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THE LYNCH SITE, 25BD1

Mary Louise Freed

A THESIS

Presented to the Faculty of
The Graduate College in the University of Nebraska
In Partial Fulfillment of Requirements
For the Degree of Master of Arts
Department of Anthropology

Under the Supervision of Dr. John L. Champe

Lincoln, Nebraska

September 10, 1954

FOREWORD

This report was begun in the spring of 1950; the laboratory analysis of the material was completed in July 1950. There was opportunity to continue the work in 1952.

My father, R. B. Callen and my aunt, Miss Ruth Callen, made possible the work done in 1954 which includes most of the writing, a review of the pottery analysis and restudy of the excavation maps.

My husband has typed the major part of the draft manuscript and aided in other ways.

Personal help and suggestions were given by George Metcalf, Alvin Wolfe, Dolores Gunnerson, Mary Kiehl and Bernard Moskowitz.

Mary Louise Freed

August 1, 1954

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THE LYNCH SITE, 25BD1

INTRODUCTION

One of the aims of anthropology is the study of the growth and change of cultures. The data on which the realization of this aim depends include reports upon single archeological sites or the ethnographies of a group of people. These data, however, are of little value as long as each report remains a unique entity, hanging in time and space. For the study of culture growth and change each must be seen in its proper perspective against the known total of history. This archeological report presents pertinent material for the study of some of these historical phenomena in the Central Plains.

The excavations of the Lynch site, 25BD1, were made in 1936 by the University of Nebraska Archeological Survey and the materials recovered are available in the Laboratory of Anthropology of the University of Nebraska. There was newspaper and radio publicity in 1936 and the site has had brief mention in technical reports.

The purpose of this paper is threefold. First, to present a report of the excavations of 1936 reconstructed from site records. Second, to present the results of the laboratory analysis of the artifacts. Third, to discuss the relationships between 25BD1 and the established manifestations of the Central Plains, and, so far as possible, to the

important Middle Missouri sites now being investigated by the River Basin Surveys, Smithsonian Institution, and their co-operating agencies.

The first section of this report gives a description of the Lynch site, its location and situation including a brief survey of the regional geography, the geological formations and the climate. The second section is a report of the field work carried on by the excavators.

Section three is an analysis and description of the material remains recovered in 1936. All of the material culture will be discussed but the ceramic remains provide the greater part of the available data for the section.

The fourth section of this paper will relate the archeological complex of the Lynch site to other cultural manifestations of the area. The possible time of occupation of the Lynch site will be discussed.

The resolution of these problems will lead to other problems in central Plains archeology. As an aid for future workers in Plains archeology suggestions as to work in the field and in the laboratory which indicate methods of working on these problems form the concluding section of this report.

Method of Study

The work was started by determining what materials were available from the 1936 excavations at 25BD1. This itemization showed that the site records and artifact inventory were incomplete but that the artifacts should be described and that they might show relationships to other manifestations.

A group of charts in the Laboratory of Anthropology files was identified as maps, elevations and profile sections of some of the excavation units. After the maps were identified tracings and blueprints made from them prior to this study could be identified and reassembled.

The pottery analysis was done first. Repairs and reconstructions were made as the work progressed. This analysis consisted of repeatedly sorting the sherds into groups alike in all of several respects. Records were kept of these groupings.

Rim sherds were worked with first. These were grouped according to form, decoration and tempering material. Close comparison of the rim sherds in the groups, and matching those which appeared to come from the same vessel although they could not be fitted together made it possible to estimate the number of vessels represented by the rim sherds. Calculations were made for each set of figures.

The body sherds were sorted according to temper, surface finish, color and decoration. The designs of the decorations were studied. After the identification of Lynch temper this was also a sorting criterion. Samples of body sherds were tested for hardness and measured for thickness. These measurements are the basis for statistical comparisons.

The restored vessels were compared with the groups of rim sherds and to each other.

The worked bone specimens were repaired and grouped according to like forms, recorded and measured.

The stone work was grouped by form and material. Much of the stone work was hard to classify because of the non-descript character of the workmanship. The different stone materials which were used seem to furnish information for the study.

Other items, including pipes, vegetal and faunal materials were examined and described.

All these materials were then sorted as to provenience so that the physical relationships of the artifacts could be recognized. A chart was prepared from these data and was used in writing this paper. This chart is on file in the Laboratory of Anthropology since it could not be satisfactorily reproduced.

The material from 25BD1 has been catalogued three times. When two items were numbered the same according to the latest cataloguing these items were not included in the tabulations.

