifiable objects. One of the brass elements

(S–206, Plate 19*l*) has parallel lines rolled into one side. This item and some of the others were chiseled from the parent material (S–180, Plate 19 *m*).

Copper: S–8: House 23
S–56: Cache 7
Brass: S–180: House 36 (3 items)
S–206: House 11

Copper Beads
(2 specimens)

A rectangular strip of copper 37 mm long is rolled into a tubular bead averaging 6 mm in diameter (S–147, Plate 19*e*). Another object (S–172) is listed in the Strong field catalog as a "copper bead" but is now missing.

S–147: House 16
S–172: House 11

Iron or Steel Arrowpoints
(6 specimens)

Five of the six specimens of this class registered in the Strong field catalog are present or are identifiable in the collections. Each of them carry Biesterfeldt site accession numbers (8033, 8037, 8038), but only three of the five have Strong field catalog numbers (S–79, 148, 184). Each point has a stubby to elongated triangular blade, and three of them retain a small square stem. Dimensions: from 25 by 14 by 2 mm to 38 by 19 by 2 mm (Plate 20*a–e*).

S–79: House 23
S–112: House 11 (2 specimens)
S–148: House 16 (2 specimens)
S–184: House 36

Iron or Steel Lance Tip
(1 specimen)

This fragmentary item has a symmetrical, elongated lanceolate blade with gently converging straight edges, and tapers rather abruptly to the tip. One shoulder of this formerly stemmed implement remains. Present dimensions: 93 by 30 by 2 mm (S–32, Plate 20*k*).

S–32: Cache 3

Iron or Steel and Brass Knife Blades
(4 specimens)

Three fragmentary iron or steel blades are either obviously or probably part of manufactured knife blades. One of them (S–205, Plate 20*h*) has a notch in the blade edge of a size and shape sometimes found near the handle on older butcher knives. One of them (S–213, Plate 20*g*) may be part of a table knife. Some or all of these implements may have been inserted in slotted bone knife handles (S–213, 205, 179, Plate 20*g–i*). One object of brass may also have functioned as a blade in such a handle. It is a piece of brass having extremely fine saw teeth along one convex edge. Near the small end of the item the saw teeth are M-cut, but other teeth are disfigured by wear. Dimensions: 68 by 20 by 1 mm (S–146, Plate 20*j*).

Iron or steel:
S–179: House 36
S–205: House 11
S–213: House 36
Brass:
S–146: House 16

Iron or Steel "Ring"
(1 specimen)

This strip of metal, 8 mm wide and about 1 mm thick, is part of what appears to be a ring or band about 20 mm in diameter. Both ends are broken. Provenience is uncertain (8037, Plate 20*f*).

8037: Site general

Iron or Steel Scrap
(15 fragments)

These small pieces of badly oxidized metal may be fragments of larger items, although some of them were chiseled out of the parent material. Six of them carry Biesterfeldt site accession numbers 8037 and 8038, but Strong field catalog numbers, if once present, are obscured or obliterated. Three pieces of metal, harder and less oxidized than the others, suggest they are of cast iron, although their thinness (1–2 mm) does not support this identification.

S–8: House 23 (3 pieces)
S–17A: Cache 1 (1 piece)
S–79: House 23 (2 pieces)
S–107: Cache 13
S–113: House 11
S–158: House 16
S–179: House 36 (3 pieces)
S–202: House 36

Lead Strip
(1 specimen)

This item carries Biesterfeldt site accession number 8038, but it is not registered in the Strong field catalog. It consists of a strip of lead about 160 mm in length, folded back upon itself twice, so that it is now 42 mm long. The strip is roughly rectangular in cross section, averaging 5 mm wide and 1.5 mm thick (Plate 19*f*).

OTHER REMAINS

Floral Remains

Nothing of this sort is represented in the collections now available from the site. Strong (1940, p. 375) comments only that

> Vegetal remains have not yet been identified but consist of what appears to be maize, numerous seeds, and a considerable amount of birchbark.

Faunal Remains

Data on the faunal assemblage represented by animal bone are very limited since only a few unmodified animal bones were saved. The majority of bone fragments were in pits, and were replaced in these features when they were backfilled (*e.g.*, Plate 6*a*). Strong, however, states (1940, p. 375) that

> A wide fauna, including bison, deer, bear, fish, and domestic dog is represented. The first of these is the most abundant.

He also stated that horse bones were in several parts of the site, although the field notes mention them only in Cache 15. Pits often contained large numbers of bison bones, as the photograph of the contends of Cache 13 (Plate 6*a*) indicates, and larger bones were used to wedge posts in their holes. Not all of the animals Strong mentions are now present in the collections (bear, horse, deer, and fish are missing), although there is no reason to question his identifications. Except for the horse, these animals were native to and common in this area.

Some of the fauna are represented in the worked bone, such as the elk metapodial fleshing tools and the mollusk shell scrapers. Some elements in the collection are not modified, or they are so badly preserved that their identification as modified bone is questionable. The six bison ribs in Table 6 are identified in Strong's field catalog as "bone beamers" although he does not mention beamers in his published summary of the site (1940). None of the ribs show any wear indicating use as beamers.

The total identifiable faunal assemblage is given in Table 6.

Human Remains

The only skeletal material from the village (and not present in the material now available) consisted of a bundle burial and a skull, recovered just south of House 23. A reconnaissance of the flat ground across the low draw northeast of the site yielded no evidence of graves. Strong speculated in the notes that burials may have been on a low ridge in a field somewhat south of the site. He was, however, unable to obtain permission to test this area.

TABLE 5.—*Provenience of non-ceramic artifacts*

CATEGORY	Houses							Cache										Feature			Trench					Other
	4	7	11	16	21	23	36	1	3	4	5	7	11	13	15	18	20	2	12	17	1	2	4	6	7	
CHIPPED STONE																										
Arrowpoint: Group 1	1		-	1	-	-	1	-		-		-		-	-	-	-	-	-	-	-				-	-
Arrowpoint: Group 2	-		-	1	-	-		-	-		-	-	-	-	-	-	-	-	-	-				-	-	-
Arrowpoint: Group 3	-	-	-	-	-	-	-	-	-			-	-	1	-	-	-	-	-	-	-	-		1		-
End scrapers	-	-	-	-	-	2	1	1		1		2	-	-	-	-	-	-	-	-	-	1			1	-
Rectangular chipped stone items	-		-	1	-	1	2	-					-	1	-	-	-	-	-	-			-			-
Bifaces		1	1	1	-	-	-	1	-			2	-	-	-	-	-	-	-	-	-	1	-		-	
Modified flakes	-	-	1	1	-	1	3	-	-			1	-	-	-	-	-	1	-	-	-	1			-	-
GROUND STONE																										
Grooved mauls		4	-	-	1	3	-	1					-	1	-	-	-	1	-	-	-	-		-	-	
Pitted hammers	-	1		-	-	1	-	-		-			1	-	-	-	-	-	-	-	-		-	-		
Pebble hammers			-	-	-	-	-	-		1			-	1	-	1	-	-	-	-	1	-				
Shaft smoother	1		-	-	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	-		-	
Sandstone abraders	-			-	-	-	-	-	-		1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	
Grooved (?) abrader	-			1	-	-	-	-						-	-	-	-	-	-	-	-	-	-	-	-	-
Gaming (?) stone	-		-	-	-	-	-	-	-	-				-		-	-	1	-	-	-	-	-	-	-	-
Catlinite pipe	-		-	-	-	-	1	-					-			-	-	-	-	-	-	-	-	-	-	-
Catlinite items	-			1	-	-	1	-	-							-	-	-	-	-	-	-	-	-	-	-
Pigments	-	2	-	-	1	1	-	-	-	1		-	-		-	-	-	1	-	-	-	-	-	-	-	-
River pebbles	-			-	-	-	-	-	1	-					-	-	-	-	-	-	1	-	-	-	-	1
Glacially striated stones	-			-	-	-	-	-	-	2			-	-	-	-	-			-	-	-	-	-	-	-
WORKED BONE																										
Scapula hoes	-			1	-	1	-	-	-	-		-	-	1	1				-	1	-	1	-	-	1	2
Squash knife	-			-	-	-	-	-	-		-	-	1				-	-	-	-	-	-	-	-	-	-
Bison humerus abrader	-	-		-	-	-	-	-	-	-				1					-		-		-	-	-	-
Bone scoop	-			-	-	-	-	-	1	-	-			-				-			-			-	-	-
Polisher	-			-	-	-	-	-	-	-	-	1	-			-				-	-	-	-	-		-
Shaft wrenches	-	1	-		-	-	-	-	-	-	-	2		-	-		-				-	-	-	-	1	-
Slotted knife handles				2	-	1	-	-	1	-	2	1	1		-			-		2		-		-	-	-
Serrated fleshers	-	1	1	-		1	-	1	1	-		-	-	1	1						-	-	-	-	-	-
Bone bracelet				-	-	-	-	-	-		-	1							-	-	-	-	-	-	-	-
Fox mandible pendant		-	-	-	-	-	-		1			-	-	-		-	-	-	-	-	-	-	-	-	-	-
Bevel-tipped tool		-	-	-						-	-	-	1	-	-	-	-	-	-	-	-	-			-	-
Bone pendant				-	-	-	-	-							-		-		-	1	-	-	-	-	-	-
Shaped bone item	-	-	-	-	-	-	-	-	-	-				1					-		-	-	-	-	-	-
Spatulate	-		-	1	-	-	-	-	-							-				-	-	-		-	-	-
Bone beads	-		-	-	-	-	2	-	-	-				-									-	-	-	-
Bone whistle	-			-	-	1	-	-	-											-	-	-		-	-	-
Fish bone artifacts	-			-	-	1	-	-	-	-			1		-						-		-	-	-	-
Miscellaneous cut bone fragments	-	2		1	-	-	-	2	1		-	1	1	1	3	-			1			-		-	-	-
WORKED SHELL																										
Shell scrapers	-	-	1		-	-	6	-	-	-				1			1	-		-		-	2	1	-	40
TRADE GOODS																										
Glass seed beads	-	-	-	(*)	-	-	-	-	-	-	1			(*)			-		-		-	-	-	-	-	-
Glass fragment	-	-	-	-		-	-	-	-	-	-			1								-	-	-	-	-
Teacup handle	-	-	-			-	-	-	-	-	-	-		-				1				-	-	-	-	-
Brass trigger guard pendant	-	-	-			-	-	-	-	1	-						-	-			-	-	-	-	-	-
Brass spring	-	-	-	-		-	-	-	1	-		-	-		-						-	-	-	-	-	-
Brass rod	-	-	-	-		-	1	-	-	-	-				-	-	-	-		-	-	-	-	-	-	-
Brass bangle		-	-	-				-	-	-	-	-	-	-				-	-	-	-	-	-	-	-	1
Shaped brass item		1	-	-			-	-	-	-	-	-				-	-		-	-	-	-	-	-	-	-
Brass knife blade		-	-	1	-			-	-	-	-	-	-					-	-	-	-	-	-	-	-	-
Brass arrowpoint		1	-	-	-		-	-	-	-	-	-					-		-	-	-	-	-	-	-	-
Brass scrap	-	-	1	-	-	-	3	-	-	-	-	-	-		-		-	-	-	-	-	-	-	-	-	-
Copper beads	-	-	1	1	-		-	-	-	-	-	-				-	-	-	-	-	-	-	-	-	-	-
Copper arrowpoint	-		-	-	-	1	-	-	-	-	-					-	-	-	-	-	-	-	-	-	-	-
Copper scrap	-	-	-	-	-	1		-	-	-	-	1	-			-	-	-	-	-	-	-	-	-	-	-
Iron arrowpoints	-	-	2	2	-	1	1	-	-	-			-	-	-	-	-	-	-	-	-	-				
Iron lance tip	-	-	-	-	-	-		-	1	-	-	-		-	-	-	-	-	-	-	-	-	-	-		
Iron knife blade	-	-	1	-	-		2	-	-	-	-	-		-	-	-	-	-	-	-			-		-	
Iron ring		-	-	-	-			-	-	-			-	-	-	-	-	-	-	-	-	-	-			1
Iron scrap			1	1	-	5	4	1	-	-			-	1	-	-	-	-	-	-		-	-	-		-
Lead strip	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-		-	-		-		1

* = beads inset in pottery

TABLE 6.—*Identified faunal remains*

Table 6

IDENTIFIED FAUNAL REMAINS

SPECIES	Identified in Strong, 1940	Identified in artifacts, 1968	Unmodified Faunal Remains			
			Element	Cat.no.	Provenience	Comments
Bison (Bison bison)	X	Scapula hoes and other artifacts	ribs	S-30	Cache 3	2 fragments
			ribs	S-90	Cache 11	1 fragment
			ribs	S-100	House 23	3 fragments
			R. tibia	S-81	Cache 7	Proximal
			vertebra	S-104	House 23	Element intact
Deer (Odocoileus sp.)	X					
Bear (Euarctos americana)	X					
Dog/coyote (Canis spp.)	X		R. tibia	S-90	Cache 11	Element intact
Horse (Equus callabus)	X				Cache 15	
Elk (Cervus canadensis)		7 cannon bone fleshers	Antler tine	S-175	House 11	1 fragment
Swift Fox (Vulpes velox)		Mandible pendant				
Whooping Crane (?) (Grus americana)		Whistle				
Turtle (unidentified)			Plastron	S-84	Cache 11	1 fragment
Fish (unidentified)	X					
Mollusks (unidentified)	X	51 scrapers				Unmodified shell not saved
Raccoon (?) (Procyon lotor)		Bone bead				

The Biesterfeldt Component

Community Pattern

There is very little which sets Biesterfeldt apart from fortified settlements of comparable age along the Missouri River. The village location on a high terrace overlooking the former river channel and the physical arrangement of the houses can be duplicated in a large number of contemporary villages farther west. Perhaps the only striking difference between this site and those of Missouri River groups is the lack of clear-cut evidence for a palisade line along the inner rim of the fortification ditch.

All of the houses are within the ditch, a circumstance which indicates that the fortification ditch was an integral part of the village from the moment it was planned, rather than an afterthought. The even distribution of the houses within the ditch supports this view.

We know almost nothing of how such ditches were dug. The only reference I have found relating to the digging of fortification ditches by sedentary villagers is a comment by Lowie on the Hidatsa (1913, p. 279); they were built and maintained by the women, under the supervision of the Black Mouth soldier society. In view of our ignorance of such matters, it is relevant to cite a description by Alexander Henry the Younger of the excavation of defensive trenches by the Saulteurs (Chippewa or Ojibwa) on 31 August 1800. The number of people digging the defenses is unknown but the ground must have been rather hard, since 1800 had been a very dry year (Coues, 1897, vol. 1, p. 68). The location: the east bank of the Red River, north of the confluence of Riviere aux Maries—a short distance below the mouth of Roseau River:

> This news spread alarm in the Indian camp. . . . All the women fell to work instantly to dig holes in the ground on the bank for themselves and their children to hide in. . . . I went over to see their trenches. There were three principal ones about 20 feet long, 5 feet wide, and 4 feet deep. These were intended for the men to defend themselves in, whilst the women and children lie close on the bottom. I was surprised to see how expeditious they had been, having neither hoes nor spades. They used axes to cut the earth; the women and children with their hands threw it into kettles and on blankets, and then tossed it up (Coues, 1897, vol. 1, pp. 74–75).

It is not unreasonable to believe that similar techniques were used at Biesterfeldt by a group who must have been familiar with the Chippewa.

No patterning of the houses within the ditch is evident. The sixty-two known houses are randomly but rather evenly placed, with three apparent open areas within the fortified area. Since these three areas were in the cultivated sector of the site, it is possible that cultivation had obscured houses there, so they were not apparent to Libby and Stout. This possibility is emphasized because Strong did find one house (House 19) in the uncultivated part of the site beneath a depression that Libby and Stout, and Strong himself, had believed to be that of a cache pit. There is no way to be certain that the central open area was in fact "open" other than to resume excavations at the site. The fact that it is centrally located in the village, and the largest of the houses adjoining it opens on to its approximate center, prompts the suspicion that it may be a plaza analogous to those in Mandan villages.

The Mandan are known to have had an open plaza in front of the village ceremonial lodge, in the center of which they built a barrel-shaped wooden "ark" (Catlin, 1876, vol, 1, pls. 47, 67, 69). Their Hidatsa and Arikara neighbors lacked such a plaza. In this respect, the Biesterfeldt community pattern most closely resembles that of the Mandan, contrary to Will's (1924, p. 330) feeling that the site most closely resembled Hidatsa villages near the mouth of the Knife River.

The oval village plan, the random distribution of the houses, and the lack of bastions or other special

features along the ditch are all consistent with a late prehistoric to early historic date.

Structures

Most of the houses in the village (all but one of which were probably dwelling units) were structurally unique at the time Strong dug the site, but there are several sites along the Missouri River where similar ground plans have since been duplicated. Here, again, the features conform to the range of variation in late sites of the Plains Village pattern.

House 16, with its entrance directed to the southwest and toward the center of the "plaza" area, conforms in all particulars to the generalized Mandan, Hidatsa, and Arikara earth lodge of the historic period. There is no reason to believe that its construction departed except in minor details from the detailed plans published by Wilson (1934) for the Hidatsa. If House 16 is unique in any way, it is because of its completeness of detail, all features being very clearly defined, demonstrating that it was once a typical, dome-shaped earth lodge with a covered, projecting entry. The possibility that it may have been a "ceremonial" lodge makes its construction especially interesting, for the form of ceremonial or religious structures tends to be conservative, implying that the inhabitants had been using this architectural style for some time prior to the establishment of the village.

The remaining structures are probably individual dwelling units. All of them differ from House 16 in lacking vertical wall posts. The house walls and roof consist of poles set near or on the rim of the house pit and leaned in on beams connecting the center posts. The covered entry, when it was exposed at all, was directed to the southeast—although the Libby-Stout 1908 map (Figure 2) implies that entry orientation was less standardized.

These cone-shaped dwellings were probably covered with branches, earth, and sod. Their appearance would have distinguished this village from the image created by the predominantly dome-shaped dwellings known and pictured for most Plains village peoples. Although cone-shaped earth lodges were known in the historic period, they were largely used by small, poor, or elderly families, as Bowers (1950, p. 232, fig. 25) and Wilson (1934, pp. 405–409, 411–415, fig. 40) found for the Mandan and Hidatsa.

Villages consisting largely, if not exclusively, of dwellings of this type are known at various points along the Missouri River in the Dakotas. Houses at the prehistoric Demery component, near the North and South Dakota boundary (Woolworth and Wood, 1964); at the protohistoric Spotted Bear component near Pierre, South Dakota (Hurt, 1954); and at the historic Arikara hunting camp at Fire Heart Creek, near the North and South Dakota boundary (Lehmer, 1966) are of this nature—to mention only the published villages consisting entirely of this type of dwelling. This sort of house also occurs as a minority variety in sites with "standard" earth lodges, such as Feature 27 at Phillips Ranch (Lehmer, 1954, pp. 95–96, fig. 47).

The only real variation in these dwellings consists of minor details in the position of leaner posts along the wall. Three of them (Houses 4, 7, and 36) had leaners which definitely or probably rested on the edge of the shallow basin-shaped floor. Three other dwellings (Houses 11, 21, and 23) had leaners set in shallow post holes or in a shallow trench below the rim of the house pit. These differences do not modify the basic architectural pattern described.

Artifact Complex

Pottery

Virtually everything in the artifact complex at Biesterfeldt is familiar in terms of what is now known of the archeology of the Northern Plains. This is as true of the pottery as it is of the nonceramic inventory, for every ceramic attribute present can be found in contemporary ceramic complexes along the mainstem of the Missouri River. In fact, only two attributes distinguish Biesterfeldt pottery from pottery in a number of sites along that river: the popularity of linear check stamping (3.4 per cent of all body sherds at Biesterfeldt were so treated), and the emphasis on cord-wrapped rod rim decoration (44 per cent of all vessels were so decorated). In both instances, it is the frequency of the elements that sets Biesterfeldt apart as distinctive, not the presence of the element alone.

There are, for example, so few linear check-stamped sherds in sites along the Missouri River (largely from near Bismarck) that they have yet to be reported in print. Cord-wrapped rod decoration is more abundant but is still rare along the Missouri. In the north, it is reported only from the Mandan On-a-Slant village (8.1%), and from the Big Hidatsa village (0.8%) (Bowers, 1948, p. 73). Frequencies of this treatment are only slightly higher in putative protohistoric Arikara sites in South Dakota such as Swan Creek (1.7%) and Rosa (1.1%) (Hurt, 1957; 1959). Cord-wrapped rod-impressed decorations are of course common enough in complexes east of the Red River, but Elden Johnson (personal communication, February 1968) informs me that linear check stamping is not known in Minnesota. Except for the abundance of these two attributes, then, the pottery decorative

techniques and surface treatment at Biesterfeldt can be duplicated in many historic, sedentary Plains complexes. Strong's (1940, p. 374) feeling that it was more "Woodland" in decoration, and that it would

> eventually be linked up with one of the aspects, possibly Headwaters Lakes . . . in Minnesota, since it has some resemblances to that of the Black Duck focus

has not been verified. There is, for instance, no hint of the cord-roughened sherds one might expect in a "Woodland" context.

The accumulating data on Black Duck have resulted in the description of a distinctive ceramic complex which cannot be related in any meaningful way to the Biesterfeldt pottery. Strong's impression that there was a relationship here was based on very preliminary and incomplete knowledge of Black Duck—not on the data later published by Wilford (1941, p. 239) and Vickers (1949, pl. 8, upper left).

There are neither sites nor ceramic complexes in Minnesota now known which provide a prototype for the Biesterfeldt pottery or other material remains. Thus, there is no question that the relationships of the site lie to the west—along the Missouri River—not to the east, the area from which the Cheyenne purportedly entered the Northern Plains.

In paste, method of manufacture, form, surface finish and texture, and technique of decoration, Biesterfeldt pottery can all but be duplicated in village sites along the Missouri River—not in a single site, but in sites of the Post-Contact Coalescent. As far as our data are concerned, the pottery most closely resembles that from late eighteenth or early nineteenth century protohistoric Arikara villages, not from Mandan or Hidatsa ones. This observation confirms Strong's (1940, p. 374) earlier observations.

The Biesterfeldt pottery most closely resembles material from Swan Creek and the Spiry-Eklo sites near Mobridge, South Dakota. Ceramics from these sites range from "good" Stanley Ware on one hand to Talking Crow Ware on the other, with a large group which Baerreis and Dallman (1961) class as "intermediate." As Lehmer (personal communication) has pointed out, this seems to be a common situation for many of the Post-Contact Coalescent sites on the east bank of the Missouri River.

A particularistic example of the similarities between Biesterfeldt and the Missouri River sites may be illustrated in the pottery shoulder patterns. These incised patterns have already been discussed in the context of the Plains area generally (Wood, 1962, fig. 3, IIIa–b). The full range of shoulder patterns present and identifiable at the site (Figure 14) is discussed in that paper, from which the following comments are abstracted.

One pattern from Biesterfeldt is a simple rhythm of erect, chevron-filled triangles with horizontally incised pendant triangles (Figure 14*b*). A second pattern (Figure 14*c*) is similar to ones described for the Pawnee (Wood, 1962, fig. 3, V:e), although the Biesterfeldt example differs in minor details from the Pawnee one. Both of these patterns, however, are rare in comparison with the "Alternating Triangle" pattern (Figure 14*e*). The latter pattern occurs on pottery in all Post-Contact Coalescent sites. There is only one complex pattern at the site (Figure 14*d*), fully as intricate as one described for the Pawnee (Wood, 1962, fig. 1*j*) This pattern, if I have correctly reconstructed its sequence from the fragments remaining, consists of two superimposed patterns mirrored along the axis of reflection, in which there is a regular succession of alternately pendant and erect triangles. Six of the elements combine to form a "spiderweb" motif, otherwise known only from the Spotted Bear site (Hurt, 1954, fig. 18, *6*).

The alternating elements of these patterns conform in style to patterns in many other protohistoric and historic villages in the Post-Contact Coalescent, but they do contrast strikingly with the majority of patterns recorded for the Mandan and Hidatsa and their protohistoric antecedents (Wood, 1962, fig. 3). The Biesterfeldt specimens, in fact, most closely resemble recorded Pawnee and Arikara patterns. These specialized ceramic data thus reinforce the orientation of the pottery in the direction of the sedentary tribes along the Missouri, where they most closely parallel those of the Arikara.

Biesterfeldt pottery represents an internally consistent and stabilized ceramic tradition. Pottery was still being made with as much care as it had been before white contact. Although this is an impressionistic judgment, there is nothing to imply any deterioration in the ceramic arts. The only reminders of Euro-American contact on the pottery, in fact, are occasional glass beads set into the walls of a few vessels. In other words, we are dealing with a ceramic tradition not yet modified by the multiple effects of white contact (for a contrasting situation, see Deetz, 1965). Furthermore, factor analysis of pottery from five of the seven houses dug or extensively tested (Appendix) shows there is very little ceramic variation from one house to another. The range of variation between houses is quite narrow, so that the content of one house is all but duplicated in other structures.

These circumstances document the stability of the configuration of ceramic attributes. If pottery was undergoing change, it was changing systematically throughout the community. The internal consist-

ency or homogeneity of the pottery not only underscores the fact we are dealing with a single component, but has further implications regarding the site and its significance to Cheyenne culture history. The pottery shows that the Biesterfeldt community was not fragmented in any significant way by warfare, disease, or the many disruptions introduced by an introduction to a fur trade economy (*e.g.*, Krause, 1967). In other words, if Biesterfeldt is a Cheyenne community, the manufacture of pottery is on the verge of virtual extinction—but it shows no evidence of strain to suggest this is the case.

Chipped and Ground Stone

Trade goods had all but displaced native-made chipped stone tools at the site. Only the projectile points, end scrapers, and rectangular chipped stone items were reasonably common and well made. The chipped stone points are probably arrowpoints, for their weights (0.5 to 2.0 grams) are within the range of the Small Point Tradition (Fenenga, 1953). These points include side-notched and unnotched varieties which can be duplicated in protohistoric village sites in the Northern Plains, including the Hintz site, on the James River (Wheeler, 1963, fig. 33*a–e*) and in Arikara sites on the Missouri River (Lehmer, 1954, fig. 48*a–j*). The small stemmed or corner-notched forms (Plate 11*a–b*) are less common in Northern Plains village sites, but specimens which are comparable (if not typologically the same) occur in the same protohistoric sites (Wheeler, 1963, fig. 33*h–i*; Lehmer, 1954, fig. 48*k*).

Plano-convex end scrapers are relatively abundant and provide one of the most characteristic of the chipped stone tools, probably because metal substitutes had not yet been introduced. Stone bifaces or knives, however, were all but abandoned in favor of steel blades, probably including butcher and table knives. A few flakes with use retouch along one or more edges are present, although flake tools were not systematically saved. Waste flakes were not saved at all.

There are five small, rectangular chipped stone items which Strong variously identifies as scrapers, knives, or aboriginal gunflints—although none of them is readily identifiable as such. Since no trade gunflints were recovered (but a gun part was), perhaps one or more of them may have been so used, although they do not show battering suggesting use as gunflints. These objects resemble examples from Aztalan, Wisconsin (Barrett, 1933, pp. 272–273, fig. 61) and from Pecos, New Mexico (Kidder, 1932, p. 35, fig. 17*d*), for which no functional identification is offered.

Ground stone tools such as fully and partially grooved mauls, pitted pebble hammerstones, and milling stones were objects largely used in women's activities. None of the examples of stone work which Strong (1940, p. 375) described as "flat grinding stones and mullers" was saved, although there are field photographs of some of them (Plate 15*c–d*). Many of them were actually glacially striated cobbles (Plate 15*b*).

Tools related to men's activities are more rare; they include a sandstone shaft smoother, sandstone abraders (whetstones?), and part of a catlinite pipe. Strong also photographed a catlinite pipe in a local collection (Plate 15*a*) said to be from Biesterfeldt. A river pebble, probably of natural origin, resembles the common bone gaming pieces from sites along the Missouri River. Other stone items include two "polishing stones" and a zoomorphic river pebble, as well as possible pigments for an off-white paint.

Bone and Shell Artifacts

Bone work is relatively abundant, probably because few of the tools fashioned from this material were being replaced by white trade substitutes. Bone tools include eight bison scapula hoes and seven serrated fleshers of elk metatarsals—all fashioned with the aid of metal tools, probably trade hatchets. Articular ends of the scapula hoes are reduced in diameter, but the glenoid cavity is unmodified.

Slotted knife handles of large ribs and bison vertebral spines are common protohistoric forms in the Northern Plains, as are perforated rib shaft wrenches; scapula or squash knives; the bison humerus cap abrader; the bird bone whistle; tubular bone beads; and the punch or polisher. More rare, but not atypical, are the fox mandible pendant; a possible needle tip; and a bison bone scoop. The decorated bone bracelet or "bow guard" is comparable to an example from the supposedly eighteenth century Hagen site in Montana (Mulloy, 1942, p. 75, fig. 37*l*), although they also occur in thirteenth century Extended Middle Missouri sites on the Missouri River in South Dakota (Caldwell and Jensen, 1969, p. 67, pl. 35*m*). Slotted knife handles of simple form occur in most late sites in the Northern Plains (*e.g.*, Mulloy, 1942; Strong, 1945; Wedel, 1955, pl. 61*g*). The rib shaft wrenches sometimes show traces of more than one hole, likewise a late trait (Lehmer, 1954, fig. 54). The whistle, one end of which is cut through a joint, is more like "northern" examples—those from sites in South Dakota are cut through the shaft. On the other hand, a few pieces of rib Strong identifies as rib end-scraper handles are described from Initial Middle Missouri contexts in the Pierre

area (Lehmer, 1954, p. 69, fig. 27*ac, ad*), and the bison bone scoop resembles the split metapodial scoops from Extended Middle Missouri contexts (*e.g.*, Wood and Woolworth, 1964, p. 38, fig. 7*g*).

Numerous crescentic shell scrapers or knives, worn down from heavy fresh water mollusk shells, were the only shell implements. Many of them were so heavily used that they are reduced to small triangular or rectangular stubs, one side retaining the umbo. These implements are present but rare in the Northern Plains (Meleen, 1948, p. 18, pl. 4, *1–6*; Wood, 1967, pp. 96, 109, fig. 12*q–r*).

Trade Goods

Euro-American trade goods include forty-seven items from more than half the houses and pits excavated. Distribution was relatively even through the village (Table 5) They include items manufactured by European or Colonial sources, as well as objects duplicating native prototypes, fashioned from material obtained from traders.

All but one of the white and blue seed or pound beads were impressed into pottery as decorative elements. There is one strip of folded lead, steel and brass knives, and a brass rod—none of them modified by the inhabitants. Iron or steel arrowpoints, on the other hand, were fashioned into forms following native prototypes. The one gun part (used as a pendant) and the questionable gunflints recovered intimate that the inhabitants possessed few firearms.

The presence of a number of other trade goods not actually recovered may be inferred or demonstrated from direct and indirect evidence in the site. Steel axes or hatchets were in use, as suggested by the chopping on the elk fleshing tools and scapula hoe butts. Furthermore, the absence of chipped stone drills and bone awls (except for a dubious catfish spine or mandible) implies that steel substitutes were present.

Dating

Internal evidence at Biesterfeldt provides us with relatively good leads to the time it was occupied. Two objects of white origin may be dismissed as internal evidence since they are regarded as intrusive: the piece of plate glass and the earthenware teacup handle. The remainder of the white goods is probably part of the aboriginal material inventory.

The single most informative artifact is a brass trigger guard which was modified for use as a pendant (Plate 19*c*). It was originally embellished with a stamped, stylized pineapple. The horse bones in the site suggest a late date. Recent summaries of the spread of the horse in the Plains (*e.g.*, Ewers, 1955, p. 5) give us no reason to suspect that horses were at all common in eastern North Dakota and western Minnesota until after 1750.

Correspondence with Elden Johnson reveals that the volume of goods of European or Colonial manufacture or origin at Biesterfeldt is very low—at least with respect to the content of late eighteenth century sites east of the Red River. Late eighteenth century sites in Minnesota have far more material. From the viewpoint of the Minnesota sites, the number of trade goods at Biesterfeldt implies it might date in the late seventeenth or early eighteenth century; looking at the site from the Missouri River, the trade goods are about as abundant as they are in the late eighteenth century. The late date implied by the gun part; the horse bones; and typological similarities with late eighteenth to early nineteenth century groups on the Missouri River suggest that the inhabitants were obtaining fewer goods than the Chippewa and other tribes east of the Red River, in present Minnesota, who were nearer the trade centers.

The trade goods are clear evidence of participation in European trade channels—but there is little evidence for participation in widespread native trade networks of the sort described by Ewers (1954) for the Northern Plains. There are no Gulf or Pacific coast shells, but there is catlinite, probably obtained from groups to the southeast and likely deriving from the quarries in southwestern Minnesota.

The Biesterfeldt site, then, appears to postdate 1750, and the inhabitants had obtained European goods at least by 1790. This discussion has passed over the possibility that Biesterfeldt was a Cheyenne village site. Ethnohistorical data, summarized later, suggest a date of about 1790 for the destruction of a Cheyenne village on the Sheyenne River. Thus, the internal evidence and the ethnohistorical data (if we choose to accept the hypothesis that the site is Cheyenne) are consistent in dating the site in the late eighteenth century.

Taxonomy

It is obvious, from the preceding discussion, that Biesterfeldt is part of the Plains Village pattern (Lehmer, 1954, pp. 139–140). This pattern, which Willey (1966, pp. 320–329) refers to as the "Plains Village Tradition," includes the following tribes in the Northern Plains: Mandan, Hidatsa, Arikara, and (in the early historic period) probably the Cheyenne and some of the Eastern Dakota. The Biesterfeldt community plan, domestic architecture, the subsist-

ence base of the people, and their material culture are so patently a part of this pattern that no expository narrative is necessary.

Further, the village is clearly a site of the Coalescent or latest tradition of this pattern (Lehmer, 1954) in the Northern Plains, since it contains trade goods. Post-Contact Coalescent sites dating from the same time period, however, usually contain the following items, missing in the Biesterfeldt inventory: plate chalcedony knives, horn core-frontal bone scoops, bone awls, L-shaped antler scraper hafts, and shell beads and ornaments. Other elements, present but rare in Post-Contact sites, are lacking, and include ground stone celts, stone spheres, and "quill flatteners." Some of these absences are consistent with the presence of trade goods, for among the elements lacking are chipped stone drills and bone awls of any sort—artifacts normally present in pre-contact sites.

It has now been more than thirty years since Biesterfeldt was investigated, but during that time no site has been dug or reported in the Northern Plains that duplicates the Biesterfeldt assemblage. On the lowest taxonomic level, therefore, we are dealing with a single component, with no other components close enough to include in the same phase.

The component is located in what Wedel (1961, fig. 1) refers to as the Northeastern Plains Periphery. This glaciated area is clearly different from other parts of the Northern Plains. When more work is done in the eastern Dakotas it will probably be desirable to subdivide this area; for the moment, it is sufficient to recognize it as an archeological sub-area equivalent to the Middle Missouri and Central Plains sub-areas.

It might be instructive, for pedagogical purposes, to speculate on what interpretations might have been made if (1) the site was undocumented and of uncertain tribal affiliation—as it indeed is—and (2) if it were in some other location—perhaps on the Missouri River somewhere between Pierre, South Dakota, and Bismarck, North Dakota.

An excavator beginning work on the site today, in this hypothetical situation, would see no distinctive features in an examination of the village before excavation, nor in the defensive or dwelling features revealed during excavation. Furthermore, there is nothing sufficiently alien in the material content which would lead him to suspect the intrusion of an alien group into this part of the Missouri River trench. On the basis of what we know now, he might be puzzled because of the presence of a few ceramic elements not common along the Missouri, but the overriding similarities between the site and other protohistoric sites along the Missouri would be manifest. The chances seem very good, in this case, that it would be interpreted as an atypical Arikara site of late eighteenth or early nineteenth century date, although it might be excluded from any of the presently named phases.

I have indulged in this exercise because of a parallel situation at a site near the mouth of Ponca Creek in north-central Nebraska. This village, known to the Ponca as Ná^{n}za, the Ponca Fort, was a fortified earth lodge village occupied by the Ponca in the last years of the 18th century. The configuration of artifacts in this site is such that, had it lacked documentation, it could have been assigned to the Arikara of late eighteenth century date (Wood, 1959; 1960, pp. 116–117). The situation at Ponca Fort, as well as at Biesterfeldt, once more reminds us that the tribal identification of sites on the basis of pottery (particularly those containing trade goods but which are not securely documented) should be made with the utmost caution.

Cheyenne Ethnohistory

The Cheyenne are one of the classic examples of the transition of a northern Woodland people into a Plains tribe, but they are scarcely the only group to have this distinction. Many groups which came to be known as "Plains Indians" are known to have moved into the Northern Plains from the northern woodlands. The Blackfoot must have done so in prehistoric times, and in the historic period the Dakota, Assiniboin, Plains Cree and Plains Ojibwa, no less than the Cheyenne and Arapaho, made such a move.

The most dramatic entrada, however, if not the most publicized as having made the most rapid transformation into a Plains tribe, was that of the Cheyenne. During the 1700s these formerly sedentary hunters and gardeners became a "typical" Plains equestrian nomadic group. The dynamics of change involved in this transition have never been studied in depth, although Jablow (1951) has suggested something of their nature in his study of Plains Indian trade relations.

Our information on the Cheyenne is exceptionally fragile and subject to interpretation for the period with which we are concerned here—from their traditional origins to about A.D. 1800. A few whites had fleeting contact with them before 1800, but they left discouragingly fragmentary and conflicting references. Unfortunately, there are no accounts from this period written by traders or others who actually lived among them, or who knew their ways or their history Their transition to nomadism had largely taken place by about 1800. Traditions obtained after that date are available, but there is no known archeological evidence postdating 1800 which can now assist us in clarifying their culture history.

Save for archeological data from the Biesterfeldt site (if it is relevant here at all), the present study contains no new basic data on "Cheyenne archeology" east of the Missouri River. Here we will summarize available ethnohistorical information and evaluate it on the basis of recent archeological data. We are concerned here with their history from the time they lived in Minnesota to the time of their removal from the Missouri River in the Northern Plains. Many of the native traditions are generally vague or unreliable, for they were collected very late, but they are generally supported by other sources, and they help sketch out some of the gaps in their history.

Jablow (1951) suggests that there are four different phases in Cheyenne history, with four modes of life involving three distinct transitions to three different environments in about three hundred years. These environments are, in order, woodland, prairie, and high plains. Their habitat while they lived in south-central Minnesota was in timber, although it is not far removed from the prairies to the west. This traditional period is not documented in other sources, but there are rare documents and relatively reliable traditional material for a second period in their history. The second period consisted of a life in semi-sedentary, horticultural villages in southern Minnesota and in southeastern North Dakota. This second period lasted until the late 1700s, when they began to adopt a third type of existence based on equestrian buffalo hunting and trading in the Great Plains. During this time they were on the Yellow Medicine River, Lake Traverse, Maple Creek, and the Sheyenne River—in prairie areas west of the woodlands.

The final period represents the historic climax of the Cheyenne, and marked their occupation of the high plains west and southwest of the Missouri River. This was their way of life until the late nineteenth century, when they entered "the fourth, the final, the inglorious phase of reservation life" (Jablow, 1951, p. 1).

Kroeber (1939, p. 81) synopsized their history as that of

a prairie-farming people, separated and well differentiated from their ancient woodland kinsmen, yielding very hesitantly to the lure of the western bison after they had horses in the 18th century, and not wholly committing themselves to the "typical Plains" culture until well into the 19th century.

Their "hesitant" acceptance of the equestrian way of life as conceived by Kroeber, and supported by accounts discussed later, does not corroborate suggestions that this was a very rapid change in their way of life. There was a more protracted transition from prairie-farming to high plains nomadism than is generally believed.

Traditional Origins

The origin traditions of the Cheyenne contain many elements familiar to students of North American mythology. Some time prior to 1880, Ben Clark recorded traditions which suggest that their earliest habitat was between Hudson Bay and the Great Lakes. These traditions (Grinnell, 1923, vol. 1, pp. 4–5; 1926, pp. 242–252) concern a time when they lived underground, and their discovery of an entrance to the surface. These and other native sources, although elusive, can best be read as an Algonquin origin for them in the general vicinity of the Great Lakes, an interpretation which is supported by their linguistic affiliations.

Cheyenne speech is much closer to Central-Eastern Algonkin than is either Blackfoot or Arapaho. It is much more different, however, than it could have become during a separation of only two or three centuries. The purely linguistic inference thus is that the Cheyenne, though recent in the plains, lived, before that, somewhat apart from the Central Algonkins of the woodland; therefore most likely in the prairies (Kroeber, 1939, p. 81n).

Whatever their origin, they are first known in the vicinity of Minnesota or Wisconsin. Will (1914, p. 68) and Grinnell (1923, vol. 1, pp. 6–7) both cite traditions which relate to a time when they were in or near Minnesota and Wisconsin. During this time they "lived far north of the Missouri River near a big lake, and subsisted almost entirely on fish" (Will, 1914, p. 68) They moved southwest from this lake until they found a "great marsh full of tall grass," beyond which was a large lake with "fine prairies along its shores."

Mooney and others feel that this period was perhaps spent near the headwaters of the Mississippi, near Mille Lacs. It was here that they were attacked by the Assiniboin (*Ho'he*) and, perhaps, by Cree, using firearms obtained from Hudson Bay Company traders or from still earlier traders on Hudson Bay (Grinnell, 1923, vol. 1, p. 7). If the traditions are at all accurate, the Assiniboin and, perhaps, Cree were in this area when the Cheyenne arrived. But Dakota tradition is explicit that the Cheyenne were in Minnesota when the Dakota first arrived (Will, 1914, p. 68).

The earliest documents on the Cheyenne are those of early French traders and, following them, French cartographers, who locate them in south-central Minnesota. This area is their first authenticated habitat prior to 1700, a location confirmed by Dakota traditions which place the Cheyenne on the Minnesota River when the Dakota first arrived (Williamson, 1872, p. 296; Comfort, 1873, p. 402; and Hyde, 1937, p. 9). The size of their population there is unknown, but developments in the next few decades suggest they were a relatively small group, severed from their Algonquin-speaking relatives. In the years to follow, their "destiny became linked more closely . . . with their Siouan neighbors than with their linguistic and early cultural congeners" (Jablow, 1951, p. 2). There is little doubt that their later removal from Minnesota was a direct response to pressures exerted by the Dakotas from the east, and by the Chippewa and Cree in the north.

Early Documentation

The Cheyenne appear to enter documented history on a map by Jean-Baptiste Louis Franquelin, based on data or a map by Louis Jolliet, for which Lowery (1912, LC 235, pp. 205–209; see also Neill, 1883, p. 797) used a date of 1700 (?). This map, dedicated to Jacques Duchesneau, Intendant of New France, is now dated 1678 (Delanglez, 1943, pp. 56–57). The *Chaiena* are noted on this map together with seven other groups along the east side of the Mississippi River, some distance above the mouth of the Wisconsin River. Below these seven names are the *Siou*. The map therefore implies that the Cheyenne were in present-day Wisconsin in the late 1600s. George F. Will apparently refers to this map (1914, p. 69) when he mentions a Franquelin map "dated about 1700," which places the Cheyenne on the Sheyenne River. His statement does not follow from the cartography depicted on the Franquelin map of 1678.

Will (1914, p. 69) also asserted that Franquelin's map of 1688 places the Cheyenne on the Minnesota River. This map (Lowery, 1912, LC 190, pp. 180–181) has been reproduced (Tucker, 1942, p. 4, pl. 11; a segment of the map covering the area of interest here was also engraved for Neill, 1883, frontispiece). I have not, however, been able to verify Will's assertion from any of the names appearing on that map.

There are no other maps relevant to the problem

of the Cheyenne until after 1800. The 1806 King copy of the map which William Clark compiled at Fort Mandan in January of 1805 depicts the drainage of the Red River and other features in eastern North Dakota and western Minnesota with some precision (Tucker, 1942, p. 10, pl. 31). It does not show the Cheyenne on the Sheyenne River, since they had already moved west to the Missouri River. However, a later published version of this map (Lewis and Clark, 1815, vol. 1), which seems to be based on the 1805 map, does show a triangle labeled "Old Village" on the great southern bend of the *Cayenne R.,* in a location which corresponds very well with that of Biesterfeldt, but the map does not identify its former occupants. The source for this part of the map may derive from Hugh Henny, a Hudson Bay Company trader who visited Fort Mandan in December of 1804, and from whom Clark obtained some sketches of the country between the Mississippi and Missouri rivers (Thwaites, 1959, vol. 1, pp. 238, 244–247).

No further maps are known which depict or suggest the Cheyenne in locations east of the Missouri River.

Residence in Minnesota

The earliest and most substantial written reference to the Cheyenne seems to have been made by La Salle in 1680. While he was building Fort Crevecoeur, on the Illinois River just downstream from present-day Peoria, Illinois, on 24 February 1680, he was visited by a group he calls *Chaa.* The *Chaa* asked him if he would not come to their home at the head of the great river, or Mississippi, telling him they had many beaver and other furs (Margry, 1874, vol. 2, p. 54) The home of the *Chaa* coincides with their purported habitat in Minnesota about this time, although La Salle's term for them is not the Cheyenne word for themselves *(tsis tsis tas).* The Pawnee, Arikara, and other Plains tribes called them *Shar'ha* which, as Grinnell points out, is a variant of the Dakota term *(Shā hi'yē · na)* for them, and from which one could readily derive the term *Chaa.* Although it is too much to ask that La Salle give his informants for this term, it is known that some *Ma tou tĕn'tas* visited La Salle about this time. If this group is Oto, as Grinnell suggests (1923, vol. 1, p. 3), the derivation is plausible, for the Oto are Siouan-speakers. In sum, although the evidence is equivocal, I am persuaded to follow Jablow (1951, p. 2) when he says that "those who have considered the evidence seem to be agreed that it was very likely the Cheyenne whom La Salle saw 300 or more airline miles from their home on the Upper Mississippi."

From their residence along the Mississippi River or its vicinity, the Cheyenne moved next to the valley of the Minnesota River. Their residence there is almost wholly based on Dakota tradition.

Dr. T. S. Williamson [1872, I, p. 242] records among the "common and most reliable traditions" of the Sioux that when the ancestors of the Sioux first came to the Falls of St. Anthony the Iowas occupied the country about the mouth of the Minnesota River, and the Cheyennes dwelt higher up on the same stream. He states also that the Cheyennes formerly planted on the Minnesota between the Blue Earth River and Lac qui Parle.

Writing about 1850, Dr. Riggs [1893, p. 193] says that "two hundred years ago or thereabouts the Cheyennes had a village near the Yellow Medicine River in Minnesota, where are yet visible old earth works; that from there they retired to a point between Big Stone Lake and Lake Traverse, where they had a village" (Grinnell, 1923, vol. 1, pp. 16–17).

George Will also comments that, according to Riggs and Dorsey, the Cheyenne built their more westerly village on the Minnesota River

about 1693. In 1700 the Sioux told Le Sueur that the Iowas, who were a short distance below the Cheyennes, had just moved to the region of the Omahas on the Missouri River. Authorities agree that the Cheyenne left the Minnesota River at about the same time, owing to the ever increasing pressure from the east and north (Will, 1914, p. 69).

It is worth repeating that these traditions imply that the Cheyenne practiced horticulture and dwelt in earth lodge villages along the Minnesota River, according to both their own traditions and those of the Dakota (Will, 1914, p. 69). After leaving the Minnesota River, the Cheyenne are next documented on the Sheyenne River in present-day North Dakota, perhaps after a brief sojourn between Big Stone Lake and Lake Traverse, which today form part of the boundary between South Dakota and Minnesota.

Residence on the Sheyenne River

Since the Cheyenne are not mentioned by Le Seuer in October of 1700, when he founded a post at the mouth of the Blue Earth River on the lower Minnesota River (Neill, 1883, p. 162), this date appears to mark the end of their occupation of Minnesota. At least one group of them chose to build a fortified village on the Sheyenne River in present-day North Dakota. This village was purportedly near the southeastern part of the prominent southerly bend of what has been called the "Sheyenne Fork" of the Red River. The precise location (or locations) on the river settled by the Cheyenne are unknown, but their residence on the river is firmly documented. Even as late as 1850, the Sheyenne River was known and called by the Dakota by a term signifying "Where

the Cheyennes Plant" (Grinnell, 1918, and 1923, vol. 1, p. 19).

Their removal to this river provided, perhaps, some respite for them from the "reverberations of the almost continuous warfare of the Sioux" (Jablow, 1951, p. 6), but renewal of hostilities, and the increasing penetration of the area by whites brought their activities on the Sheyenne River to light, although not as clearly as we might wish.

There is no doubt that Jonathan Carver was referring to the Cheyenne in 1766 when he spoke of them as one of the eight bands of the "Sioux of the Prairies" (1778, pp. 79–80) Jablow (1951, p. 7) provides very good reason to doubt much of what Carver says—even to the fact he ever actually met them. Nevertheless, Jablow felt that the

> association of the Cheyenne with the western bands of the Dakotas may provide a possible clue to the transition of at least some groups of the former to a buffalo hunting economy. The point is of particular interest in this connection because we have evidence which seems to indicate that just about at this time the Cheyenne village on Sheyenne River was either still inhabited by members of the tribe who were engaged in horticultural pursuits, or that the settlement had only recently been destroyed. . . . But it seems safe to say, as other writers have suggested, that between 1700 and about 1770 the Cheyenne were undergoing a process of change which eventuated in their becoming complete equestrian nomads by the end of the eighteenth century (Jablow, 1951, p. 7).