The photographs were studied and correlated with the maps and the records of the digging contained in the original field catalogue to obtain an idea of the actual excavating.

The detailed study of the maps themselves and the blueprints and tracings furnished a good deal of information about the features found in the ground, but this record is by no means complete.

The sample of Lynch materials in the Smithsonian Institution Missouri River Basin Survey collection was examined and compared with the Laboratory of Anthropology collection.

The Laboratory of Anthropology survey collections were examined for materials similar to that at 25BD1. Two other sites were identified as related to the Lynch Village.

Aerial photographs of the site were obtained since adequate mapping could not be done for this study.

Correspondence was undertaken to try to gather details of publicity which was made during the 1936 season.

The results of the laboratory study were compared with published findings of other workers at sites which seemed comparable. Some comparisons could be made by conversations with workers familiar with material under study.

The library research provided the basis for the discussion of physiographic aspects of the Lynch site and the surrounding territory.

A brief but informative trip was made to 25BD1.

Study Materials

This study is based upon the materials which are now available in the collection of the Laboratory of Anthropology at the University of Nebraska. These materials are, one, the greater part of the specimen inventory of some 7600 items including the pottery, the stone, the worked bone and some of the faunal and vegetal remains; two, a file of 98 photographs of the work done between June and August, 1936; three, the original field catalogue of 1936; four, a set of original field maps and profile drawings of the 1936 excavations.

Other available materials are the collection made in 1940 in the laboratory collections; and that made in 1949

which is at the field office of the Missouri River Basin Survey at Lincoln, Nebraska. Much of the usual data collected in the field is unavailable. Nearly all of the faunal remains are stored in the University of Nebraska State Museum, and will be identified when workers and space are available. The extant molluscan remains have been identified. None of the field notes nor excavation records are on file at the Laboratory of Anthropology. Some 200 specimens and 21 photographs were added after the study was made.

THE LYNCH SITE

Boyd County is located next to South Dakota and the Missouri River in the northeastern corner of Nebraska. The county is drained principally by the Niobrara River and Ponca Creek, both tributaries of the Missouri River. The topography is characterized by steeply rolling hills and small stream courses. Much of the soil is sandy and given to blowing in the strong winds of the continental climate.

The town of Lynch is built upon the flat bottom land at the junction of Ponca Creek with its tributary, Whiskey Creek. The uplands rise sharply from the bottom lands and are about 200 feet above the valleys. The Lynch Village, site 25BD1, occupies the flat-topped upland immediately west and north of the town. (Map 4)

Site Description

Site 25BD1 is located in Sections 15 and 16, Township 33 North, Range 10 West, and is approximately $42^{\circ}50'25''$ North Latitude, and $98^{\circ}28'45''$ West Longitude. The location can be made by projecting a line due south about 11 miles from the intersection of the Nebraska-South Dakota boundary (43° North Latitude) and the Missouri River.

The site area covers from 200 to 400 acres of the high terrace dividing Ponca Creek from Whiskey and Silver Creeks.

This terrace, the only flat-topped upland in the immediate area, is from 200 to 215 feet above the valley floor; at the town of Lynch the valley is 1400.5 feet above sea level.¹ An eastward flowing tributary of Whiskey Creek separates the terrace from uplands to the north. This creek, apparently spring-fed, is in a valley about 50 feet below the terrace, and has developed bottom lands along its course, in contrast to the gullies which drain the upland areas directly into the creeks. (Map 4)

Almost 1/2 mile west of Jehorek farmstead (J on Map 4) two gullies divide the site area from the land to the west leaving a neck of land at present about 1170 feet across. The separation combined with the steep sides of the terrace on the south, east, and north logically put the site area in an easily defensible location.

The elevated position of the site area exposes it to the cold winter and hot summer winds which would blow away village odors and the common insect pests.

The present water source is Ponca Creek but springs occur along the streams.² Their location in relation to the site could not be determined.

1. Moran, Hayes, Lovald, 1937, p. 3.

2. Moran, Hayes, Lovald, 1937, pp. 3; 43.

The soil at 25BD1 is sandy. Its internal drainage is good,¹ but once the ground cover is removed it is highly subject to wind erosion.

The ground cover of the site area is native grasses where it is not under cultivation or been otherwise disturbed.

Both the crops and the grass seem to grow sparsely. There are no trees upon the uplands except where they have been planted to provide shelter for the farmsteads. Native timber grows on the creek bottoms, in the deeper parts of the gullies, and, in some areas, on the slopes along the creek valleys.