When the Cheyenne began their transition to a "Plains tribe" is unknown, although Will (1914, pp. 69–70) felt that the process began while they were on the Sheyenne River. There is no doubt that the Cheyenne on this river depended heavily on bison, for they went on bison hunts in which most of the village participated, as we shall see. Horticultural practices continued to be important, and they were growing corn, beans and squash in their gardens along the Sheyenne River. Jablow (1951, p. 44) points out that this produce was abundant enough that it was traded with the Chippewa, who may have hesitated to drive the Cheyenne out because they were so fond of garden produce (Tyrrell, 1916, p. 261).

Will's view that they began their transition to a Plains way of life on the Sheyenne River is undoubtedly an oversimplified view of the situation. Jablow points out (1951, p. 7) that Grinnell "conceives of the process somewhat more dynamically." Generalizing from his experiences with other Plains Indians, Grinnell observed that tribal movements "were by individual camps and in no sense as a tribal body" (1923, vol. 1, p. 2n), a view which was largely accepted by Kroeber (1939, p. 81n) Grinnell elaborates this point:

> Dr. Riggs and Dr. Williamson seem to assume that the different village sites in Minnesota and North Dakota were occupied successively, but I believe that this was not the case. It seems more probable that several of the various villages were occupied at the same time and were merely different permanent, if scattered, camps or villages of distinct bands of Cheyennes. . . .
>
> I have no doubt that for a long time a number of contemporary Cheyenne villages were scattered along the Minnesota River and to the westward, and that some of these, after they had been occupied for a generation or two, were abandoned and new locations sought. At all events the trend of tribal movement was westward, and this at last brought the Cheyennes to the Missouri River.
>
> In the movements of a group of Indians, a camp or village followed its own ideas as to where it wished to go, and usually did not consider the movements of other camps. It moved independently. There was no contemporaneous tribal migration. The different camps did not unite in a forward movement. . . . Thus in the tribal movements westward the rearmost camps of the migrating Cheyennes were constantly moving onward and passing over those in advance of them (Grinnell, 1923, vol. 1, pp. 21–22).

If the Cheyenne movement westward obtained respite from harassment from the Dakota, Chippewa, or others, it was of brief duration. The Cheyenne, having been pushed ahead of these tribes, were further removed from the source of firearms and were accordingly less well armed than their eastern enemies. Traditions cited by Will suggest that the Cheyenne living on the Sheyenne River "were in constant terror of their various enemies" and lived on the river only about thirty years, when the "situation became untenable and they felt compelled to move westward once more" (Will, 1914, p. 71).

The Biesterfeldt Site

Biesterfeldt has been identified as a Cheyenne village of the late 1700s, and this evidence is consistent with extant ethnographic and documentary evidence. The evidence, however, is largely circumstantial, and the present reappraisal concerns the identification of the historic *village* on the river with the archeological *site* in question. As Strong said, the site is

> inadequately documented in a technical sense since no white man is known to have visited it. However, a mass of corroborating evidence makes its identification almost a certainty (Strong, 1940, pp. 370–371).

The actual dates the village (or the site) was founded and abandoned are not known, although they can be roughly approximated from data on hand. One assumption, rarely made explicit, is that there was only one Cheyenne earth lodge village on the Sheyenne River. The extant references seem to uphold this view. For example, John Hay, in the journal of his trip to the Northwest in 1794, has notes

on the journals of Evans and McKay for their travels between 1787 and 1797. He comments (Quaife, 1916, p. 208) that the Cheyenne once lived on the Sheyenne River, but Assiniboin and Dakota pressure forced them to leave "*that* village" (my emphasis) and move to the Missouri River. This statement, echoed a few years later by Lewis and Clark (Thwaites, 1959, vol. 6, p. 100) and others, gives us no reason to believe they had more than one village; nevertheless, the possibility that there were several villages is an open one.

The Biesterfeldt site is the only such site yet known on the Sheyenne River in this part of the Dakotas. An effort to detect other sites of this nature in 1967, using aerial photographic coverage from Valley City to Kindred along the course of the river, was fruitless. The six-inch series of photographs inspected was taken in 1952 and 1954. Clearly, an inspection of larger scale photographs is desirable.

I am indebted to C. S. Smith for pointing out that one possible means of dating a Cheyenne village on the Sheyenne River is provided by astronomy. Citing unpublished stories and traditions collected by George Hyde from the "oldest living members of the Cheyenne," Will notes that, while they were on the Sheyenne River,

> a great war party set out from the village one day. After they had been out for a short time the sun was blotted out in full day and the party became so terrified that they fled precipitately back to the village (Will, 1914, p. 70).

This reference is obviously to a total eclipse of the sun, and there is only one eclipse which can probably equate with the tradition cited. Oppolzer (1962), in his *Canon of Eclipses,*

> has given very complete tables from which the elements of all eclipses from -1207 [B.C.] November 10 (Julian Calendar) to 2161 November 17 (Gregorian Calendar) may be calculated. These include 8,000 eclipses of the Sun and 5,200 of the Moon. They are accompanied by maps showing the tracks of the central line for all total or annular solar eclipses which are north of latitude −30°. These tracks are drawn through three calculated places where the eclipse is total or annular at sunrise, midday, or sunset. The tracks are correct on the scale of the maps for modern eclipses, but for ancient eclipses may be a few degrees in error (Dyson and Wooley, 1937, p. 9).

The scale of the maps published by Oppolzer precludes precision in determining the exact track of the eclipses, but his published elements furnish the position of the central line in some cases within an error of 16 to 24 kilometers (Mitchell, 1951, p. 61). Calculating the tracks of the relevant eclipses must thus await the attention of one competent to manage the data involved. With this reservation in mind, we can assess the three eclipses which took place between 1679 and 1811, and which are therefore relevant to the Cheyenne occupation of the Sheyenne River valley.

There was a solar eclipse which may have been visible on the lower Sheyenne River on 10 April 1679, the central line of which was somewhat south of Biesterfeldt, at about 46 degrees latitude. There was another total eclipse on 22 May 1724, which was probably visible just north of Biesterfeldt. A third eclipse took place on 17 September 1811 (Oppolzer, 1962, Tables 138, 140, and 144). The latter was a partial eclipse and is not only very late, but should not have "blotted out the sun."

The 1679 eclipse is probably too early, and the 1811 eclipse is certainly too late. Thus, if there is any validity to the tradition referred to by Hyde, the total eclipse of 22 May 1724 appears to be the most likely one. Thus a Cheyenne village (not necessarily the Biesterfeldt site) on the Sheyenne River *may* have been occupied in 1724.

There are two different accounts of the abandonment of a Cheyenne village (or villages) on the Sheyenne River which are often equated with the Biesterfeldt site. The first account is provided by David Thompson. During his tenure as an employee of the Northwest Company, Thompson traveled extensively in the Northwest, and one of his missions carried him down the Red River valley in the spring of 1798 (Tyrrell, 1916). Writing from his notes in 1840, forty-two years after the event, he records his arrival at Cadotte's House, a Northwest Company trading post on the Red River not far from the mouth of the Sheyenne River. In April of 1798, he met the Chippewa chief Sheshepaskut ("Sugar") at Cadotte's House, while in the company of Jean Baptiste Cadotte, factor of this post. When Sheshepaskut came to the post, Thompson asked him the reason for

> his making war on the Chyenne Indians and destroying their Village, and the following is the substance of our conversation. Our people and the Chyenne's for several years had been doubtful friends; but as they had Corn and other Vegetables, which we had not and of which we were fond, and traded with them, we passed over and forgot, many things we did not like; *until lately;* when we missed our Men who went a hunting, we always said, they have falled by the hands of our enemies the Sieux Indians. But *of late years* we became pursuaded the Chyennes were the people, as some missing went to hunt where the Sieux never came (Tyrrell, 1916, p. 261, italics mine).

The Chippewa therefore decided to destroy the Cheyenne village, but the attack was deferred until the following summer, when 150 warriors were massed for the attack. Led by Sheshepaskut, they camped not far from the Cheyenne settlement and posted scouts in a grove nearer the village. On the seventh morning, a scout reported

the Chyennes had collected their Horses and brought them to the Village. We immediately got ourselves ready and waited for the other young man who was on the Watch; it was near mid day when he came and informed us that a great many men and women had gone off a hunting, and very few remained in the Village. We now marched leisurely to the small grove of Oaks to give the hunting party time to proceed so far as to be beyond the sound of our Guns. . . . From the Grove to the Village was about a mile of open plain; as we ran over, we were perceived, there were several Horses in the Village on which the young people got, and rode off.

We entered the village and put every one to death, except three Women; after taking every thing we wanted, we quickly set fire to the Village and with all haste retreated for those that fled at our attack would soon bring back the whole party, and we did not wish to encounter Cavalry in the Plains (Tyrrell, 1916, p. 262).

At this point in the conversation Cadotte took up the narrative, relating the events concerning the prisoners taken by the Chippewa in the encounter. Among them was an infant which was taken to the Rainy River House and raised there (Tyrrell, 1916, pp. 262–263).

The reference to Rainy River House is particularly tantalizing since, as Swanton (1930, p. 159) pointed out, if the dates for Rainy River House were known, it would be possible to date the destruction of the village. But, he adds, it is unlikely that it could have been much before 1790. Furthermore, since the Chippewa chief, speaking in 1798, refers to "late years," and "lately," it is even more unlikely that the attack was made much before 1790. Internal evidence at Biesterfeldt is consistent with two elements of the story taken from the very chief who led the raid, although the identification of the site with this village is inferred only from the fact that there are no references suggesting more than one Cheyenne village on the Sheyenne River: (1) there were not only horses at the village, but they were there in quantity, since most of the occupants had gone out hunting on them—and Strong recovered horse bones at Biesterfeldt (1940, p. 373); (2) Sheshepaskut also said that his party "quickly set fire to the Village"—and the abundance of burned timbers in the Biesterfeldt houses are in fact consistent with this statement.

Neither of these elements, however, has any real significance in identifying the site, although they are corroboratory. It should occasion no surprise that horse bones occur in a site containing as much trade material as Biesterfeldt; and a very large percentage of earth lodges dug in the Plains have been burned. The account provided by Thompson, therefore, simply testifies to the fact a Cheyenne village was destroyed by the Chippewa on the Sheyenne River.

The second account of the destruction of a Cheyenne village on the Sheyenne River is derived from hearsay evidence. In 1800, two years after Thompson's visit to Cadotte's House, Alexander Henry the Younger built a fort near the mouth of Park River, on the Red River some 150 kilometers above the mouth of the Sheyenne River. On one of his trips in which he passed the mouth of Wild Rice River, he commented that

Beyond this river, about 12 leagues by land, is Schian [Sheyenne] river, on the W. This derives its name from a formerly numerous tribe of Indians, who inhabited its upper part. They were a neutral tribe between the Sioux and the Saulteurs for many years; but the latter, who are of a jealous disposition, suspected they favored the Sioux. A very large party having been once unsuccessful in discovering their enemies, on their return wreaked their vengence on those people, destroying their village and murdering most of them. This happened about 60 years ago [*i.e.*, about 1740], when the Saulteurs were at war with their natural enemies, the Sioux of the Plains, who are the only inhabitants of St. Peter's river. The Schians having been nearly exterminated, abandoned their old territories and fled southward across the Missouri, where they are now a wandering tribe (Coues, vol. 1, 1897, p. 144).

In January of 1801, Henry met the son of a "great chief" of the Chippewa, and in October of the same year he met the chief, "Le Sucerie" ("Sugar"), himself (Coues, vol. 1, 1897, p. 163, 190), but this was after he had composed the above account in his day-to-day journal. Because of the discrepancies between his account and that of Thompson—the latter obtained from Sheshepaskut himself—there is no reason to believe Henry obtained his story directly from the Chippewa chief involved, although we can only guess as to his source.

Assuming that the Thompson and Henry accounts refer to the same raid and the same village, the implied differences in the time of destruction cannot be fully resolved. Henry's implication that it was destroyed in 1740, for example, is inconsistent with Thompson's estimate that, in 1798, Sheshepaskut "appeared to be about sixty years of age, and yet had the activity and animated countenance of forty" (Tyrrell, 1916, p. 253). If Thompson was anywhere near the correct age of Sheshepaskut—and he had met a great many Indians by the time he made this observation—Sheshepaskut would have been born about the time Henry asserts the village was destroyed!

For this reason it is not at all certain that Thompson and Henry were writing about the same attack, nor even the same village. As Marc Rucker has reminded me, Thompson describes a planned attack in which there was no great loss of life, most of the people being out hunting; Henry describes an attack carried out on the spur of the moment in apparent frustration, resulting in the destruction of most of the inhabitants. This discrepancy may imply that

the Chippewa attacked more than one Cheyenne village on the Sheyenne River.

Another line of evidence bearing on the date not only of the Biesterfeldt site, but of the Sheyenne River village, is the fact that horse bones were recovered at Biesterfeldt, and the village destroyed by Sheshepaskut had horses. The first mention of horses in the Minnesota-North Dakota area is in 1738 and 1739 by the La Vérendryes (1927, p. 351). In Haines' study of the diffusion of the horse, he states there were no horses northeast of the Missouri River in the Dakotas until one of the La Vérendrye sons brought two of them from the vicinity of the Black Hills. During the period 1735–1743 horses were rare west of the Missouri River (Haines, 1938, pp. 433–434). On these grounds, Jablow concluded that horses became common among the Dakota between 1766 and 1772, and cited Cheyenne tradition (Will, 1914, p. 77; Grinnell, 1915, p. 34; and Hyde, 1937, pp. 20–21) which supports the probability that some Cheyenne obtained horses between 1740 and 1770 (Jablow, 1951, p. 10). Consequently, the destruction of the Cheyenne village on the Sheyenne River described by Thompson took place after 1743, for at the time of its destruction the Cheyenne had enough horses to cause the Chippewa to fear meeting "Cavalry in the Plains" (Jablow, 1951, p. 9).

Documentary evidence for the abandonment of Cheyenne villages on the Sheyenne River, while incomplete, is still better than Cheyenne traditions themselves. Although the Chippewa destroyed at least one, if not more, Cheyenne village on the river, Will points out that it was the Assiniboin whom the Cheyenne "credit with the causes for the final abandonment" (1914, p. 71). Will relates a story (1914, pp. 71–72) obtained by Hyde regarding the final abandonment of a village on the Sheyenne River, a story given in greater detail by Grinnell (1915, pp. 7–8) It is as follows, in greatly condensed form.

After the Cheyenne had lived in a village on the Sheyenne River some thirty years, everyone in the village except one old woman went away on *foot* on a buffalo hunt, since they did not then have horses. One night, not long after their departure, Assiniboin warriors entered the earth lodge where the old woman was working by torch light. Evading them and running to the bluff at the edge of the village, the woman turned aside and cast the torch over the bluff. The pursuing warriors were thus deceived and tumbled over the bluff onto the rocks below. Many of them were killed, and those who were injured were killed by Cheyenne who were summoned by the old woman. In stripping the slain warriors, the Cheyenne obtained their first guns, as well as many steel knives. In a council following this episode, they decided to abandon the village and move west, as they feared the Assiniboin would destroy the village in vengeance.

Recent documentation of the Biesterfeldt site may have begun as early as 1862:

> There are also, on one of the banks of the Red River of the North, the remains of an old village of the Shyennes, with an important stream bearing their name (Hayden, 1862, p. 275).

But the first description we can be assured refers to Biesterfeldt appeared in 1863, when Riggs wrote that the village was on the southeast side of the Sheyenne River

> on a high piece of land abutting on a swale which contains springs of living water. More than fifty years have passed since its abandonment by the Cheyennes, but the fortifications are all easily traced. The ditch that encircled the village proper is now, in places, three feet deep. It includes between two and three acres of ground. This place was thickly settled with houses. Some sixty or seventy of these houses stood inside the fortifications. Then outside the city were suburban residences, but they were not sunk into the ground nearly so much as those on the inside (Riggs, 1863).

His description is a very close account of what is now known of the site.

Riggs visited the site when he accompanied the Sibley Expedition of 1863. Another member of this expedition was A. L. Van Osdel, who published an independent statement on the site. Grinnell (1923, vol. 1, p. 19) is undoubtedly correct in his appraisal of this source, which

> possesses a certain interest, but apparently the writer has endeavored to make it vivid by suggesting that the site had been recently abandoned. In fact, in one place he 'says: "Several old dirt lodges were still standing, delapidated and in the [last] stages of decay. These old structures were built in a circular form and were from fifteen to twenty feet in diameter (Van Osdel, 1899)."

The Biesterfeldt site was surveyed by Theodore H. Lewis on 20 August 1890, at which time he prepared a plat of the fortification ditch and made a few notes on the village. This plat shows an "entrance" on the south side of the ditch which has been added to the Libby-Stout map of 1908 reproduced here (Figure 2). Notes accompanying his plat state there are remains of 65 lodges and a large number of old caches; the smallest house is 4.60 meters in diameter, and the largest is 10.6 meters in diameter. A copy of the plat and notes was provided me by Alan R. Woolworth of the Minnesota Historical Society (Hill-Lewis manuscripts, Box 7, Folder 2).

About 1905, O. G. Libby, of the State Historical Society of North Dakota, visited the site and noted how closely it resembled earth lodge villages along the Missouri River (Will, 1914, pp. 72–73). Libby,

accompanied by A. B. Stout (then of the University of Wisconsin), revisited the site in 1908 in the course of mapping other earth lodge villages in North Dakota. This team prepared a detailed map of the site and a smaller-scale map of the surrounding terrain. Will drew on their maps and notes in the preparation of his 1914 article. The general map was reproduced in Grinnell (1923, vol. 1, p. 18), and the site map has been published several times (Grinnell, 1923, vol. 1, p. 20; Strong, 1940, p. 160; and Will and Hecker, 1944, pl. 5). It is also the base for Figures 2 and 3 in this study.

The historical and traditional sources may be summarized by saying that the Cheyenne earth lodge village (or were there more?) was on a high bank overlooking the southeast side of the great southern bend of the Sheyenne River. The Biesterfeldt site fulfills these expectations. Since

> There is no record whatsoever of any other tribe of a like culture having a permanent village in this locality [and] taking into consideration all these details, it seems certain that this must be the old Cheyenne site (Will, 1914, p. 73).

This statement is still valid, and it was probably the reason which loomed largest in Strong's mind when he ascribed the Biesterfeldt site to the Cheyenne, for this was the most economical solution to its identity—and still is. The Cheyenne are known to have inhabited the vicinity of the site at the approximately correct time. No other tribe is documented in the area for the equivalent time, and it is the only known earth lodge village on the river. We are probably safe in excluding the Dakota, Assiniboin, Plains Cree and Plains Ojibway for the authorship of Biesterfeldt. The roster of other possibilities, among groups known to have passed through the area or who are under strong suspicion of having done so at about the correct time, is brief: the Sutaio (the nearest linguistic relatives of the Cheyenne), the Arapaho, and Atsina (Gros Ventre). The latter two, like the Cheyenne and Sutaio, are Algonquin-speakers. Because of the similarities between Biesterfeldt and villages of the sedentary tribes along the Missouri River, the Mandan, Hidatsa, and Arikara should at least be mentioned.

The Sutaio, linguistic cognates of the Cheyenne, might be a plausible alternative in spite of our lack of information on them. Like the Cheyenne, they have an eastern or northeastern origin, and Swanton (1952, p. 285) suggested they remained near the Cheyenne during their migration from Minnesota to the Missouri River and beyond. Traditionally, the Sutaio were enemies of the Cheyenne before they began their westward movement, but they lived near and associated with the Cheyenne for many years after crossing the Missouri River. The Sutaio finally joined them, to become one of the Cheyenne bands (Grinnell, 1923, vol. 1, pp. 9–10). Virtually nothing is known of them before their mention by Lewis and Clark. Their horticultural background is reflected in Grinnell's statement that up to 1833 many of them were "planting on the Missouri" (Grinnell, 1923, vol. 1, pp. 11, 30).

Perhaps the next most likely candidates are the Arapaho and Atsina. They, too, derive from the northeast and are suspected of having once been village farmers. Both groups have traditions that they were once one people, living in or near the Red River valley, from which they moved southwest across the Missouri River—some time before the Cheyenne did so. The Atsina separated from the Arapaho a little later (Swanton, 1952, p. 385). According to Hayden (1862, pp. 321, 340–341, 343), when the two groups were united they lived somewhere on or south of the Saskatchewan River, and did not separate until about 1750.

Whatever group occupied Biesterfeldt were hunters and gardeners living in a fixed, fortified earth lodge village, superficially all but identical to those of contemporary Mandan, Hidatsa, and Arikara settlements on the Missouri River. Their economy, no less than their material culture, was similar to these people's. Elements of Biesterfeldt ceramic art are also closely related to those of the Arikara and other sedentary Missouri River tribes, contrary to Strong's statement that they are of Woodland or "northeastern types." Nevertheless, Strong is correct in his assertion that "their earth lodges and basic [material] culture were so similar to the latter that contacts must have been close" (1940, p. 375).

These similarities, in fact, are a great deal closer than one would expect of the Cheyenne on the basis of documentary and traditional evidence. Without evidence to the contrary, one might suspect that Biesterfeldt was occupied by a group which had lived on the Missouri in close contact with one of these groups, *then* moved to the Sheyenne River valley. This possibility is unsupported by any documentary or traditional data—which of course may not be of significance in view of the dearth of documentation for eastern North Dakota in the eighteenth century. The only reference to a Missouri River group in this area, in fact, is a Mandan tradition which apparently antedates the time they were reduced by smallpox:

> Many long years ago, when the Mandan villages were large and numerous, they occupied and were masters of all this section of country [in the vicinity of Painted Woods Lake, North Dakota]. The Sioux lived hundreds of miles toward the land of the rising sun, but . . . came here to fight and kill our people

and drive [the bison away from our villages]. We were strong then, and often brought the horrors of war to their own lodges (Taylor, 1932, p. 90).

The intrusion of Mandan war parties into what may be eastern North Dakota is as far as we can go in suggesting that the sedentary Missouri River tribes even *visited* terrain anywhere near Biesterfeldt.

Matters are not simplified by the fact that recent excavations along the James River in eastern North Dakota revealed a complex reminiscent of Biesterfeldt, although the complex differs in several ways from this site. Work at the Hintz earth lodge village and nearby related sites led to the definition of the protohistoric Stutsman Focus (Wheeler, 1963). The presently known components are on the west bank of the James River, just north of the present town of Jamestown. At this point, the James River flows south parallel to the Sheyenne River, some fifty kilometers west of the Sheyenne. These sites are about one hundred airline kilometers northwest of Biesterfeldt.

Hintz is an unfortified earth lodge village containing white trade goods in limited number; pottery similar to but distinct from that at Biesterfeldt; a few examples of pottery types as they were first defined at Biesterfeldt (Wood, 1955) and a few alien examples; and a roster of chipped and ground stone, worked bone and other items, most of them similar to those at Biesterfeldt. The presence of trade goods led Wheeler to suggest the complex dates about 1750–1800. If these dates are correct, and there is no reason to believe they are very far off, we are faced with an occupation on the James River by a sedentary horticultural people, approximately contemporaneous with Biesterfeldt, about which historical sources are silent.

It is difficult to ignore a number of analogies between Hintz and Biesterfeldt. Both villages were those of sedentary horticultural peoples in the 1700s, when white trade goods were beginning to reach them from the Old Northwest through native trade channels. Because Hintz was undocumented, Wheeler (1963) had to base his comparisons on archeological data (almost exclusively ceramic), and tentatively concluded that it was most likely occupied by some Hidatsa group. On the other hand, Strong was led to identify Biesterfeldt as Cheyenne on the basis of circumstantial evidence alone.

Hidatsa traditions (Bowers, 1965, pp. 297–303) assert that some of them came to the Missouri River from eastern North Dakota. Bowers (1948, pp. 28–80) has discussed in summary fashion his "Painted Woods Focus" sites on the Missouri River north of Bismarck as having been occupied by some of the first Hidatsa arrivals on that river—on the basis of identifications by informants in the 1930s. I hesitate to accept such identifications without further supporting evidence. In 1968, most of these sites were tested by Donald J. Lehmer and myself. Anticipating the as yet unpublished results of that work, and of tests by Lehmer (personal communication) in historic Hidatsa villages at the mouth of the Knife River (32ME10 and 32ME11), Hidatsa occupation of the Missouri River almost certainly preceded the probable date for the Hintz site. Thus, Hintz may well be far too late to represent Hidatsa who moved to the Missouri River.

It is no easy matter to sum up the traditional and documentary data bearing on the Cheyenne occupation of the Sheyenne River valley, and the role Biesterfeldt may have played in this picture. It is clear that the Cheyenne moved from Minnesota to a location in the valley of the lower Sheyenne River very near the Biesterfeldt site. This much, and this much alone, is incontrovertible. Every scrap of documentation points to one or more Cheyenne villages on this river in the 1700s. The fact that only one village site is known on the river, and its occupation unquestionably intercepts the period the Cheyenne are documented there, makes it very difficult to avoid the most economical solution: it is a Cheyenne village. Yet, the material culture there is so patently like that of sedentary village tribes along the Missouri River (and so unlike what we could plausibly expect for a site-unit intrusion by an Algonquin-speaking group from the Woodlands) that it seems equally courageous to maintain it is not Cheyenne.

All of the non-Woodland pottery from eastern North Dakota I have seen closely resembles Coalescent, if not Post-Contact Coalescent tradition wares. If there are any Middle Missouri tradition sites there, they have not come to my attention. In any case, the only reported village sites in eastern North Dakota are Hintz and Biesterfeldt—both of them protohistoric, neither of them clearly identifiable as to tribe, and both closely related to contemporary sedentary tribes along the Missouri River. For these reasons, I propose the following hypotheses:

The Sheyenne River and James River valleys in eastern North Dakota constitute a marginal region in the Northeastern Plains sub-area, occupied by Post-Contact Coalescent populations of the Coalescent tradition.

The Coalescent tradition, broadly conceived as a syncretism of the Central Plains and Middle Missouri traditions, was generated by research in sites along the Missouri River (Lehmer, 1954). The remarkable uniformity of content in Post-Contact Coalescent

sites is traditionally seen as a response to stimuli arising from contacts between proto-Mandan-Hidatsa and Arikara-Pawnee within the confines of the Missouri valley. The Hintz and Biesterfeldt sites, far removed from the locale where this syncretism was first detected, force the conclusion that the existing taxonomic scheme has wider application and implications. There is no reason to believe Hintz and Biesterfeldt are splinter groups of Missouri River populations. Consequently, their presence cannot be explained by the same set of cultural confrontations which were responsible for Post-Contact Coalescent complexes along the Missouri River. We are thus led to the next hypothesis.

Sedentary horticultural groups in eastern North Dakota (perhaps Cheyenne and other Algonquin speakers) with a cultural base quite different from the Middle Missouri and Central Plains traditions were subjected to forces and processes analogous to those in the Missouri valley. By direct contacts they borrowed specific elements from the Missouri valley which stimulated the development of a recognizable manifestation of the Post-Contact Coalescent variant. That is, we are postulating a parallel development there (with some borrowing) rather than a linear one.

In this development, the Hintz site most closely approximates the changes which took place among the Mandan-Hidatsa; and the Biesterfeldt site, changes among the Arikara. These parallels demonstrate that the Northeastern Plains sub-area, on the protohistoric level at least, was participating fully in the evolution of the Plains Village pattern. The nature of the contacts between the Sheyenne-James region and the Missouri valley cannot be readily explained. It certainly cannot be explained in terms of trade, for there is little point in exchanges between two horticultural peoples.

Whatever the solution to these dilemmas may be, it is obvious that the occupation of eastern North Dakota by protohistoric Plains villagers is infinitely more complex than hitherto realized. The preceding comments are designed to expose our basic ignorance of what actually took place there, and to offer some tentative hypotheses for exploration. The work necessary to clarify these problems will pose real challenges in methodology and necessitate very careful work, but defining the cultural processes involved in this critical area should offer real rewards to anyone willing to accept the challenge.

Residence on the Missouri River

The movements of the Cheyenne to villages on the Missouri River (which they largely abandoned before the passage of Lewis and Clark) are all but unknown. They lived along this river for some time, occupying earth lodges "not unlike" those of the Arikara and Mandan (Grinnell, 1915, p. 1). Except for a village near the confluence of the Missouri River and Porcupine Creek, none of their settlements along the Missouri (Figure 16) were fortified. Gradually, they abandoned these villages and their horticultural pursuits and began to move out onto the High Plains west of the Missouri, in all likelihood following earlier groups which had taken to hunting bison and living in tipis.

George Will synopsized some of their traditions which relate that they roved

> the prairies of eastern North Dakota for a while after abandoning the Sheyenne River village. . One old lady tells how they traveled, *all on foot* while the wolf dogs were each packed [with] travois. . . . According to her story they traveled directly to the Missouri River in order to seek the protection of the Mandans and Arikara (1914, p. 76, emphasis mine).

There are no firm dates for the arrival of any group of Cheyenne on the Missouri River, although there are a number of approximations. There are statements that some of them arrived in the 1600s, but the more plausible dates postdate 1700.

The earliest reference to a crossing of the Missouri is by W. P. Clark (quoted in Mooney, 1905–07, p. 366–367), to the effect the Cheyenne crossed the Missouri near the mouth of the Cheyenne River "about 200 or 250 years ago." Since Clark's work was published in 1885, this would place the crossing about 1635 to 1685. Mooney (1905–07, p. 367) comments that Clark's date "is a fairly good guess." Grinnell offers some confirmation in a statement obtained from a Cheyenne informant

> long regarded as the most reliable historian—the man with the best memory—[that] some of them reached the Missouri River about 1676, two hundred and four winters before 1880, when the statement was made (Grinnell, 1915, p. 1).

Elsewhere Grinnell also says (1923, vol. 1, p. 30) there were Cheyenne far west of the Missouri by about 1680. There is still another source which implies the Cheyenne were west of the Missouri River about this time, far from their more plausible habitat in or near Minnesota. Quoting Twitchell (New Mexican Archives, vol. 1, p. 265), Grinnell refers to a letter written by Don Diego de Vargas in May, 1695,

> in which he says that certain Apaches from the east, "who are called Chiyenes," had recently come to Santa Fe. Just who these people may have been is uncertain. It is not said that they called themselves Chiyenes, but were called Chiyenes. . . . It may well be that even at that early date a party of Cheyennes had drifted far southwestward after buffalo (Grinnell, 1923, vol. 1, p. 15).

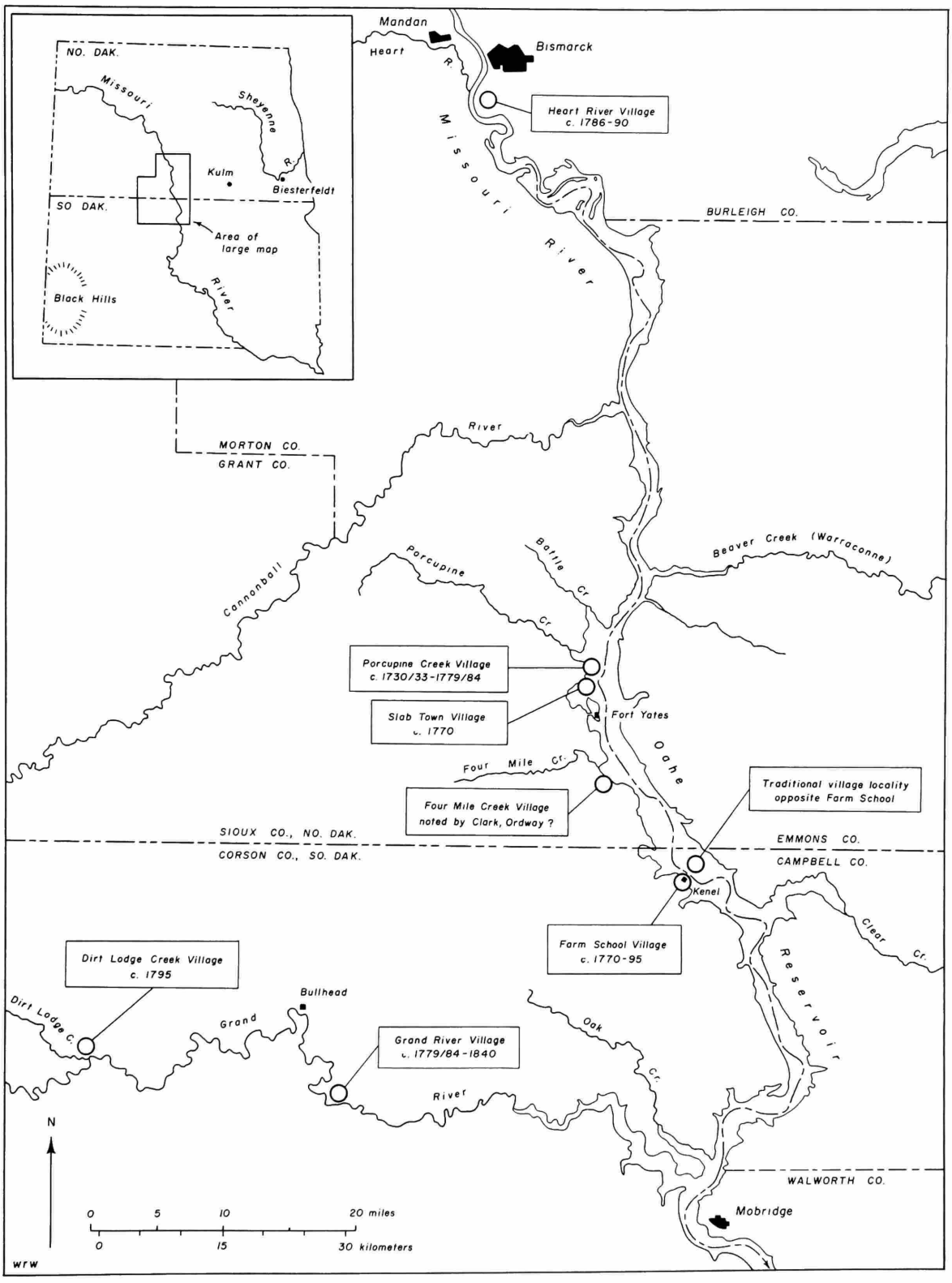

FIGURE 16.—Traditional locations for certain Cheyenne villages on and near the Missouri River.

No one since Grinnell has quoted these dates with explicit approval. In view of what we know of the Cheyenne, it seems very unlikely (even if the reference is taken at face value) that anything other than a small group of Cheyenne was involved. If a reason must be offered for their presence in Santa Fe, I suspect that trade—not bison hunting—carried them that far south.

There are a few hints that these very early dates are not wholly impossible. The Cheyenne would not have had horses in the late 1600s, and I believe it is significant that the traditions cited by Will (1914, p. 76, quoted above) mention the journey to the Missouri River was made on foot. Surely we are dealing with statements drawn from informants of different bands, which represent movements to the Missouri River at different times. That is, there is good reason to suspect that some groups preceded the arrival of horse-owning Cheyenne on the Missouri River. In any event, none of these early dates can be verified by other data, nor can they be invalidated; they are simply suspect.

No Cheyenne sites are known between the Sheyenne River valley and the Missouri valley. There is an unverified reference to a site near Kulm, North Dakota, based on Dakota tradition given George Will by A. McG. Beede. Will reports that the purported village, in the hills some 135 kilometers east of Fort Yates, was built by Cheyenne who came from Minnesota. They lived near Kulm for a time, then crossed the Missouri and built a village on the west bank, near Porcupine Creek (Will, 1924, p. 327). Grinnell, a few years later, published the same account in a somewhat expanded version:

> The Cheyennes who settled on the Porcupine are said by the Sioux to have been the first of the tribe to reach the Missouri River *at that point,* though long before this there were Cheyennes west of the Missouri. The story is that they came from some village described as being on the Minnesota River. . . .
>
> From this Minnesota home these Cheyennes had journeyed westward, and passed by the Cheyenne village on the Sheyenne River, and gone beyond that to a small flat on the headwaters of Maple Creek, west and a little south of the present town of Kulm, North Dakota. At that point . . . they built a village and . . lived there for a few years. Dr. Beede tells me that he has seen there the remains of houses and some small mounds. This village was soon abandoned and they moved on westward (Grinnell, 1923, vol. 1, pp. 27–28, emphasis mine).

General Sully fought the battle of Whitestone Hills only a short distance from the present town of Kulm in September of 1863. It is possible that fortifications thrown up there by Sully may have been mistaken for a Cheyenne site (Grinnell, 1923, Vol. 1, p. 27n).

Most of the Cheyenne villages on the Missouri River were near the North and South Dakota boundary (Figure 16). These settlements were between the Mandan-Hidatsa villages and those of the Arikara to the south. The Mandan and Hidatsa were usually on good terms with the Cheyenne and, in fact, the two groups often lived near one another (Grinnell, 1915, p. 5; 1923, vol. 1, pp. 29–30, 38, 47–48). These friendly relationships also included the Arikara, for Cheyenne informants "often spoke of the time when the two tribes lived together at the mouth of the Moreau" River (Grinnell, 1923, vol. 1, pp. 8–9).

Grinnell brought together Cheyenne and Dakota traditions which, when combined with later documentation, provide general information on their occupation of the Missouri River in the late 1700s, when there were still Cheyenne and Suhtai villages along the river and its tributaries.

> It was soon after . . . 1833 that an increasing number of [them] began to take to a wandering life and some of them to go south. Up to this time many Cheyennes and many Suhtai were planting on the Missouri River. The different camps of Cheyennes, and of Suhtai, were sometimes on one side of the Missouri River and sometimes on the other. Yet, according to Cheyenne and Sioux traditions, there were Cheyennes far west of the Missouri River 150 years before that time [or by about 1680] (Grinnell, 1923, vol. 1, p. 30).

Most of the traditional accounts, however, relate to Cheyenne villages along the Missouri between about 1730 and 1840. Doll Man, said to have been more than eighty years old on his death in 1871, was born about 1790 in a "camp" of Cheyenne on the Missouri River that "dwelt permanently near or with the Mandans" (Grinnell, 1923, vol. 1, pp. 47–48). This camp was said to have gone out on the Plains "only occasionally" to hunt bison.

Another account of Cheyenne living near the Mandan is contained in the account of the daughter of an elderly Suhtai woman, Elk River (Grinnell, 1923, vol. 1, pp. 29–30, 38). In 1877 a band of Cheyenne was detained at Fort Lincoln, North Dakota. During their stay there, Elk River's mother (born about 1786) visited several "well-known" places near the mouth of the Heart River (Figure 16) where, as a child, her people had grown crops. At this time, they

> lived in a permanent village on the east bank of the Missouri River and planted there. In the large houses of this village . . . there were often a considerable number of people—two or three or four families (Grinnell, 1923, vol. 1, p. 30).

Perrin du Lac saw the Cheyenne at the mouth of the White River in present-day South Dakota in 1802, and speaks of them as wanderers, but that they sowed near their village maize and tobacco, which they returned to harvest at the beginning of autumn (Du Lac, 1805, p. 259, cited in Grinnell, 1923, vol. 1, p. 29).

There is no evidence to identify any site along the

Missouri River as Cheyenne, in spite of Strong's comment that he recovered some pottery "suggesting Cheyenne types" (1940, p. 376) near Fort Manuel Lisa, five kilometers southeast of Kenel, South Dakota. Recent fieldwork along the Missouri, summarized later, is negative.

Lewis and Clark Documentation

It is still impossible, as it was much earlier, to reconcile Dakota traditions regarding Cheyenne villages in the vicinity of Fort Yates with other and written documents. Save for Cheyenne and Dakota tradition, the only sources relevant to the identification of any of these sites are the journals of Lewis and Clark, and that of Sgt. John Ordway, a member of their party.

The Lewis and Clark expedition made its way through the Missouri valley near Fort Yates (Figure 16) on 15 and 16 October 1804, accompanied by an Arikara chief from a village near the mouth of the Grand River. He served as an informant for many of their statements, and is probably responsible for those which relate to the Cheyenne occupation of this part of the valley. Clark (Thwaites, 1959, vol. 1, pp. 190, 195), like Grinnell, speaks of the Cheyenne as having been established on both banks of the Missouri; Clark specifically refers to the *We hee skeu* (the villagers on this side), and to the *Shārha* or *Shar há* (the village on the other side [west bank]). No Cheyenne or Suhtai were living in the locality at the time of their passage, however, and the "old" villages mentioned by Clark and Ordway were on the west bank. They give no clue as to how long they may have been abandoned.

On 14 October they passed Blackfoot Creek (their *Piaheto* or Eagle Feather Creek) near the present North and South Dakota boundary (Thwaites, 1959, vol. 1, p. 193), and camped about thirteen kilometers above its mouth. On the following day, Clark notes passing an

> old village of the *Shăr há* or Chien Indians on the L.S. [west bank] below a Creek on the same Side (Thwaites, 1959, vol. 1, p. 195).

Ordway's journal entry for the same day notes what may be the same village, for he mentions passing

> a handsome Bottom prarie & the Mouth of a creek where their was an old village Some years ago of the Chian Nation on S.S. [west bank] (Quaife, 1965, pp. 153–154).

Because of ambiguity in the journals relating to the creeks passed on that day it is not possible to be certain exactly which west bank creek they mean, although the only stream of any consequence an appropriate distance north of Blackfoot Creek is Four Mile Creek, which empties into the Missouri about six kilometers south of Fort Yates. That night they camped on the east bank near an Arikara hunting camp, somewhere opposite and above the present Fort Yates.

On the morning of 16 October Clark mentions a village which is usually identified as having been on Porcupine Creek. He states:

> a little above our camp on the L.S. [west bank] passed a circular work, where the, *Shăr há* or Chien, or Dog Indians formerly lived a short distance above passed a Creek which we call Chien Creek (Thwaites, 1959, vol. 1, p. 195).

The entry in his field notes provides essentially the same information:

> a little above our Camp on the L.S. passed an old Shyenne Village, which appears to have been serounded with a wall of earth; this is the retreat & first Stand of this nation after being reduced by the Sioux and drove from their Countrey on the heads of red River (Osgood, 1964, p. 161).

On the same occasion, Ordway states they

> passed an old Shian fort on the S.S. [west bank] where the Chian nation of Indians lived Some years ago. Proceeded on passed a creek on s.s. (Quaife, 1965, p. 154).

It is not entirely clear whether Clark and Ordway are referring to two or three Cheyenne villages in the passages cited. Clark seemingly mentions the first Cheyenne village just before camping for the night of 15 October; between Ordway's first Cheyenne village and camp that same night he mentions passing timbered bottoms on both sides of the river and a creek which entered the Missouri on the west side—hinting that they are referring to *two* separate villages below the "circular work" (Will, 1924, p. 311n). On the other hand, the fortified sites both of them mention leaves no room for doubt that they are speaking of the same settlement, below the mouth of what Clark calls *Chien Creek*. Clark noted passing five streams on 16 October, but only the two northernmost ones can be identified with any assurance: *Kee tooch Sar kar nar* (Little Beaver Creek) and *War ra con ne* (Big Beaver Creek), both of them on the east bank. Most authors have assumed that "Chien Creek" is identifiable as present-day Porcupine Creek. This may be the case, but I do not believe the situation is clear enough to verify this identification.

Additional comments about the village near (if not on) Porcupine Creek were recorded by Nicholas Biddle in notes compiled during a visit with Clark in Virginia. He records that after the Cheyenne left the Red River area,

> they halted on the Southern [west] side of the Missouri below the Warriconne where their ancient fortifications are still seen (Jackson, 1962, p. 518).

This same information is contained in Washington Irving's *Astoria*, the manuscript of which was completed and published in 1836 (Irving, 1964, p. 221). Although the source of Irving's information has not been determined, it is obvious that it derives from Biddle or Clark—as does a similar statement by Father de Smet, writing in 1841 (Chittenden and Richardson, 1905, vol. 1, p. 211).

Porcupine Creek Village

Porcupine Creek enters the Missouri River some eight kilometers north of the town of Fort Yates, North Dakota (Figure 16). The Teton Dakota told Grinnell that there was a Cheyenne village on the south bank of this stream, near its mouth, and he recorded his visit to this location as follows: it

> is situated on a bluff above the Missouri River on the south side of Porcupine Creek, less than five miles north of Fort Yates. The village has been partly destroyed by the Missouri River, which has undermined the bank and carried away some of the house rings, but many remain. . . .
>
> This settlement must have been large. It stands on a flat which slopes slightly toward the river, and the houses were close together. . We counted more than seventy large house sites, taking no account of the small ones. The houses extend several hundred yards back from the river, that is, toward the west, and 150 or 200 yards north and south. . . .
>
> Sioux tradition declares that the village was established about 1733 or a little earlier, perhaps 1730; they fix the date as about one hundred years before the star fell—1833. It was occupied for fifty years or more, and then the people abandoned it and moved over to a point on the Grand River twenty miles above its mouth. The date of the removal is given as about the time of the great flood . . . which, it is said, took place about 1784 (Grinnell, 1923, vol. 1, pp. 23–24, 27).

George Will also describes this village, but in a much abbreviated fashion, adding his own comments to its dating:

> All of the traditions agree that the village . . was abandoned before the great smallpox epidemic of 1780 or 1781, which the Cheyennes almost entirely escaped (Will, 1914, p. 77).

Will further comments (1924, pp. 311–312) that this was the village built by the first Cheyenne band to arrive on the Missouri River. If there is any validity to the traditions cited by Grinnell and Will, the village may date about 1730–1784.

Because of the possibility that this is the location of Clark and Ordway's fortified Cheyenne village, this locality has been visited by nearly everyone concerned with that tribe: Alan R. Woolworth and I visited it in 1955 and 1956. Until the Oahe Reservoir was filled, a village site (32SI6) with several well-defined earth lodge depressions remained on the south bank of the stream, but no one from the time of Grinnell on has ever noticed the remains of any kind of fortification there. Excavations were conducted there in 1957, when Daniel J. Scheans investigated the site under the sponsorship of the State Historical Society of North Dakota.

The results of this work, as yet unpublished (Scheans, 1957), do not confirm a Cheyenne occupation of the area. Scheans found two prehistoric pottery-bearing components (one of them Woodland) on the south bank of the stream. On the north bank he exposed an earth lodge dating about 1890–1900, and a much earlier component with pottery resembling that from the prehistoric Demery site (Woolworth and Wood, 1964), probably dating in the 1600s. Accordingly, it is indeed possible that, by the time the site was investigated, the locality in which the Cheyenne lived had washed into the river.

Slab Town Village

Another purported Cheyenne village is said to be about three kilometers below Porcupine Creek, also on the west side of the river (Figure 16). Many years ago, some Dakota built several log cabins here, the foundations for which significantly disturbed the surface contours of the area (Grinnell, 1923, vol. 1, p. 24; Will and Hecker, 1944, p. 89). Until about 1956, a Y.M.C.A. mission house remained on the presumed site. Grinnell (1923, vol. 1, p. 28) feels it is possible that this locality was occupied for a time by Cheyenne from a village on the Sheyenne River.

This site (32SI5) was briefly investigated in 1956, when Alan R. Woolworth and I, conducting the State Historical Society of North Dakota's 1956 archeological program, worked in the Fort Yates area. The locality was again investigated by Scheans in 1957, but neither party recovered any material suggestive of a Cheyenne Indian occupation. The pottery which was recovered can be attributed to one or more prehistoric occupations in the locality.

Farm School Village

Another site identified as a Cheyenne village is just below the North and South Dakota boundary at the Farm School, in the now-flooded town of Kenel, South Dakota (Figure 16). Will drew on Dakota traditions that a village was built there by Cheyenne who came from "the" village on the Sheyenne River (Will, 1924, p. 311). Grinnell, again accompanied by Beede, visited this site, some twenty-five kilometers southeast of Fort Yates.

> The farm school buildings are in the middle of the old Cheyenne village. To the south and southeast of the school are a dozen or twenty house rings, and to the north, close along the river, are others. Within the boundaries of the school are three low mounds. . . .

This village was large, and the way in which the houses at its border were placed suggests that attacks by enemies were not anticipated. The cultivation of the soil, the erection of the school buildings, and the westward movement of the Missouri River . . . have greatly reduced the area of the village (Grinnell, 1923, vol. 1, p. 25).

Grinnell bases what he has to say of the history of this village on Dakota tradition:

Some time after the Cheyennes had established their village on Porcupine Creek . . another group of Cheyennes made their appearance on the Missouri River, crossed it to the village of their friends on Porcupine Creek, remained there for a time, and after no very long stay moved south to [the Farm School], where they established a village a little up-river and northeast of the Cheyenne Hills—the farm school Cheyenne village, which the Sioux call the Cheyenne Plantings. This group of Cheyennes is said to have been the one that long occupied the village on the Sheyenne River. . . . They lived at the Cheyenne Plantings . . . for about twenty-five years, and then moved up Grand River to Dirt Lodge Creek (Grinnell, 1923, vol. 1, p. 28).

This site (39CO3) has also been inspected by many people, but no controlled excavations were ever carried out there. Collections in the State Historical Society of North Dakota (from a cellar dug at the school in one of the "mounds"); material which Alan R. Woolworth and I obtained in 1956 from the cutbank of the river near Kenel; and my own collections made along the reservoir banks in 1969, contain pottery which can be duplicated in a number of nearby prehistoric sites (Wood and Woolworth, 1964). The complex represented significantly antedates any possible Cheyenne occupation of the locality.

The historic site of Fort Manuel Lisa (1810–1812), about five kilometers down river, was built over older and aboriginal remains. Strong worked in the vicinity of this fort in 1938, and asserts (1940, p. 376) that "we found a little pottery suggesting Cheyenne types in caches" next to the fort. I have not had the opportunity to examine Strong's sample from the site.

Four Mile Creek Village

References in the journals of Clark and Ordway on 15 October 1804, quoted earlier, may well refer to a village near the mouth of this creek, about six kilometers south of Fort Yates (Figure 16), although there is no present evidence for such a site. Will (1924, p. 333) refers in passing to a Cheyenne site reputedly found by Emil Steinbrueck near the mouth of this creek, although no one since has commented on this possibility. Clark's comment on the Cheyenne village which may have been in this area is quite specific that it was below the mouth of the creek. The nearest known site below its mouth is the Paul Brave site, about one and a half kilometers distant (Wood and Woolworth, 1964); there can be no possible association between this prehistoric site and the historic Cheyenne occupation of the area.

Gordon W. Hewes surveyed the lower course of Four Mile Creek in 1947 without locating anything of significance (Hewes, 1949, p. 23), and my own inspections of the creek mouth in 1955, 1956, and 1969 confirm his observations. The nearest known site above its mouth is 32SI22, about three kilometers to the north, about which nothing is known. Adjoining 32SI22 to the north is a long-rectangular house village, 32SI101 (James E. Sperry, personal communication); the house type here excludes this site as a Cheyenne village. Finally, Site 32SI202, near the mouth of One Mile Creek, is an occupational site at which earth lodges may have been obscured (Cooper, 1953, p. 46). None of the material from these sites suggests they are anything other than manifestations of local prehistoric complexes.

Dirt Lodge Creek Village

This village is mentioned only by Grinnell, again on the basis of Dakota tradition. The Cheyenne who left the Sheyenne River, after living at the Farm School Village for about twenty-five years, moved to this site on the Grand River, some seventy kilometers above its mouth (Figure 16). They built an earth lodge village here, the westernmost such Cheyenne settlement (Grinnell, 1923, vol. 1, p. 28). The date of their move to this location, as recorded in the winter count of a Dakota, was 1795 (Grinnell, 1923, vol. 1, p. 28). To my knowledge, no one has previously tried to locate this village; if they have, they have not recorded their failure to do so. It was probably built in the Grand River valley itself, near the mouth of Dirt Lodge Creek. My own inspection of large-scale aerial photographs of the vicinity of the mouth of this creek in 1969, and a reconnaissance of the area, revealed nothing in the way of aboriginal remains.

Grand River Village

A site on the Grand River (Figure 16), not far from where Grinnell believed Sitting Bull lived, was supposed to have been occupied by the Cheyenne who abandoned the village on Porcupine Creek.

Sioux tradition declares that the village on the Porcupine River was established about 1733 or a little earlier. It was occupied for fifty years or more, and then the people abandoned it and moved over to a point on the Grand River twenty miles above its mouth. The date of the removal is given as about the time of the great flood which, it is said, took place about 1784. The Cheyenne village remained on Grand River for a long time, probably as late as 1840, for Red Hail, a Sioux (born 1833), often told Dr. Beede of visiting the village as a small boy, six or eight years of age, and eating green corn there (Grinnell, 1923, vol. 1, p. 27).

Grinnell says the village was on Grand River about eleven kilometers below the post office of Bullhead, and near the camp where Sitting Bull was killed in 1890. His elderly Cheyenne informants used to tell of the days when they lived on the Grand, or "Ree" River, *Onō' ni o' hē*:

> There was no difficulty in finding the village site on the north side of Grand River, a mile or a mile and a half below Sitting Bull's camp. Here were a few house rings, within one of which was a hollow,—a cache which had fallen in,—and a few hundred yards farther down the river, on a higher bench, many more house sites, some of them forty feet in diameter. They were often overgrown with low bushes. The village was large and the houses ran back nearly a half mile from the river. Sometimes they stood close together, and the general plan of the village reminded me much of the old Pawnee village on the Loup River in Nebraska. On a sandy ridge near the river bank were found a number of large caches, apparently distant from any house sites. Some of these occurred in pairs—two deep holes close together. According to Sioux tradition some of the lodges here were so large that the Cheyennes took their horses into their houses at night for protection (Grinnell, 1923, vol. 1, p. 26).

Grinnell is our sole authority for this village. Only one survey along the Grand River is known, and it "produced no evidence of Cheyenne earthlodge villages" (Bowers, 1948, p. 79). In the summer of 1967, I flew from the mouth of the Grand River to a point just west of the town of Bull Head. Both sides of the river were carefully inspected, but nothing resembling an earth lodge village was noted.

Cheyenne Creek Village

There are two purported east bank villages of the Cheyenne along the Missouri River. One of them, referred to by both Grinnell and Riggs, was near the mouth of Cheyenne Creek, in Potter County, South Dakota,

> near the former town of Forest City. This settlement . . referred to by Riggs [1893, p. 194] is one of the many places still known to the Sioux by the name of *Sha hi en a wo ju*. It was occupied for a long time, and from it the people moved south. Old Sioux today talk about the village . . , opposite the present Cheyenne River Indian Agency . . and of . . . the cornfields at that place (Grinnell, 1923, vol. 1, p. 29).

There are two sites (Cooper, 1953, p. 56) near the mouth of Cheyenne Creek and the former town of Forest City, both of them now inundated by the Oahe Reservoir. One of them was an occupational site with pottery (39PO9); the other, an earth lodge village (39PO11). Neither site was investigated prior to flooding.

Village Opposite Farm School

A second village on the east bank of the Missouri is only casually mentioned by Grinnell, again drawing on Dakota traditions. The village (Figure 16) was purported to be on the east bank of the river opposite the Farm School Village (Grinnell, 1923, vol. 1, p. 28). The village is mentioned by no other authority, and no archeological fieldwork has been conducted in the presumed locality.

Discussion

We have reviewed numerous archeological sites in the vicinity of Fort Yates and tried to correlate them with documentary and traditional evidence, but fieldwork to date has not confirmed a Cheyenne origin for any of them. Occupations by prehistoric village peoples and by the historic Dakota have so cluttered the area that it would be very difficult to locate, much less identify, even a permanent Cheyenne settlement. There are a large number of sites near Fort Yates, for the area was settled by village peoples beginning about A.D. 1100 (Wood, 1967, p. 123). It is therefore not surprising that most of the traditional locations to which Grinnell was led yielded evidence of a "Cheyenne" village. It is nevertheless obvious that the Cheyenne did live on both banks of the Missouri near Fort Yates, in spite of the lack of sites we can directly ascribe to them. Perhaps we have not inspected the correct locations, or perhaps the villages have washed into the river. On the other hand, contrary to numerous assertions, it is possible that their villages consisted largely of tipis which left little if anything in the way of surface evidence. Furthermore, pottery (if it was being made at all) was probably a very scarce commodity.

For a long time after Biesterfeldt was excavated, it was reasonable to expect that eventually some site along the Missouri would yield evidence of the complex represented there. Will and Hecker (1944, p. 38), however, were never able to locate a village on the Missouri River with "pure Cheyenne culture" (*i.e.*, like that at Biesterfeldt). This is still true, more than twenty-five years later; nor am I aware of any site of the appropriate age or location on the river for which a Cheyenne origin could be posited on any grounds. Since the Missouri valley at Fort Yates and south is now inundated by the Oahe Reservoir, the chances are remote indeed that the situation will alter in the foreseeable future. A concerted search should be made for the two villages on the Grand River, but if they are as vaporous as those (which seemed to be so well documented) in the Fort Yates area, there seems little chance to obtain further data of any significance for this period in Cheyenne culture history.

Abandonment of the Missouri River

The documents and traditions collated above make it abundantly clear that the Cheyenne did not arrive on the Missouri River as a tribal body. Rather, individual bands gradually abandoned Minnesota and eastern North Dakota and made their separate ways to the Missouri, arriving on that river along a broad front at different times. The precision of the data leaves much to be desired, but there were Cheyenne villages, at one time or another, between the mouths of the Heart River in North Dakota and the White River in South Dakota. The best documented of these villages are those near Fort Yates and those on the lower reaches of the Grand River.

Early crossings of the Missouri River by pedestrian bands in the mid-1600s are possible, although they are very poorly attested. These early groups, probably moving as independent bands, became nomadic by the 1700s. It is not until the mid-1700s that any details of Cheyenne life on the Missouri are available, when still other groups arrived on the river. These later arrivals probably had the horse (although some of them were reputedly pedestrian). They settled for a time in villages along the river but eventually they, too, moved out onto the High Plains. All but two of the village groups seem to have abandoned village life and gardening on the Missouri by 1800.

The assertion that most of the Cheyenne were fully developed equestrian bison hunters after about 1790 is corroborated by numerous historical records, many of them known or cited by Grinnell. We also have Grinnell's assurance that they used only the tipi as a dwelling after the abandonment of their permanent villages in the late 1700s. But it is here that Grinnell contradicts himself: he documents two Cheyenne earth lodge villages on the lower Grand River between about 1779 and 1840.

These two villages on the Grand River pose problems that are not easily resolved, for they are mentioned by no one other than Grinnell. It is strange that they are not mentioned by any of the early traders and explorers who visited the Arikara villages at the mouth of the Grand River. For example, in the summer of 1795, when Jean Baptiste Truteau was staying among the Arikara near the mouth of the Grand River, he had several occasions to visit with the Cheyenne, and discuss them with his hosts—although there is no evidence that he actually visited their camps or villages (Nasatir, 1952, vol. 1, p. 90). In his journal he speaks of their "villages"; yet it is clear from his comments that these are not permanent villages, for he mentions they "wander over the country" (Nasatir, 1952, vol. 1, p. 301–309).

Nine years after Truteau's visit, Pierre Antoine Tabeau was living among the Arikara—again at the mouth of the Grand River—when Lewis and Clark visited them in 1804. Tabeau knew the Cheyenne through their trade relationships with the Arikara, and he states that the Cheyenne, "having themselves been farmers," value corn and other garden commodities highly. He continues that the Cheyenne were "for a few years established on the Missouri," but that they had ceased to till the ground, and roamed the plains between the Missouri River and the Black Hills (Tabeau, 1939, pp. 151–153). When Alexander Henry visited the same area, in 1806, he made no mention of a permanent Cheyenne village (Coues, 1897, vol. 1).

Perhaps the two villages Grinnell mentions on the lower Grand River escaped notice because they were not on the main route of travel—the Missouri valley itself. Perhaps, too, they were not occupied continuously. The very name of Dirt Lodge Creek implies that a settlement of some permanence was made there. Still, if they were as well known as Grinnell would lead us to believe, it is hard to believe that Truteau, Tabeau, or Henry would not have mentioned them. In any case, their status is in doubt, although the documentation Grinnell offers suggests they have some basis in fact, and may well have been the last permanent villages of the Cheyenne along the Missouri River.

It now seems appropriate to re-examine the rapidity of Cheyenne adaptation to the High Plains. It is of course impossible to estimate how long it took any individual group to abandon village life, and perhaps fifty years is a plausible figure, as Strong (1940, p. 376) suggested. Yet, if the traditional data are at all accurate, individual bands may have moved across the Missouri as early as 1635, while the last of them did not leave the river until about 1840. This provides a maximum of about two centuries for their occupation along the Missouri. In a more conservative vein, some of them must certainly have crossed by 1680, and only a few of them were left on the river after 1790. This still implies that it took the tribe as a whole well over a century to make the transition.

There is no question that some Cheyenne became nomadic Plainsmen earlier than others, and there were probably different reasons for their removal to the Black Hills and other points west of the Missouri. In spite of attachments for their mode of life, the occupation of the High Plains seems to have been inspired by three factors: trade relations, bison hunting, and the difficulties of coping with equestrian Dakota nomads.

The Mandan, Hidatsa, and Arikara were middlemen in a far-flung native trade network (Ewers, 1954)

which was well established long before the arrival of Lewis and Clark. The newly arrived Cheyenne were probably excluded from the same role in this network that the three sedentary tribes occupied: the trade of horticultural and other products to nomadic groups to the east and west. Thus, the Cheyenne move to the south and west may have been prompted in part by the fact it placed them in a position to act as intermediaries between the Mandan-Hidatsa and Arikara centers, and sources of goods to the southwest. Their role in this trade between 1795 and 1840 has been discussed at length by Jablow (1951). Because of their profits as middlemen, the Mandan, Hidatsa, and Arikara tried to maintain their position in this system and coexist with the hostile Dakota, who began arriving on the Missouri in increasing numbers not long after the Cheyenne.

There were probably more bison west of the river, away from the range of the three sedentary tribes on the Missouri and of the ever increasing number of Dakota. Bison hunting, in fact, is the only factor Grinnell discussed for the Cheyenne move to the High Plains. Those

> who began to wander out on the plains at first merely made hunting journeys, and returned with their meat to their village; but gradually these hunting excursions lasted longer and longer, until a time was reached when they practically lived on the plains and visited the river. Wandering farther and farther, those who had left the Missouri River reached the Black Hills (Grinnell, 1923, vol. 1, p. 12).

The increasing dependence on bison is probably related in another way to the presence of the Dakota. Cheyenne efforts to continue a sedentary, horticultural way of life led to such depredations by the Dakota as the plundering of their gardens, not to mention more direct military measures. Dakota pressure on the Cheyenne was described by Pierre Antoine Tabeau, who had witnessed the Dakota harassment of Arikara in their villages near the mouth of the Grand River. Tabeau comments that the Cheyenne were

> for a few years established on the Missouri; but, having neither the patience nor the weakness of the Ricaras to endure the insults and the vexations of the Sioux, [they] had to resort to open war. The Sioux, always wandering, left little for capture to the enemy, who often knew not where to find them, and the Cheyennes, settled there, were every day exposed, in spite of their superior courage, to some particular catastrophe. To lessen this disparity more, they abandoned agriculture and their hearths and became a nomadic people (Tabeau, 1939, p. 152).

Their sedentary neighbors on the Missouri were also subject to the same harassment but, unlike the Cheyenne, they remained in their villages on the river. Their course of action led, within a few years, to life in crowded villages surrounded by Dakota who preyed on their crops and gardeners, and virtually denied them the opportunity to hunt. Furthermore, their wealth from the native trade network was obliterated by the newly developed American Fur Company activities. There seems little doubt that the Cheyenne pursued the more adaptive alternative where, in addition, their dispersal resulted in fewer deaths from smallpox—which all but decimated the village people along the Missouri River. Finally, it is possible that the early and successful Cheyenne adaptation to the High Plains environment provided a model for the subsequent Dakota expansion west of the Missouri River.

Quite obviously, any number of social and technological changes were necessary when the Cheyenne abandoned their villages; the theoretical implications of these are the subject of a number of specialized studies. The changes were not made without dissent, however, for Will (1914, p. 77) points out that some families refused to accept nomadism. Rather, they moved to Arikara and Mandan villages and became members of these tribes. As an example, he mentions a Cheyenne who spoke in a Mandan council as a Mandan; but the individual to whom he alludes (Thwaites, 1959, vol. 1, pp. 212–213) was a chief of the "1st" Mandan village [Deapolis, 32ME5] that Clark referred to as a "prisoner" adopted into the tribe. Bruner (1961, pp. 231–232) mentions that the Mandan often adopted aliens to bolster their numbers after the smallpox epidemics. Other Cheyenne, even after becoming nomadic, retained some horticultural practices. Some of Grinnell's informants told him individual women commonly planted patches of corn as late as 1850 (Grinnell, 1915, p. 1; 1923, vol. 1, p. 253).

None of the post-1800 Cheyenne encampments have been sought out and excavated. Locating such camps would not be impossible, although tipi ring sites are known for their notoriously low artifact yields. In any case, because the status of Biesterfeldt is in doubt, and all but three (unlocated) Cheyenne villages along the Missouri River are flooded, about all that remain are tipi rings.

Summary and Conclusions

The Biesterfeldt site was first reported when archeological research in the Dakotas was in its infancy, and the flood of recent work there—especially along the Missouri River—has necessitated a number of revisions in the traditional way in which the site is interpreted. There are few groups in the Plains as poorly known as the village peoples who inhabited the Northeastern Plains periphery. The report on the Stutsman Focus in the James River valley, and the present study of the Biesterfeldt site in the Sheyenne River valley, provide all our present data on this aspect of the occupation of this part of the Plains. Needless to say, extensive survey and testing, followed by rigorous excavation programs, are necessary before we can be more precise in our interpretation of these sites. Therefore, our conclusions must be viewed with some reservation.

In the following discussion the internal evidence at Biesterfeldt is considered separately from the ethnohistorical data and their implications. Biesterfeldt has been regarded as a Cheyenne Indian village for more than a century, but every effort has been made here to avoid confusing the archeological *site* under study with the village or villages alluded to in the ethnohistorical documentation, particularly since the data from these sources are inconsistent.

Internal Evidence: Biesterfeldt

The community pattern and the structures at the site, together with the material inventory from these structures, provide the least controvertible statements in this study.

Biesterfeldt was built on a flat sandy terrace on the bank of the Sheyenne River, in a setting analogous to that preferred by the sedentary Missouri River tribes. The site is on the boundary between the monotonously level Red River valley and the hilly Drift Prairie. The village was fortified by an oval ditch, lacking bastions, which abutted against the river bank. The ditch, probably reinforced by a post palisade, encompassed about sixty-two randomly placed circular earth lodges.

A large earth lodge with four center posts, vertical wall posts, and a covered entryway faced the southwest onto a central, open "plaza." The setting is suggestive of Mandan or Arikara ceremonial lodges, and the form of the lodge is entirely consistent with the architectural tradition of these people. If this structure is in fact a ceremonial lodge, the religious nature of such structures and the conservatism attached to them imply that this is an old element in the complex. In contrast to the "ceremonial lodge," dwellings consisted of four-post earth lodges lacking vertical wall posts. All entries were directed to the southeast; every house was burned. House floors lacked storage pits, but pits were common outside the houses.

Most of the pottery attributes are well within the range of the ceramic traditions of the sedentary Missouri River groups; this is true of vessel form, rim form, paste, rim and shoulder embellishment, and vessel finish. These elements are most like those of the Arikara on the Missouri River; there are no clear prototypes for them in Minnesota. The pottery is distinguished from that on the Missouri River principally by the popularity of cord-wrapped rod rim decorations, by the abundance of linear check-stamping, and—to a lesser extent—by trade beads set into the vessel wall or impressed into the rim.

The manufacture of pottery, ground stone and bone tools had not yet been modified to any significant extent by the introduction of white trade goods. These industries stand in sharp contrast to chipped stone tools, most of which were nearly or fully displaced by substitutes obtained indirectly from white traders. Trade goods are relatively common, includ-

ing both unmodified items and objects of metal which duplicated native prototypes.

On the basis of internal dating, the presence of horse bones implies a date after 1750.

The artifact complex at the village conforms in most particulars with a generalized Plains Village pattern inventory, and contrasts strikingly with Woodland manifestations to the east. There is no question that the site is part of the Post-Contact Coalescent of the Plains Village pattern; it is a protohistoric village of sedentary, village-dwelling horticulturalists and hunters.

On the basis of internal evidence and comparisons with village sites of comparable age in the Northern Plains, we are dealing with a site on the extreme northeastern margin of the Plains Village pattern, geographically separated but closely related to peoples who inhabited the Missouri River valley in the Northern Plains.

Tribal Identification: Biesterfeldt

The identification of the site as a member of the horticultural village pattern in the Plains, and its approximate date, are matters susceptible to elaboration but not debate. The identification of Biesterfeldt as a village occupied by the Cheyenne Indians in the late eighteenth century, however, is still an open question.

Traditional origins for the Algonquin-speaking Cheyenne are in the woodland area of the Great Lakes region. Cartographic and other data lack precision for the seventeenth century, but the Franquelin 1678 map and other documents suggest they were on the Mississippi River in present Wisconsin or Minnesota.

Some Cheyenne appear to have lived in horticultural villages on the Minnesota River in western Minnesota in the late 1600s. Traditional data hint that other Cheyenne may already have moved west and crossed the Missouri River. The movements of the Cheyenne to the Missouri and beyond were by individual camps or villages, not as a tribal body. Settlements on the Minnesota River and on the Missouri may thus have been contemporaneous with the village or villages on the Sheyenne River.

Some time after 1700, one or more groups settled on the Sheyenne River, where they continued to plant gardens near settled villages. There is a tradition of an eclipse of the sun which took place while they lived on the Sheyenne River. Astronomical data show there was an eclipse on 22 May 1724 which was visible on the lower Sheyenne River. An eclipse in 1679 is probably too early; one in 1811 is too late.

Documents by early travelers imply there was only one Cheyenne village on the Sheyenne, but discrepancies between the account of the destruction of a village by Thompson, and by Alexander Henry the Younger, might be interpreted that the Chippewa attacked more than one Cheyenne village on this river.

The Cheyenne occupied the Sheyenne River at the same time the site is dated; one of the villages attacked by the Chippewa owned horses, and Biesterfeldt contained horse bones. No other earth lodge village is now known on the Sheyenne River; thus, the most economical identification is that it is Cheyenne. Documentation of Biesterfeldt as Cheyenne began with Hayden in 1862, drawing on earlier but unknown sources, and all later writers have accepted this identification.

Another protohistoric site on the James River, the Hintz site, dates from the same time period as Biesterfeldt (1750–1800). Hintz is also related in some way to Missouri River horticulturalists; the Hidatsa are suggested.

For these reasons, the Sheyenne River and James River valleys in eastern North Dakota may constitute a marginal region of the Northeastern Plains sub-area, occupied by the Post-Contact Coalescent variant populations of the Coalescent tradition. During the period 1750–1800 it was occupied by groups related to the Mandan-Hidatsa (Hintz) and Arikara (Biesterfeldt). The region was fully abandoned by horticultural peoples by 1800.

The Coalescent tradition, as generated by research along the Missouri River, is seen as a response to contacts between the Middle Missouri and Central Plains traditions within the Missouri valley. There is no reason to believe Hintz and Biesterfeldt are splinter groups of Post-Contact Coalescent Missouri River populations, so these sites cannot be explained by the same set of cultural confrontations responsible for Post-Contact Coalescent complexes on the Missouri River. Consequently, we hypothesize that sedentary horticultural groups in the Northeastern Plains were subjected to forces and processes analogous to those in the Missouri valley. Parallels between Hintz and the Mandan-Hidatsa, and between Biesterfeldt and the Arikara, show that horticultural peoples in the Sheyenne and James river valleys were participating fully in the development of the Plains Village pattern.

Missouri Valley and High Plains Sites

The occupation of the Missouri valley between the mouths of the Heart River in North Dakota and the White River in South Dakota by the Cheyenne is documented by accounts of early travelers, as well as by Cheyenne and Dakota traditions.

The journals of Clark and Ordway say the Chey-

enne lived on both banks of the Missouri River near Fort Yates; they mention at least two, if not three, abandoned Cheyenne villages on the west bank of the Missouri near that town.

Documentation is offered for several sites or traditional locations along the Missouri River where the Cheyenne reputedly lived: the village on or near Porcupine Creek; Slab Town; Farm School; Four Mile Creek; Dirt Lodge Creek; Grand River; Cheyenne Creek; and a village opposite Farm School. Field work has not suggested, much less confirmed, a Cheyenne origin for any of them. Since there are a very large number of prehistoric sites near Fort Yates, it is not surprising that the traditional locations visited by Grinnell yielded a "Cheyenne" village.

No Cheyenne village sites have been located and identified on or near the Missouri River. Perhaps the correct localities may not have been visited, or they may have slumped into the river. In any case, since the Missouri valley near Fort Yates and south is now flooded by the Oahe Reservoir, only three possible villages are still available for checking: a village opposite the mouth of the Heart River, and two villages on the Grand River.

Early crossings of the Missouri River by pedestrian bands in the mid-1600s are possible, but the arrival of horse-owning Cheyenne in the 1700s is better documented; some of the latter may not have abandoned the river until about 1840. Cheyenne residence on the river consequently spans at least one century, if not two. Thus, it took the tribe as a whole well over a century to adopt nomadism and abandon village life.

Their abandonment of the Missouri valley seems to have been prompted by three factors: (1) movement into an area where they could act as intermediaries between the Mandan-Hidatsa and Arikara trade centers, and sources of goods to the southwest; (2) exploitation of a bison-rich area not claimed either by the Dakota or by the sedentary horticultural tribes; and (3) increasing military pressure by the hostile and equestrian Dakota.

A fresh start is therefore necessary to obtain new archeological data on Cheyenne culture history. Three areas offer possibilities: eastern North Dakota and parts of adjoining states should be surveyed and tested; the three remaining village sites on the Missouri and Grand rivers should be looked for and investigated, if possible; and tipi camps west of the Missouri postdating 1800 should be exploited.

Literature Cited

Baerreis, David A. and John E. Dallman
1961. Archaeological Investigations near Mobridge, South Dakota. *Society for American Archaeology, Archives of Archaeology,* Number 14.

Barrett, S. A.
1933. Ancient Aztalan. *Public Museum of the City of Milwaukee Bulletin,* 13.

Bass, William M. III
1964. The Variation in Physical Types of the Prehistoric Plains Indians. *Plains Anthropologist Memoir,* 1.

Bowers, Alfred W.
1948. A History of the Mandan and Hidatsa. Ph.D. dissertation, University of Chicago.
1950. *Mandan Social and Ceremonial Organization.* Chicago: University of Chicago Press.
1965. Hidatsa Social and Ceremonial Organization. *Bureau of American Ethnology Bulletin,* 194.

Bruner, Edward M.
1961. Differential Change in the Culture of the Mandan from 1250–1953. Editor E. H. Spicer, In *Perspectives in American Indian Culture Change.* Chicago: University of Chicago Press.

Caldwell, Warren W. and Richard E. Jensen
1969. The Grand Detour Phase. *Publications in Salvage Archeology,* number 3. Smithsonian Institution River Basin Surveys.

Carver, Jonathan
1778. *Travels Through the Interior Parts of North America in the Years 1766, 1767, 1768.* London, privately printed.

Catlin, George
1876. *Illustrations of the Manners, Customs, and Condition of the North American Indians.* 2 volumes. London: Chatto and Windus.

Chittenden, Hiram M. and Alfred Talbot Richardson, eds.
1905. *Life, Letters and Travels of Father Pierre-Jean De Smet, S.J., 1801–1873,* volume 1. New York: F. P. Harper.

Clark, W. P.
1885. *The Indian Sign Language.* Philadelphia: L. R. Hamersly and Company.

Comfort, A. J.
1873. Indian Mounds Near Fort Wadsworth, Dakota Territory. *Smithsonian Institution, Annual Report for 1871,* pages 389–402.

Cooper, Paul L.
1953. Appraisal of the Archeological Resources of the Oahe Reservoir, North and South Dakota. *Missouri Basin Project, Smithsonian Institution.*

Coues, Elliot, editor
1897. *New Light on the Early History of the Greater Northwest: The Manuscript Journals of Alexander Henry and of David Thompson, 1799–1814.* 3 volumes. New York: F. P. Harper.

Deetz, James
1965. The Dynamics of Stylistic Change in Arikara Ceramics. *Illinois Studies in Anthropology,* number 4.

Delanglez, Jean
1943. Franquelin, Mapmaker. *Mid-America: An Historical Review,* 25, (1) [new series, volume 14] 29–74

Du Lac, F. M. Perrin
1805. *Voyage dans les deux Louisianes, et chez les nations sauvages du Missouri . . . en 1801, 1802, et 1803.* Paris: Capelle et Renaud.

Dyson, Sir Frank and R. v. d. R. Wooley
1937. *Eclipses of the Sun and Moon.* Oxford: The Clarendon Press.

Ewers, John C.
1954. The Indian Trade of the Upper Missouri River Before Lewis and Clark: An Interpretation. *Missouri Historical Society Bulletin,* 10 (4): 429–446.
1955. The Horse in Blackfoot Indian Culture. *Bureau of American Ethnology Bulletin,* 159.

Fenenga, Franklin
1953. The Weights of Chipped Stone Points: A Clue to Their Functions. *Southwestern Journal of Anthropology,* 9 (3) : 309–323.

Fenneman, Nevin M.
1938. *Physiography of Eastern United States.* New York: McGraw-Hill Inc.

Griffin, James B. and William H. Sears
1950. Certain Sand-Tempered Pottery Types of the Southeast. *Prehistoric Pottery of Eastern United States.* Museum of Anthropology, University of Michigan.

Grinnell, George Bird
1915. *The Fighting Cheyennes.* New York: Charles Scribner's Sons.
1918. Early Cheyenne Villages. *American Anthropologist,* new series, 20 (4) : 359–380.
1923. *The Cheyenne Indians, Their History and Ways of Life.* 2 volumes. New Haven: Yale University Press.
1926. *By Cheyenne Campfires.* New Haven: Yale University Press.

Haines, Francis
1938. The Northward Spread of Horses Among the Plains Indians. *American Anthropologist,* new series, volume 40: 429–437.

Hayden, F.W.
1862. On the Ethnography and Philology of the Indian Tribes of the Missouri Valley. *Transactions of the American Philosophical Society,* new series, volume 12 (part 2, article 3): 231–461.

Hewes, Gordon W.
1949. The 1947 Summer Field Session in Archeology, University of North Dakota. *Proceedings of the Fifth Plains Conference for Archeology,* University of Nebraska, Laboratory of Anthropology, Notebook number 1:21–24.

Hurt, Wesley R., Jr.
1954. Report of the Investigations of the Spotted Bear Site, 39HU26, and the Cottonwood Site, 39HU43, Hughes County, South Dakota. South Dakota Archaeological Commission, *Archaeological Studies Circular,* number 6.
1959. Report of the Investigation of the Rosa Site, 39PO3, Potter County, South Dakota. South Dakota Archaeological Commission, *Archaeological Studies Circular,* number 9.

Hyde, George E.
1937. *Red Cloud's Folk: A History of the Oglala Sioux Indians.* Norman: University of Oklahoma Press.

Irving, Washington
1964. *Astoria, or Anecdotes of an Enterprise Beyond the Rocky Mountains.* Edited by E. W. Todd. Norman: University of Oklahoma Press.

Jablow, Joseph
1951. The Cheyenne Indians in Plains Indian Trade Relations: 1795–1840. *American Ethnological Society Monograph,* 19.

Jackson, Donald
1962. *Letters of the Lewis and Clark Expedition, With Related Documents: 1783–1854.* Urbana: University of Illinois Press.

Kelly, T. E.
1966. Geology and Ground Water Resources, Barnes County, North Dakota: Part III, Ground Water Resources. *North Dakota Geological Survey Bulletin,* 43.

Kidder, Alfred V.
1932. The Artifacts of Pecos. *Papers of the Southwestern Expedition,* number 6. Phillips Academy, Robert S. Peabody Foundation for Archaeology.

Krause, Richard A.
1967. Arikara Ceramic Change. Ph.D. dissertation, Department of Anthropology, Yale University.

Kroeber, Alfred L.
1939. Cultural and Natural Areas of Native North America. *University of California Publications in American Archaeology and Ethnology,* 38.

La Vérendrye, Pierre Gaultier de Varennes, Sier de
1927. *Journals and Letters of Pierre Gaultier de Varennes de la Vérendrye and his Sons.* Lawrence J. Burpee, editor. Toronto: Champlain Society.

Lehmer, Donald J.
1951. Pottery Types from the Dodd Site, Oahe Reservoir, South Dakota. *Plains Archeological Conference News Letter,* 4, (2) : 3–15.
1954. Archeological Investigations in the Oahe Dam Area, South Dakota, 1950–51. *Bureau of American Ethnology Bulletin,* 158, River Basin Surveys Papers, number 7.
1966. The Fire Heart Creek Site. *Publications in Salvage Archeology,* number 1. Smithsonian Institution River Basin Surveys.

Lehmer, Donald J. and Warren W. Caldwell
1966. Horizon and Tradition in the Northern Plains. *American Antiquity,* 31, (4) : 511–516.

Lewis, Meriwether and William Clark
1815. *Travels to the Source of the Missouri River and Across the American Continent to the Pacific Ocean, 1804–1806.* 3 volumes. London: Hurst, Rees, Orme, and Brown.

Lowery, Woodbury
1912. *The Lowery Collection: A Descriptive List of Maps of the Spanish Possessions Within the Present Limits of the United States, 1502–1820.* Edited, with notes by Philip Lee Phillips, Chief, Division of Maps and Charts. Washington, D.C.: U.S. Government Printing Office.

Lowie, Robert H.
1913. Societies of the Hidatsa and Mandan Indians. *American Museum of Natural History Anthropological Papers,* 11 (part 4) : 219–358.

Margry, Pierre, editor
1874. *Margry Papers. Mémoires et documents pour servir à l'histoire des origines Françaises des pays d'outre-mer.* 6 volumes. Paris: Maisonneuve et cie.

Meleen, Elmer E.
1948. A Report on the Investigation of the La Roche Site, Stanley County, South Dakota. South Dakota Archaeological Commission, *Archaeological Studies Circular,* number 5.

Mitchell, Samuel Alfred
1951. *Eclipses of the Sun.* Fifth edition. New York: Columbia University Press.

Mooney, James
1905-1907. The Cheyenne Indians. *American Anthropological Association Memoirs,* 1 (part 6).

Mulloy, William T.
1942. The Hagen Site, A Prehistoric Village on the Lower Yellowstone. *University of Montana Publications in the Social Sciences,* number 1.

Nasatir, A. P.
1952. *Before Lewis and Clark.* 2 volumes. St. Louis: St. Louis Historical Documents Foundation.

Neill, Edward Duffield
1883. *The History of Minnesota: From the Earliest French Explorations to the Present Time.* Fifth edition, revised and enlarged. Minneapolis: Minnesota Historical Company.

Oppolzer, Theodor, Ritter von
1962. *Canon of Eclipses.* New York: Dover Publications, Inc.

Osgood, Ernest Staples
1964. *The Field Notes of Captain William Clark, 1803–1805.* New Haven: Yale University Press.

Quaife, Milo M., editor
1916. Extracts from Capt. McKay's Journal—and Others. *Proceedings of the State Historical Society of Wisconsin,* pages 186–210.
1965. *The Journals of Captain Meriwether Lewis and Sergeant John Ordway.* Madison: State Historical Society of Wisconsin.

Riggs, Stephen Return
1863. *St. Paul Daily Press,* 5 August 1863.
1893. Dakota Grammar, Texts, and Ethnography. *Contributions to North American Ethnology,* 9. Department of the Interior, U.S. Geographical and Geological Survey of the Rocky Mountain Region.

Scheans, Daniel J.
1957. The Archeology of the Battle-Porcupine Creek Area, Sioux County, North Dakota. Manuscript on file in the State Historical Society of North Dakota.

Smith, Carlyle S.
1951. Pottery Types from the Talking Crow Site, Fort Randall Reservoir, South Dakota. *Plains Archeological Conference News Letter,* 4 (3) : 32–41.

Strong, William Duncan
1935. An Introduction to Nebraska Archeology. *Smithsonian Miscellaneous Collections,* 93 (10).
1940. From History to Prehistory in the Northern Great Plains. In Essays in the Historical Anthropology of North America in Honor of John R. Swanton. *Smithsonian Miscellaneous Collections,* 100: 353–394.
1945. An Unusual Side-Bladed Knife from a Protohistoric Mandan Site. *American Antiquity,* 11 (1) : 60–61.

Swanton, John R.
1930. Some Neglected Data Bearing on Cheyenne, Chippewa, and Dakota History. *American Anthropologist,* new series, 32 (1) : 156–160.
1952. The Indian Tribes of North America. *Bureau of American Ethnology Bulletin,* 145.

Tabeau, Pierre Antoine
1939. *Tabeau's Narrative of Loisel's Expedition to the Upper Missouri.* Translated by R. A. Wright, edited by A. H. Abel. Norman: University of Oklahoma Press.

Taylor, Joseph Henry
1932. *Frontier and Indian Life and Kaleidoscopic Lives.* Fiftieth Anniversary Edition. Washburn's Fiftieth Anniversary Committee. Valley City, North Dakota: E. P. Getchell.

Thwaites, Reuben Gold, editor
1959. *Original Journals of the Lewis and Clark Expedition, 1804–06.* 8 volumes. New York: Antiquarian Press.

Tucker, Sara Jones, editor
1942. Indian Villages of the Illinois Country. *Illinois State Museum Scientific Papers,* 2 (part 1, atlas).

Tyrrell, J. B., editor
1916. *David Thompson's Narrative of his Explorations in Western America, 1784–1812.* Toronto: The Champlain Society.

Van Osdel, A. L.
1899. *The Monthly South Dakotan* (4 August).

Vickers, Chris
1949. Manitoba Pottery Types. *Proceedings of the Fifth Plains Conference for Archeology,* University of Nebraska, Laboratory of Anthropology Notebook number 1, page 85.

Wedel, Waldo R.
1955. Archeological Materials from the Vicinity of Mobridge, South Dakota. *Bureau of American Ethnology Bulletin* 157 (Anthropological Paper 45) : 69–188.
1961. *Prehistoric Man on the Great Plains.* Norman: University of Oklahoma Press.

Wedel, Waldo R. and A. T. Hill
1943. Scored Bone Artifacts of the Central Great Plains. *Proceedings of the United States National Museum,* 92 (3141) : 91–100.

Wheeler, Richard Page
1963. The Stutsman Focus: An Aboriginal Culture Complex in the Jamestown Reservoir Area, North Dakota. *Bureau of American Ethnology Bulletin,* 185, River Basin Surveys Papers, number 30: 171–234.

Wilford, Lloyd A.
1941. A Tentative Classification of the Prehistoric Cultures of Minnesota. *American Antiquity,* 6, (3) : 231–249.

Will, George F.
1914. The Cheyenne Indians in North Dakota. *Proceedings of the Mississippi Valley Historical Association,* 7: 67–78.

1924. Archaeology of the Missouri Valley. *American Museum of Natural History. Anthropological Papers,* 22 (part 6) : 285–344.

Will, George F. and Thad. C. Hecker

1944. Upper Missouri River Valley Aboriginal Culture in North Dakota. *North Dakota Historical Quarterly,* 11, numbers 1, 2.

Willey, Gordon R.

1966. *An Introduction to American Archaeology,* volume 1. Englewood Cliffs, New Jersey: Prentice-Hall.

Williamson, Rev. T. S.

1872. Who Were the First Men? *Minnesota Historical Society Collections,* 1: 295–301.

Wilson, Gilbert L.

1934. The Hidatsa Earthlodge. Edited by Bella Weitzner. *American Museum of Natural History. Anthropological Papers,* 33 (part 5): 341–420.

Woolworth, Alan R. and W. Raymond Wood

1964. The Demery Site (39CO1), Oahe Reservoir Area, South Dakota. *Bureau of American Ethnology Bulletin,* 189, River Basin Surveys Papers, number 34.

Wood, W. Raymond

1955. Pottery Types from the Biesterfeldt Site, North Dakota. *Plains Anthropologist,* number 3: 3–12.

1959. Notes on Ponca Ethnohistory, 1785–1804. *Ethnohistory,* 6, (1) : 1–27.

1960. Ná^{n}za, the Ponca Fort. *Archives of Archaeology,* number 3. Society for American Archaeology and the University of Wisconsin Press.

1962. A Stylistic and Historical Analysis of Shoulder Patterns on Plains Indian Pottery. *American Antiquity,* 28 (1) : 25–40.

1967. An Interpretation of Mandan Culture History. *Bureau of American Ethnology Bulletin,* 198, River Basin Surveys Papers, number 39.

Wood, W. Raymond and Alan R. Woolworth

1964. The Paul Brave Site (32SI4), Oahe Reservoir Area, North Dakota. *Bureau of American Ethnology Bulletin,* 189, River Basin Surveys Papers, number 33.

Appendix

A FACTOR ANALYSIS OF POTTERY FROM FIVE HOUSES AT BIESTERFELDT

Dan M. Healan

This analysis was performed to test two of Wood's intuitively derived impressions resulting from his intensive but conventional study of the Biesterfeldt pottery. First, the pottery was understood to have an "internal consistency or homogeneity" (p. 47–48), which was interpreted to mean that not only was there a single component, but the ceramic tradition was relatively stable—although the presence of Euro-American trade goods meant that the ceramic tradition would soon be heavily modified. Second, there was a very strong impression that the pottery from any given house was about as typical of the site as was the sample from another house. This led us to ask whether extensive excavation at a particular site might not be redundant for certain kinds of specific problems. That is, if Strong had dug only one house at Biesterfeldt, how representative of the other houses might it be? Thus, we set out to see how "typical" each house was, by determining how much variation there was between them in terms of fifty ceramic attributes dealing with surface treatment. To facilitate the study, a multivariate statistical procedure known as Factor Analysis was used (Rummel, 1967).

Two of the seven houses Strong investigated were not used in this analysis. Both of them (Houses 4 and 7) contained a very small pottery sample; there was, for example, a single rim sherd from each of them, although the body sherd collection was substantially larger. The paucity of specimens in these houses is unusual, and unquestionably sets them apart from the others, but at the same time it precludes their use in a statistical analysis.

Table C presents a frequency distribution of the number of attributes possessed by (or found in) each of the remaining five houses. For reasons explained later, a sixth unit of analysis was added (Cache 15). These data served as input, and a Q-technique Factor Analysis was run on an IBM 360 computer, using the BMD–03M Factor Analysis program (Dixon, 1968). Factor Analysis was used in order to correlate or compare the houses on a series of attributes. For some examples of Q-analysis in anthropology, see Tugby (1965) and Driver and Schuessler (1957).

The level of correlation among the five houses is very high in each case (Table A). By examining the squared multiple correlation coefficients in the principal diagonal (in this case the correlation between each house and all others combined), one can determine the degree of prediction of the status of the variables in the one house by the status of those in the other four. For example, the squared multiple correlation coefficient for House 21 (.965) indicates that 96.5 per cent of the variation in this house can be predicted from a knowledge of the characteristics of the other four.

The unrotated factor matrix (Table B) is included here to demonstrate the uniformity of variation among the five houses. Each factor represents an independent (orthogonal) component of variation among the fifty attributes and evaluates the role of each unit in each component in terms of a numerical value (loading). Two factors are listed, indicating two independent components of variation for this set of data. Note, however, that Factor 1 accounts for 97 per cent of all variation among all of the attributes. Moreover, each unit loads highest on Factor 1. Thus, there is only one major dimension of variation, and all houses share substantially in it. Note that Houses 16 and 21 loaded lowest, but that even these loadings are high.

TABLE A.—*Inter-unit correlation coefficients with multiple correlation coefficients in the principal diagonal*

	House 21	House 23	House 11	House 16	House 36	Cache 15
House 21	0.965					
House 23	0.963	0.996				
House 11	0.965	0.993	0.994			
House 16	0.883	0.942	0.955	0.969		
House 36	0.966	0.996	0.997	0.958	0.998	
Cache 15	0.939	0.989	0.988	0.977	0.988	0.989

We may, then, conclude that any house at Biesterfeldt is quite representative of the others, although Houses 16 and 21 are least typical. An examination of the orthogonally rotated factors and rotated factor scores (not presented here) reveals that the differences between the houses are largely in attributes 45–47, and 49. Part of the explanation is that House 16 is above the mean in terms of the quantity of data recovered, and House 21 is below the mean. House 16 is interpreted by Wood as possibly being a ceremonial lodge; House 21 is a partly excavated structure in which the sample may not be reliable. Table C shows there are no significant differences between the houses in terms of which attributes are involved in the patterns. That is, Houses 16 and 21 score on essentially the same attributes and in the same order as the other houses—only in a larger and smaller proportion, respectively. Therefore, these are differences of degree, rather than kind of variation.

To say that any one house is as typical as any other is, of course, to do so only in terms of ceramic attributes, for only one of the many classes of artifacts from the site was analyzed. It is true that ceramic data comprise a very large proportion of the artifact inventories of sites such as this one, but there are many other dimensions of the site which could be investigated, but which are ignored here. There may well be major differences between houses in other classes of artifacts, as in fact is suggested by a visual inspection of the non-ceramic artifacts tabulated by household (Table 5).

Material from the refuse-filled Cache 15 was in-

TABLE B.—*Principal components*

Unit	Factor 1	Factor 2
House 21	0.962	0.195
House 23	0.994	0.060
House 11	0.997	0.026
House 16	0.964	0.224
House 36	0.999	0.026
Cache 15	0.992	- 0.084
Percent of total variation	97 %	1.7 %

TABLE C.—*Raw data for factor analysis*

CASE	UNIT					
	House 21	House 23	House 11	House 16	House 36	Cache 15
Rim Embellishment						
1. cord-wrapped rod	3	1	7	11	6	5
2. cord-impressed	1	1	2	7	7	3
3. tool-impressed			1	-	2	
4. plain, smoothed		-	1	2	2	2
5. plain, brushed	-	-	2	1	1	-
6. plain, pinched		-	-	2	1	2
7. miscellaneous	-	-	2	1	1	
Rim Form						
8. a	1	-	2	-	1	
9. b	-	-	1	3		2
10. c				-	2	2
11. d	-	-		3	2	-
12. e	2	1	2		4	1
13. f	1			1	1	1
14. h				3	1	1
15. i				1	-	2
16. j		-	3	5	7	2
17. k				1		1
18. l				2		-
19. m				1		-
20. n		1	1	2		1
21. o			1		2	-
22. p			3	-		-
23. q			-	1		
24. r			1	-		
25. unclassifiable			1	1		
26. wavy rim			2	2	1	2
Appendages						
27. lugs	-	-	-	3	3	1
28. handles	-		1	-	2	
29. spouts		-	2	4		
Neck Treatment						
30. brushed	1		4	10	5	3
31. smoothed	3	2	10	13	15	9
Rim Decoration						
32. transverse			1	-	-	2
33. oblique (/)		1	2	3	2	3
outer 34. oblique (\)	3		4	4	2	1
outer 35. 2 lines, horizontal	1	-	3	5	6	2
outer 36. 3 lines, horizontal			4	8	4	1
outer 37. 4 lines, horizontal			-		1	1
inner 38. oblique (/)				1	1	-
inner 39. punctate				1	-	-
inner 40. tool-impressed				1		-
inner 41. horizontal		-	-	-		1
Neck Impressions						
42. 1 line	-		-	-	2	2
43. 2 lines	-	-	3	1	3	
44. 3 lines	1	1	1	1	1	1
Body Treatment						
45. simple stamped	41	53	138	339	319	83
46. linear check-stamped	9	-	3	5	13	-
47. smoothed	1	6	18	143	46	20
48. decorated (incised)		2	1	1	11	3
49. brushed		2	15	73	25	10
50. unidentifiable	3		7	36	12	10

cluded in the test cases to see how the remains from such a feature compared with the content of houses. The pottery from this pit was found to be well within the range of variation of the excavated houses, and is as "typical" of the site as any of the houses themselves. This fact reinforces the statement that certain aspects of behavior in the ceramic sub-system of the Biesterfeldt cultural system can occur in more than one context—in houses and in refuse pits.

In sum, the multivariate analysis confirmed Wood's earlier but intuitive impression that ceramic data from any one of the five dwellings are generalizable to other houses in the village. That is, for certain and specific problems, only a single household in the village might need to be singled out for study. Furthermore, the analysis also demonstrates that the ceramic tradition was internally consistent and stabilized, showing none of the strain one might expect in a ceramic tradition being modified by the multiple effects of white contact.

Appendix References

Dixon, W.J.
1968. *Biomedical Computer Programs.* Berkeley and Los Angeles: University of California Press.

Driver, Harold E. and Karl F. Schuessler
1957. Factor Analysis of Ethnographic Data. *American Anthropologist,* 59: 655–633.

Rummel, R. J.
1967. Understanding Factor Analysis. *Journal of Conflict Resolution,* 11 (4) : 444–479.

Tugby. Donald J.
1965. Archaeological Objectives and Statistical Methods: A Frontier in Archaeology. *American Antiquity,* 31 (1) : 1–16.

PLATE 1.—The Biesterfeldt site and ajoining topography (U.S. Department of Agriculture photograph CWN–1AA–149).

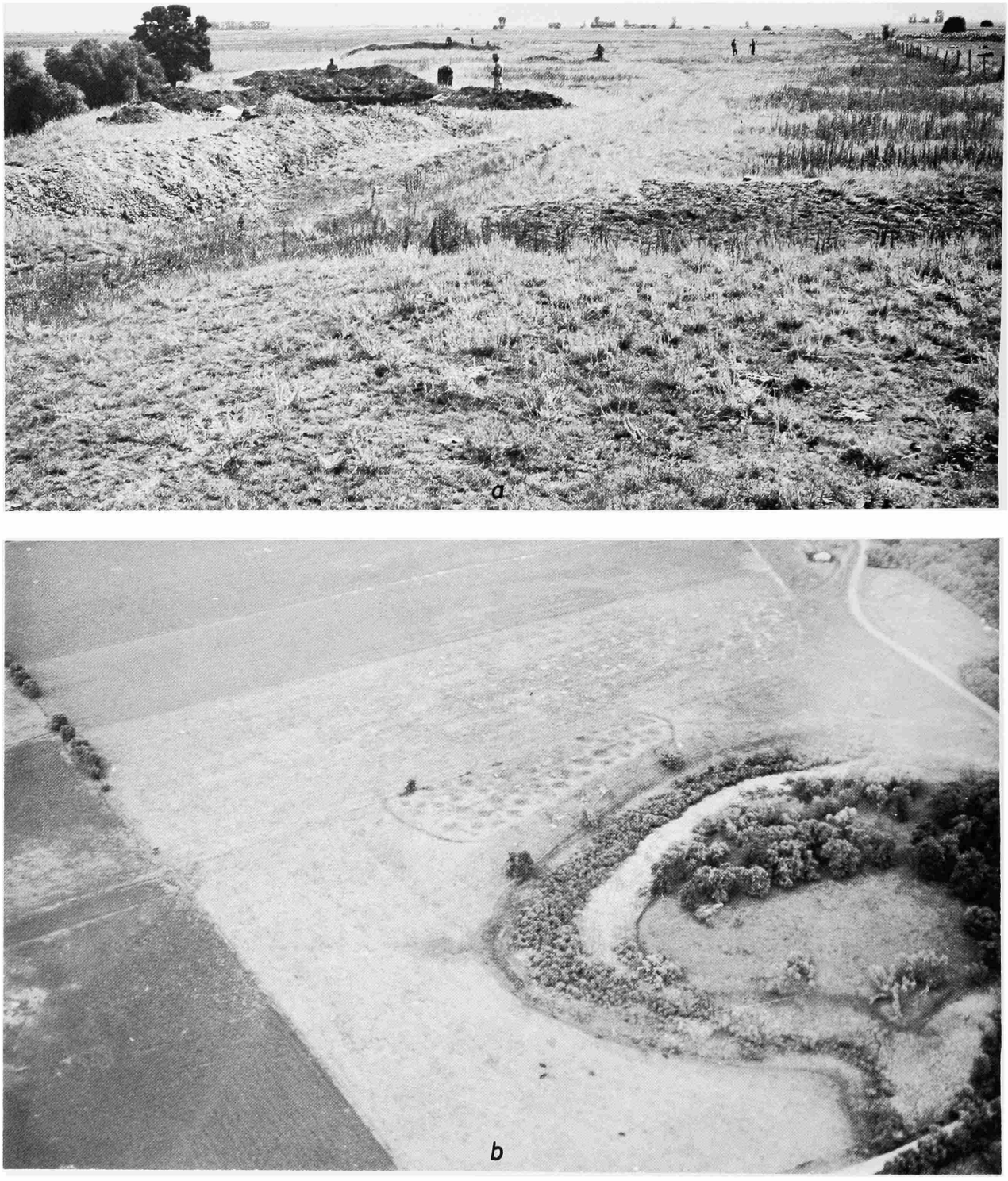

PLATE 2.—General views of the site. *a*, View east during the 1938 excavations. *b*, Aerial view of the site, looking southwest.

PLATE 3.—Views of the Sheyenne River River valley and delta. *a*, The Sheyenne River valley just west of the site; view northeast. *b*, *An earth* lodge depression in the east end of the site; view northeast.

PLATE 4.—The excavated House 16; view is northeast.

PLATE 5.—Excavated features. *a*, The excavated House 16; view southwest. *b*, The fortification ditch cross section, north wall of Trench 1; view northeast.

PLATE 6.— Excavated features. *a*, Cache 13, cross sectioned and cored, with stone and bone contents replaced; view south. *b*, The excavated House 7; view north.

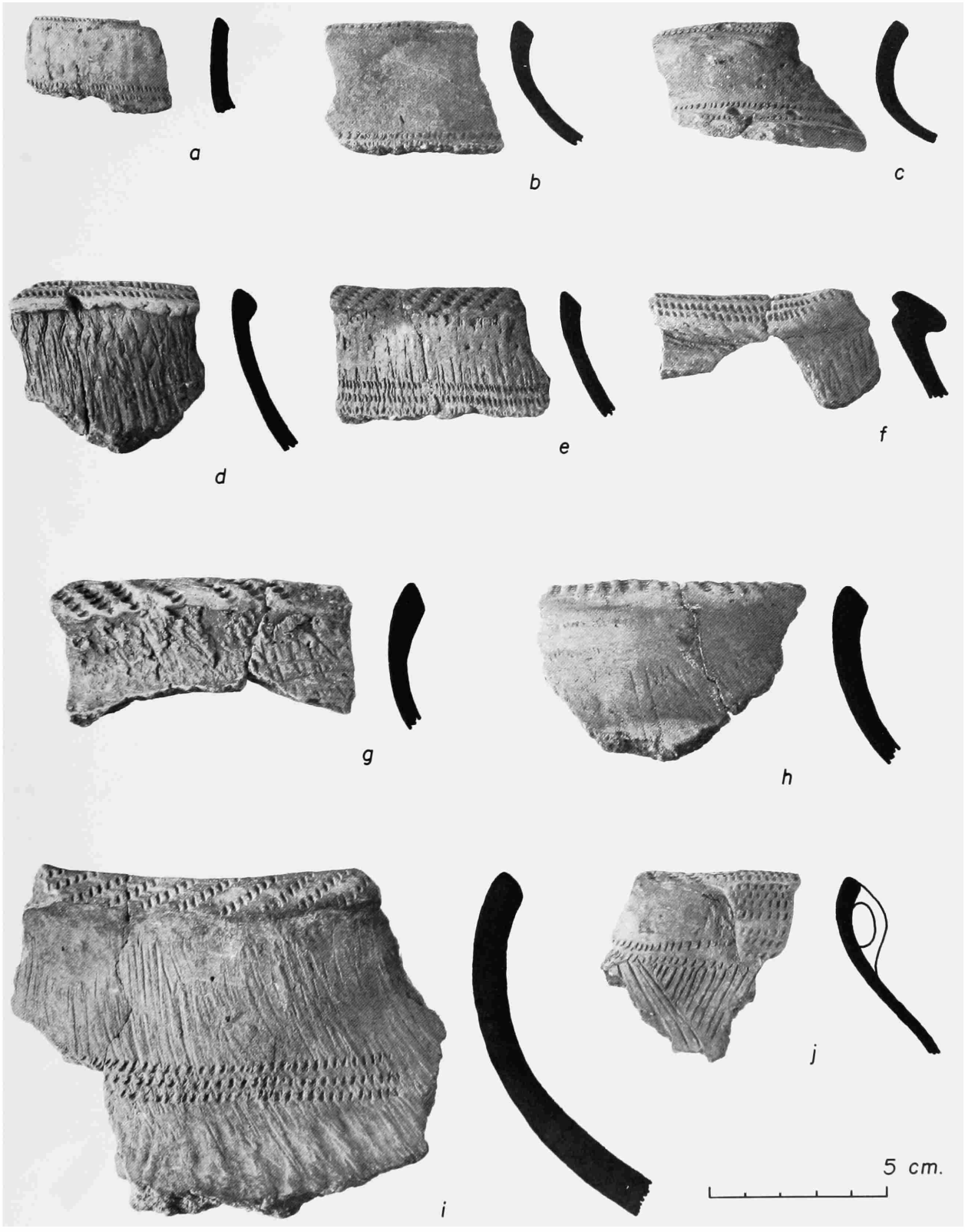

PLATE 7.—Cord-wrapped rod-impressed rim sherds.

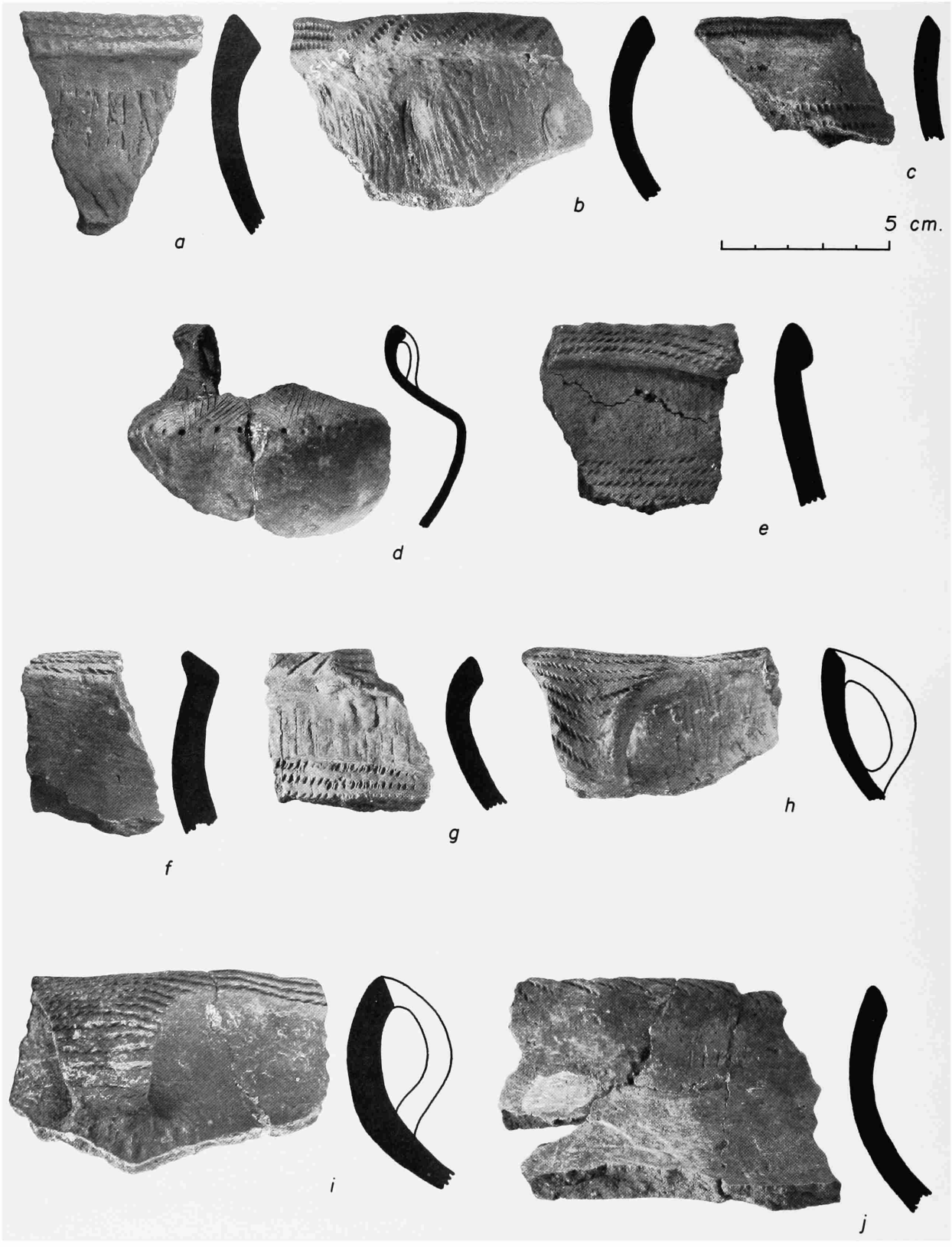

PLATE 8.—Rim sherds. *a, b,* Bead-impressed. *c-j,* Cord-impressed.

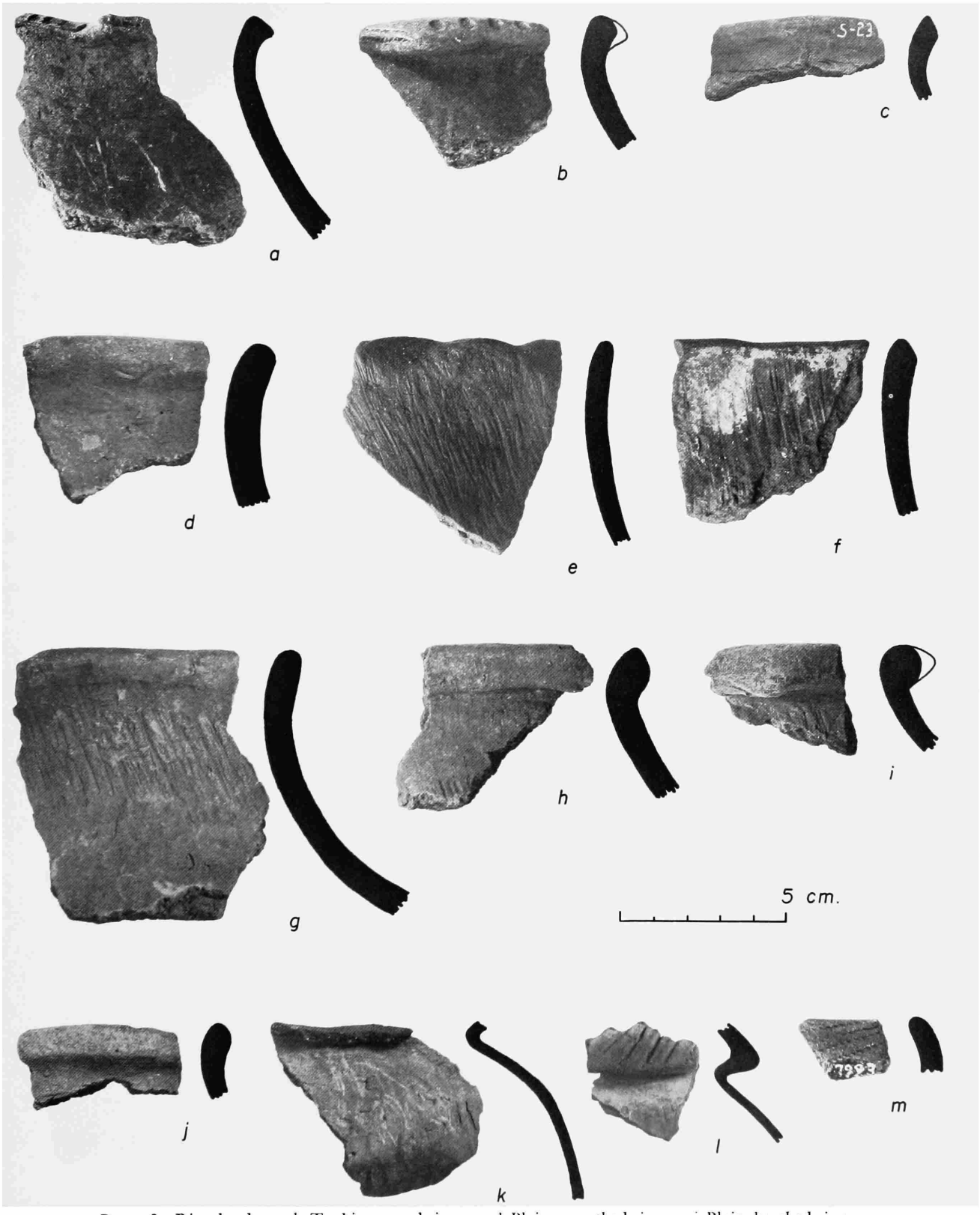

PLATE 9.—Rim sherds. *a, b,* Tool-impressed rims. *c, d,* Plain, smoothed rims. *e-i,* Plain, brushed rims. *j,* Pinched, plain rim. *k, l,* Example A. *m,* Example B.

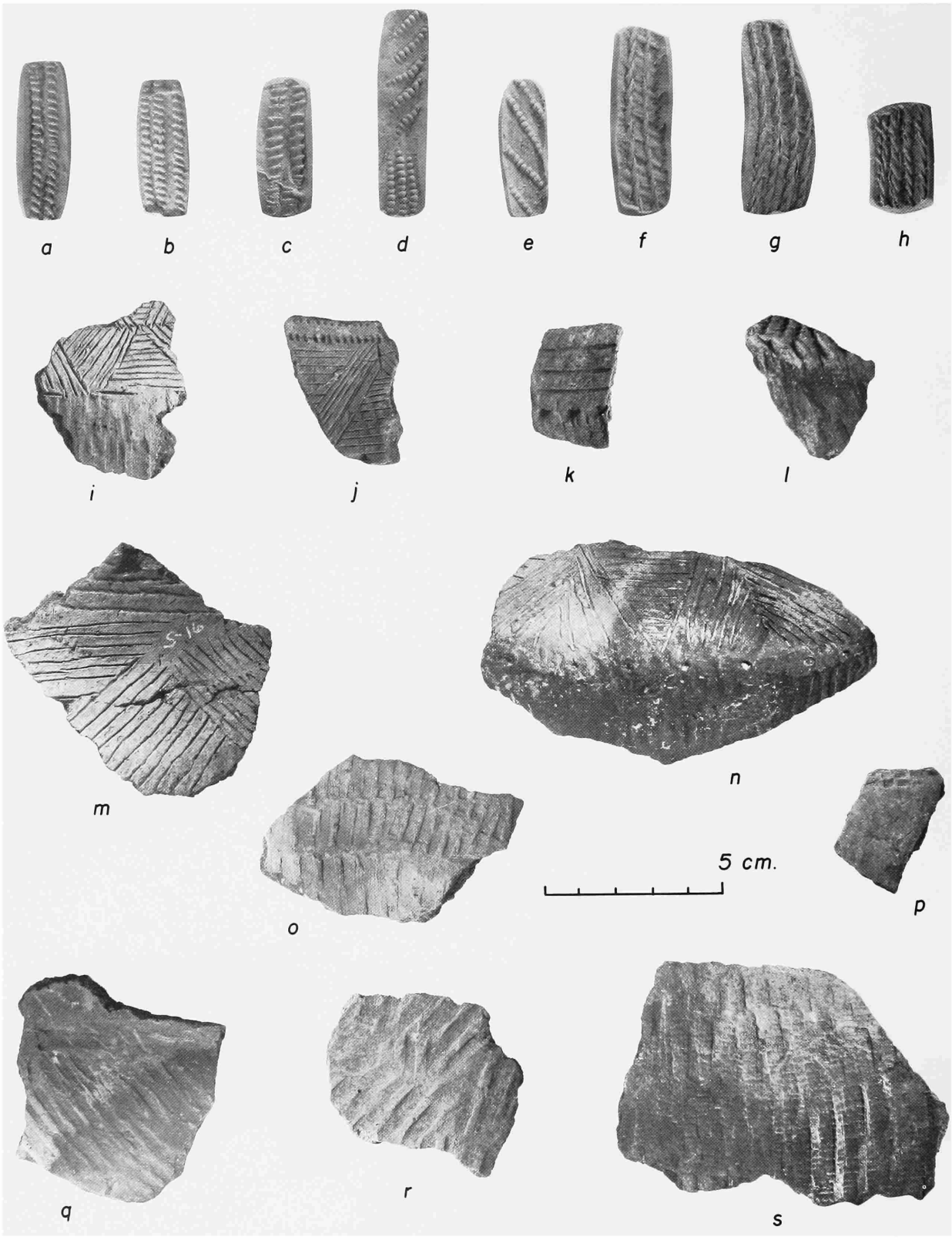

PLATE 10.—*a-h,* Plasticene impression from rim sherds: *a-c,* Cord-wrapped rod-impressed; *d, e,* Bead impressed; *f,* Mat-impressed; *g, h,* Cord-impressed. *i-s,* Body sherds: *i-n,* Incised geometric patterns; *o, q, r,* Simple stamped; *p,* Dentate-stamped; *s,* Linear check stamped.

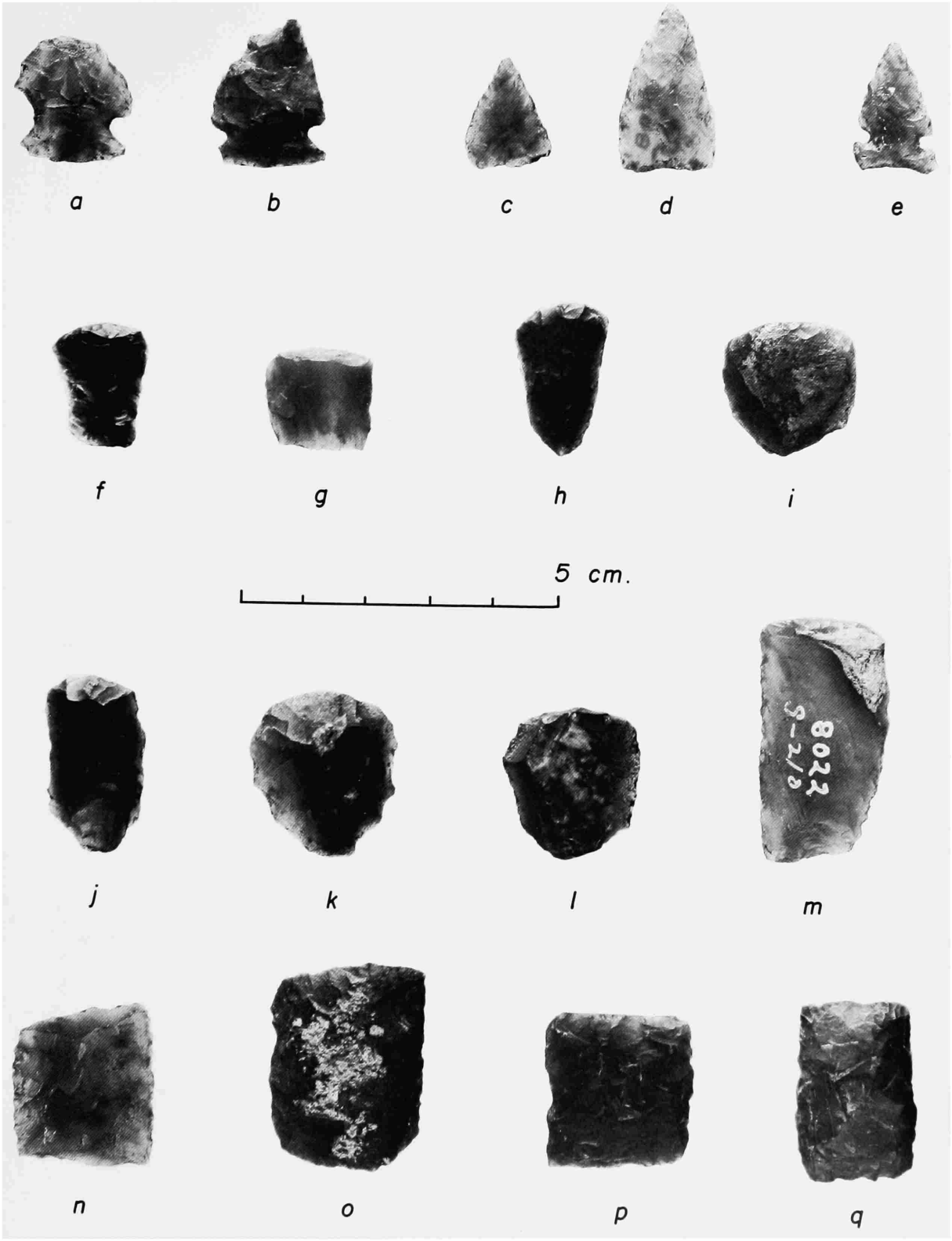

PLATE 11.—Chipped stone artifacts. *a-e*, Arrowpoints. *f-m*, End scrapers. *n-q*, Rectangular, chipped stone items.

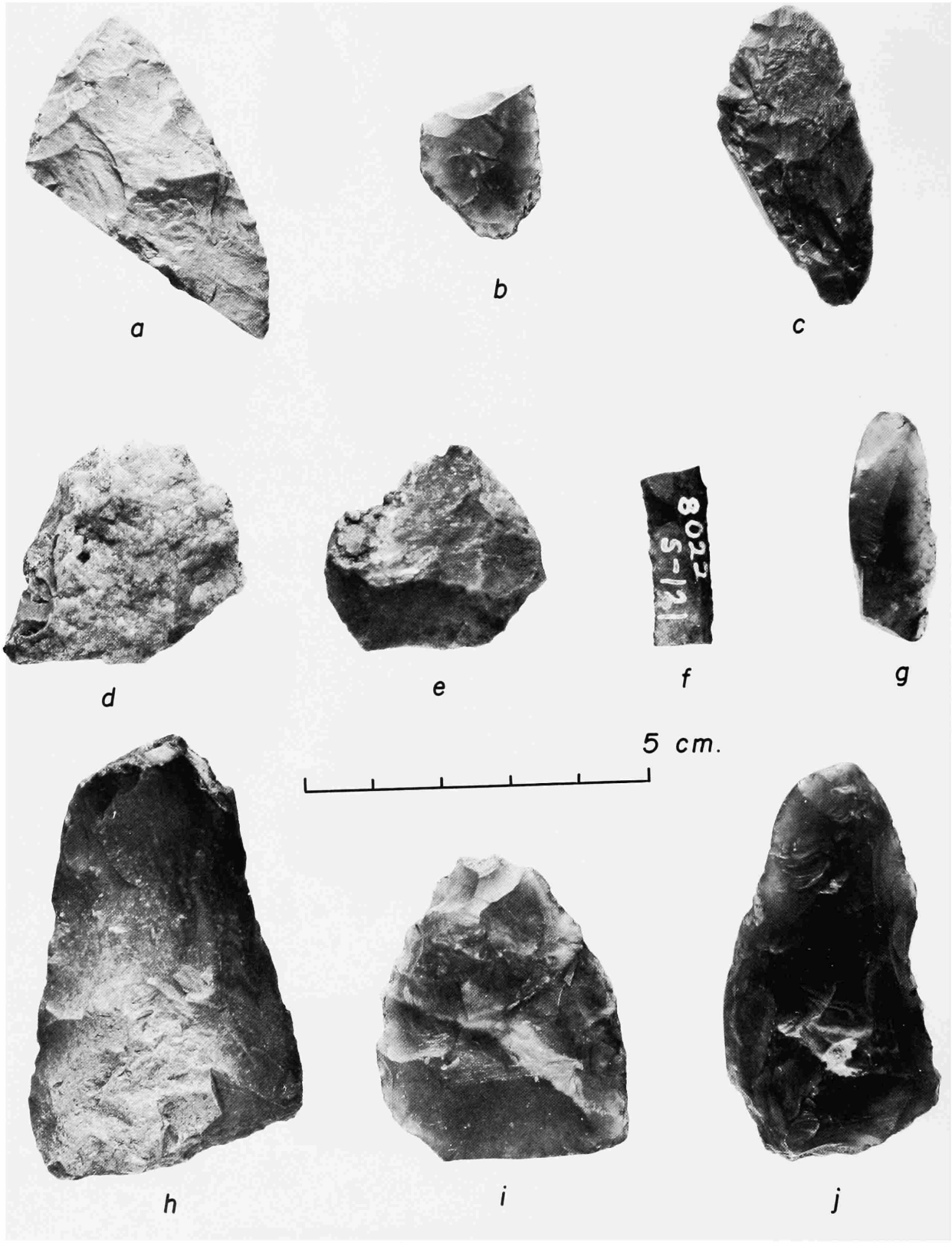

PLATE 12.—Miscellaneous chipped stone items.

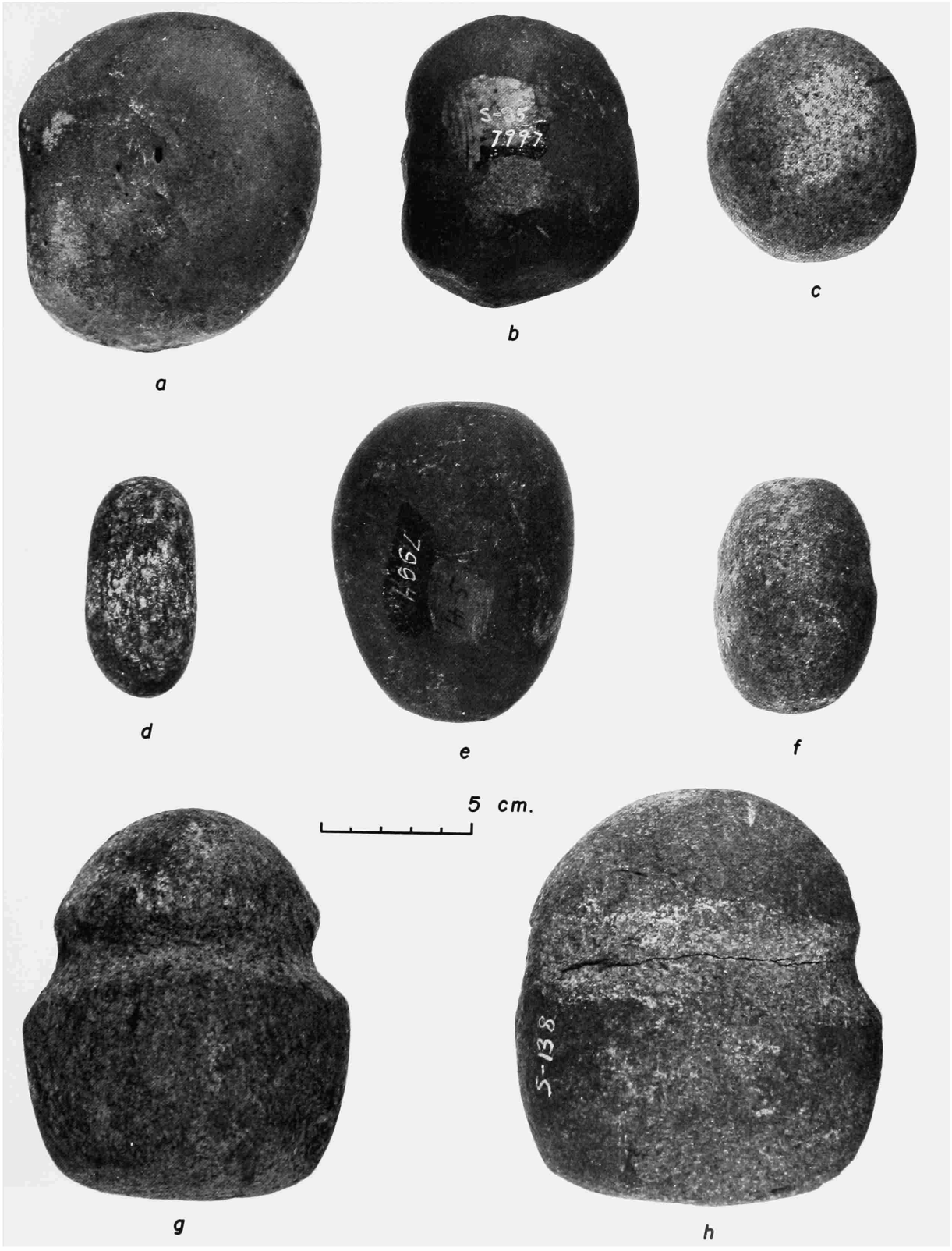

PLATE 13.—Ground stone tools. *a, b, c, e,* Hammers. *d, f, g, h,* Grooved mauls.

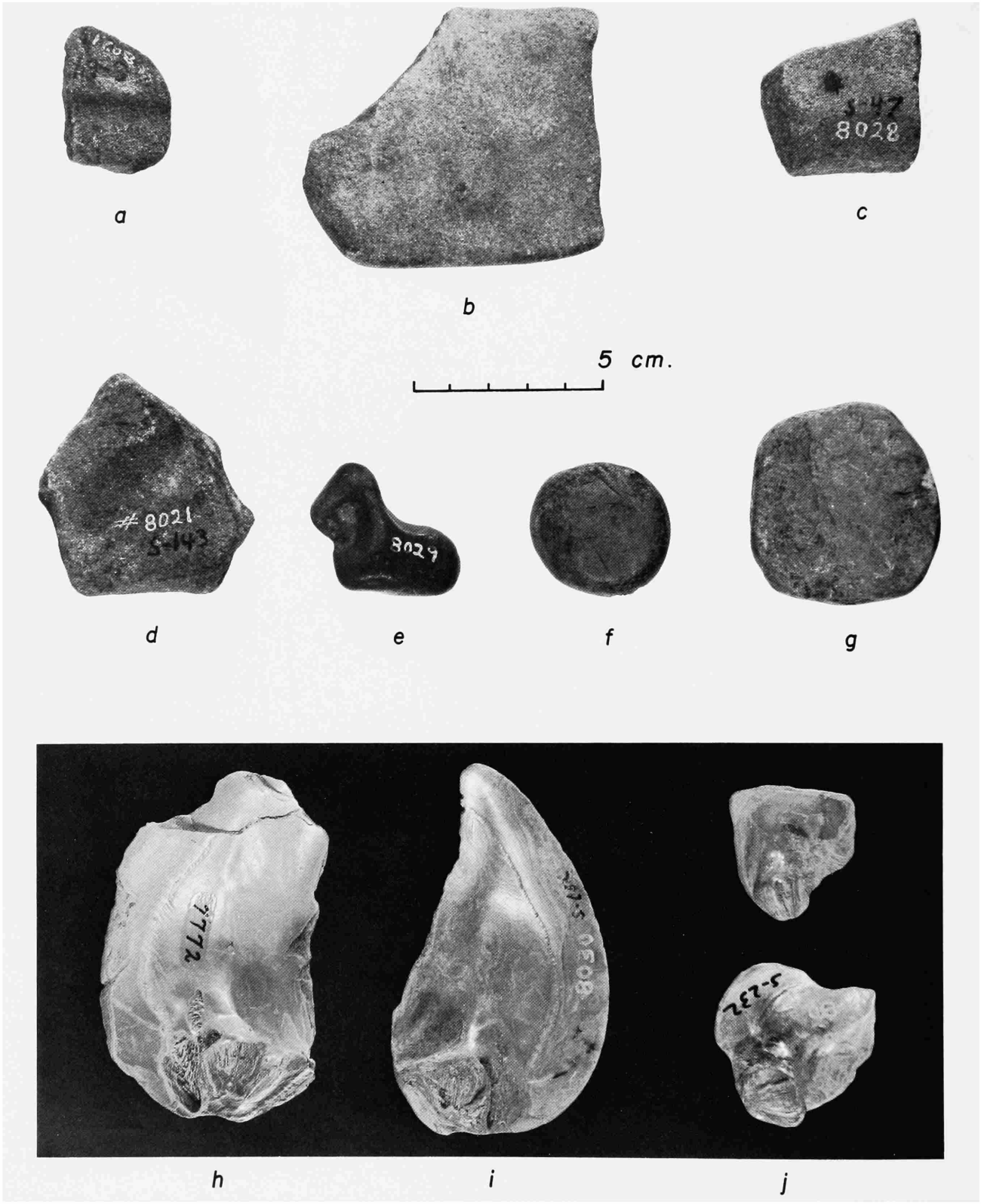

PLATE 14.—Ground stone tools and shell artifacts, *a*, Shaft smoother. *b*, *c*, *d*, Sandstone abraders. *e*, *f*, River pebbles. *g*, Gaming (?) stone. *h*, *i*, *j*, Shell scrapers.

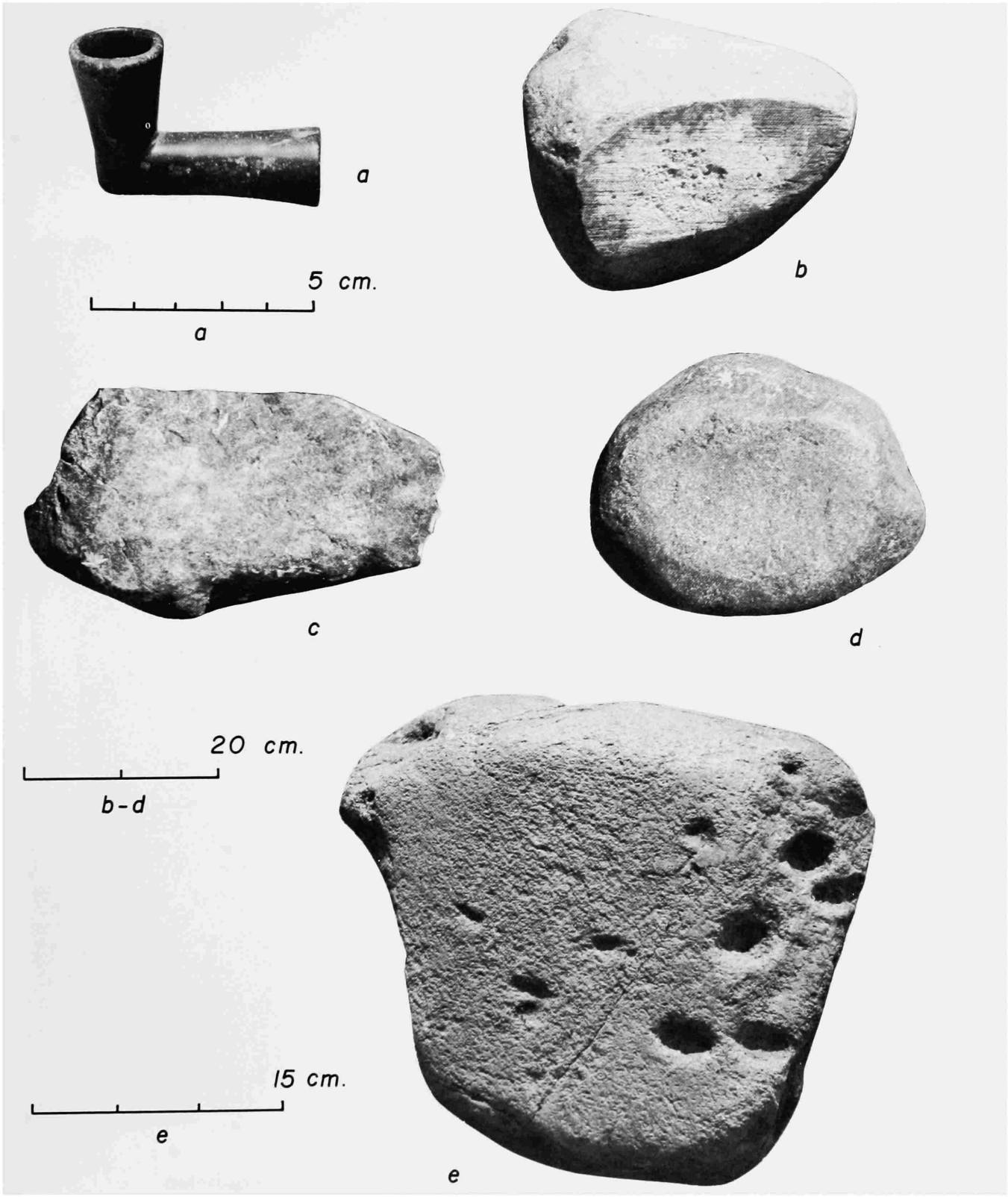

PLATE 15.— Ground stone objects. *a*, Elbow catlinite pipe. *b*, Glacially striated stone. *c*, *d*, Milling stones. *e*, Pitted field stone.

PLATE 16.—Bone tools. *a*, Squash knife. *b*, Bison humerus abrader. *c*, *d*, *e*, Scapular hoes.

PLATE 17.—Bone tools. *a*, Bone scoop. *b*, Polisher. *c*, *d*, Shaft wrenches. *e*, *f*, Slotted knife handles. *g*, *h*, *i*, Serrated fleshers.

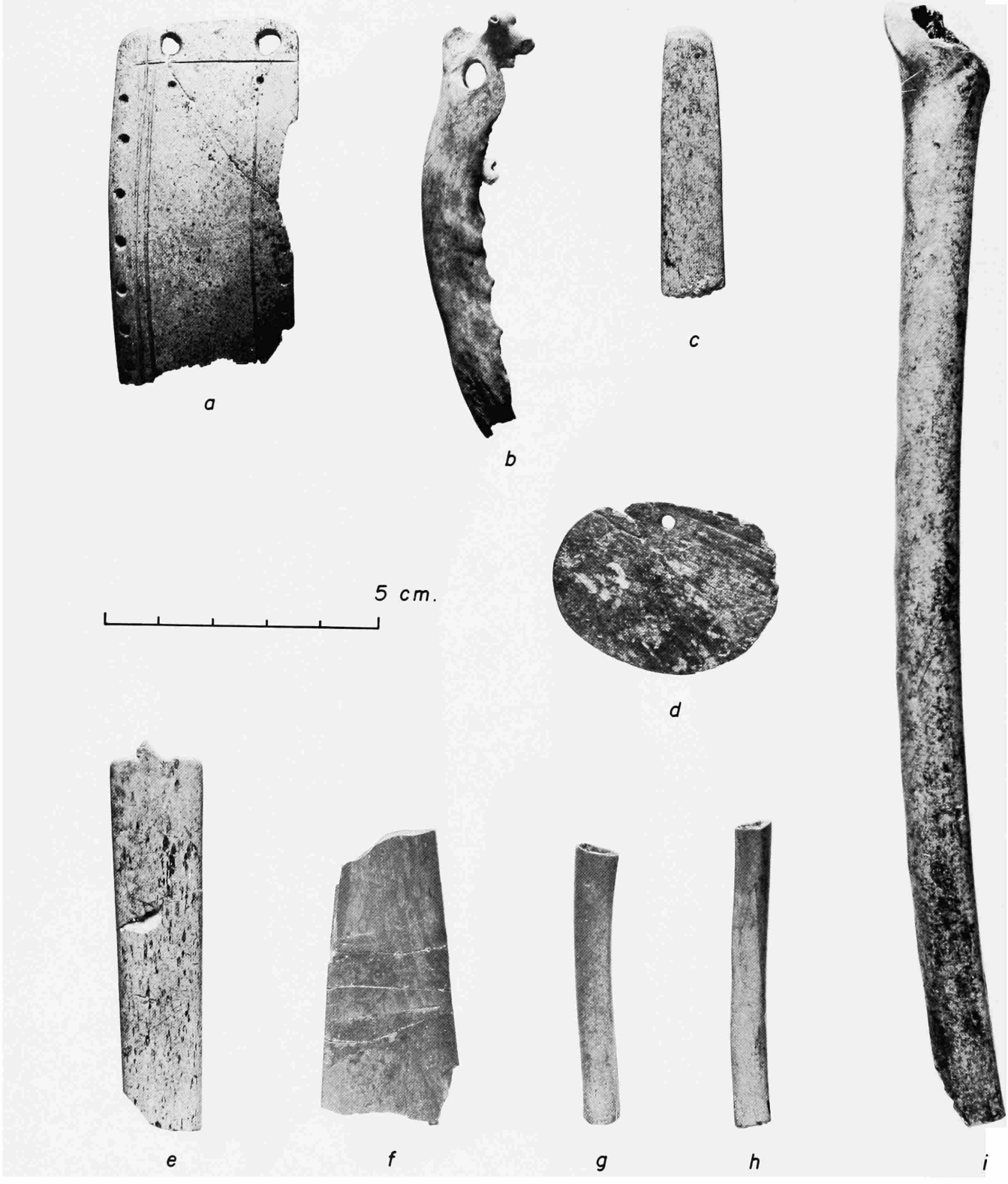

PLATE 18.—Small bone artifacts and ornaments. *a*, Bone bracelet. *b*, Fox mandible pendant. *c*, Bevel-tipped tool. *d*, Bone pendant. *e*, Shaped bone item. *f*, Spatulate. *g*, *h*, Bone beads. *i*, Bone whistle.

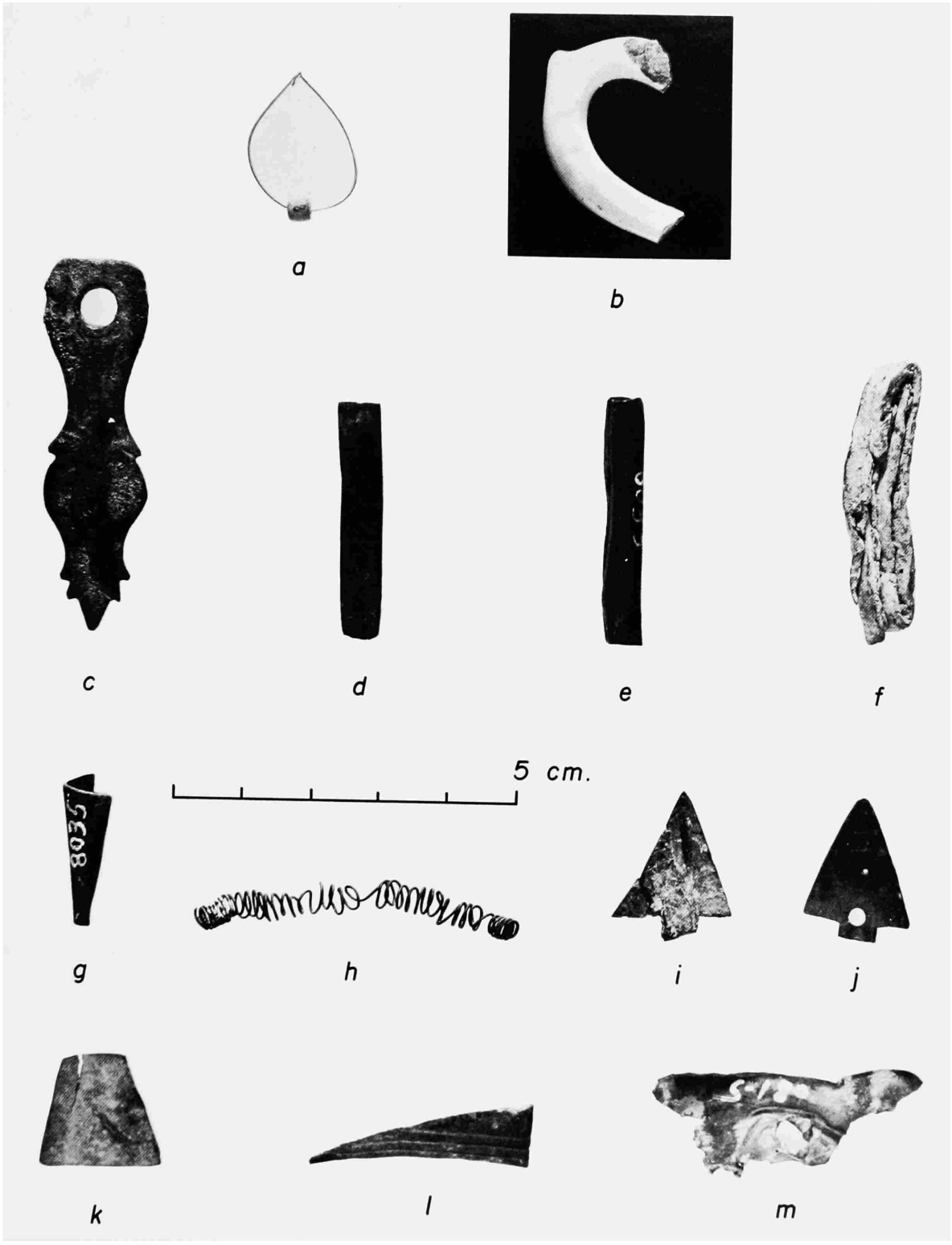

PLATE 19.—Miscellaneous trade and intrusive items. *a*, Glass seed bead. *b*, Teacup handle. *c*, Brass-trigger guard pendant. *d*, Brass rod. *e*, Copper tubular bead. *f*, Lead strip. *g*, Brass bangle. *h*, Brass spring. *i*, Copper arrowpoint. *j*, Brass arrowpoint. *k*, Shaped brass item. *l*, *m*, Brass scraps.

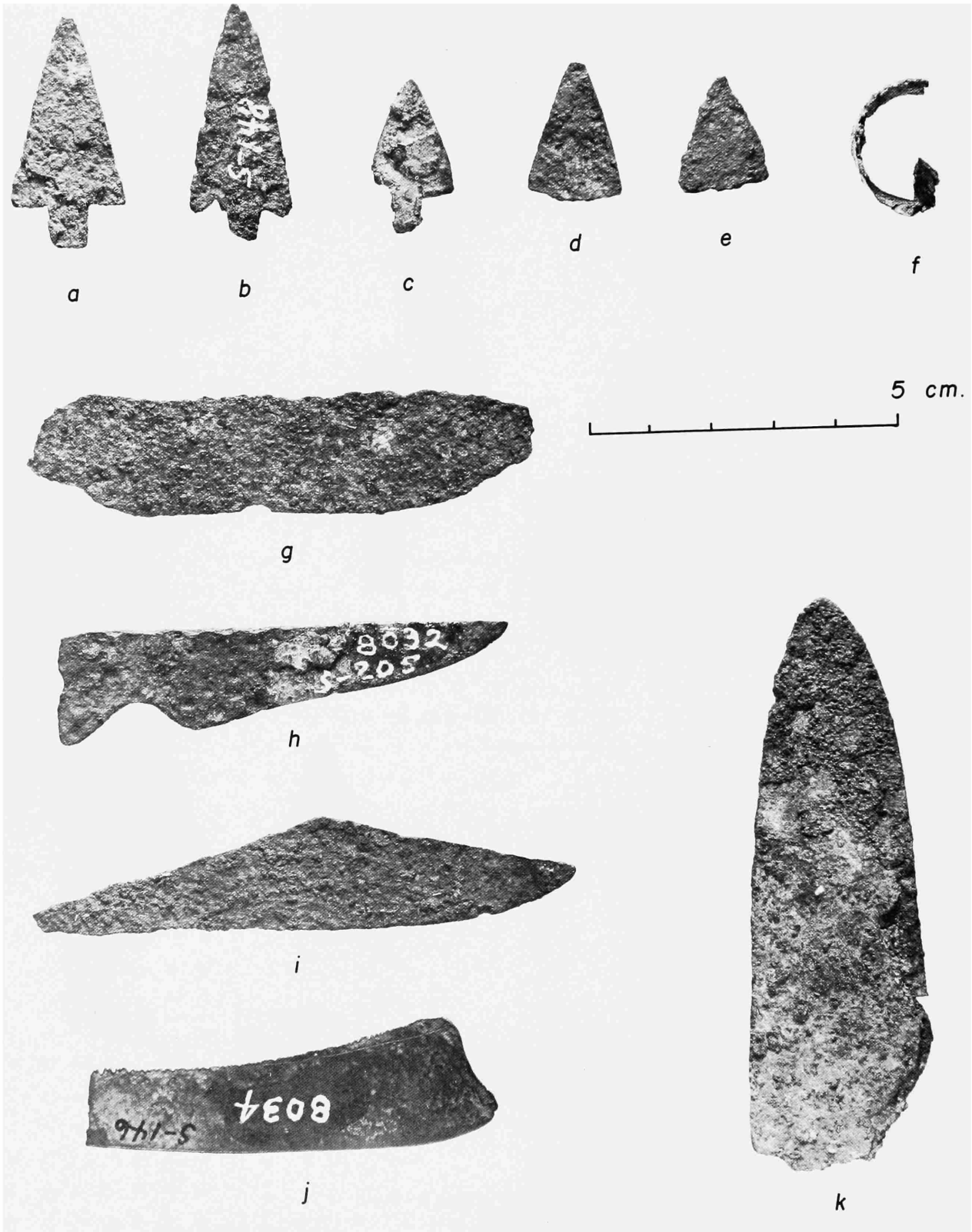

PLATE 20.—Trade goods of iron or steel and brass. *a–e*, Iron or steel arrowpoints. *f*, Iron or steel "ring." *g, h, i*, Iron or steel knife blades. *j*, Brass knife blade. *k*, Iron or steel lance tip.

Index

☆ U. S. GOVERNMENT PRINTING OFFICE: 1971 O—399 -749