The gullies of the slopes around the site are deep, straight-walled, and floored with a thick layer of white sand. They provide difficult walking, and would not have furnished pathways between the valley and Lynch Village.

(Map 4)

Local Topography

Boyd County is in the High Plains section of the Great Plains physiographic province. It is part of a former nearly level to hilly constructional plain which has been severely eroded by the Missouri and Niobrara rivers and their tributaries. While the principal topographical features are the result of this erosion, glacial action has

1. Moran, Hayes, Lovald, 1937, pp. 31-32.

modified the surface in some places by changing the pre-glacial drainage and adding deposits of gravel, sand, boulders, and clay; the wind has modified certain sandy surfaces into small areas of dunes. Most of the smoother plains remnants are capped by a mantle of loess-like material which is thinner than the loess covering to the south and east in Nebraska, but similar to it; some of these remnants are capped by sand or gravel. The sand and gravel lying next below the loess has been exposed in places by the erosion of the loessial cover.¹

Besides these remnants of the old plains there are numerous areas of nearly level to moderately hilly upland on the Pierre shale formation. The largest and smoothest of these areas are north of Ponca Creek in the eastern part of the county. The remaining uplands, on severely eroded Pierre shale, are extremely rough and broken; and usually occur as strips along the valley sides and adjacent uplands along many of the drainageways. This is true of Ponca Creek and its tributaries. The slope of this land is usually abrupt.²

The Missouri River, the principal stream, has eroded a trough, usually with steep slopes, to an average depth of 500 to 600 feet below the general upland level. The area slopes gradually downward from west to east. The streams

1. Moran, Hayes, Lovald, 1937, pp. 1-2; Condra, 1908, p. 6.

2. Moran, Hayes, Lovald, 1937, p. 2.

flow generally eastward into the Missouri; the drainage pattern is dendritic. All the streams have steep gradients and are actively deepening their channels. Run-off is rapid and erosion is severe over most of Boyd County.¹

A tributary of the Missouri, the Niobrara River, flows in an easterly direction across northern Nebraska and forms the southern boundary of Boyd County. Ponca Creek nearly parallels the Niobrara River eastward from the 99° meridian across most of Boyd and part of Knox Counties, and empties into the Missouri above the town of Niobrara in Knox County. Whiskey Creek flows in a southeasterly direction across the east central part of Boyd County and empties into Ponca Creek at the eastern side of the town of Lynch. Silver Creek is a southward flowing tributary of Whiskey Creek. Both these streams start near the Missouri River bluffs and flow across the southern part of the old Ft. Randall Military Reservation.²

Springs, usually of good quality, on the lower valley slopes of the rivers and Ponca Creek issue from the contact zone between the upland or terrace sands and the underlying Pierre shale.³

1. Moran, Hayes, Lovald, 1937, p. 3; Condra, 1908, p. 6.

2. Moran, Hayes, Lovald, 1937, map.

3. Moran, Hayes, Lovald, 1937, pp. 3, 43.

Geography of Region

The native vegetation is chiefly grass. On the uplands and terraces the principal grasses on the finer textured soils of Boyd County are little bluestem, grama, buffalo, and wheatgrass. On sandy soils big bluestem and needle grass are common.¹

The native forest occupies narrow strips of land adjacent to the stream channels as well as some slopes of the bluffs and uplands. The trees are usually elm, ash, bur oak, hackberry, boxelder, cottonwood, and willows.² Thickets of edible plants probably included the wild grape, plum, choke-cherry and mulberry.³

The native fauna may have included bison, elk, antelope and deer while wolves, coyotes, badgers and rabbits were plentiful. Beaver, bear, otter, racoon, cougar, opossum, wildcats, fox, squirrels and lesser forms probably were found along the streams.⁴

The soils of Boyd County have been developed under grass cover from the various geological formations, and most of the upland soils show important characteristics due to the parent material. The sandy or gravelly soils of the uplands are more or less droughty and unstable. The soils developed from

1. Moran, Hayes, Lovald, 1937, p. 4.

2. Moran, Hayes, Lovald, 1937, p. 4.

3. Wedel, 1941, p. 5.

4. Wedel, 1941, p. 5.

Pierre shale, on the uplands, retain water well, but they shrink and crack in dry weather. Occupying hilly areas, these heavy soils contain enough selenium to produce poisonous vegetation in some places. The finer textured soils of the terraces and flood plains are highly productive and the silty ones can be worked under most conditions but those developed from re-worked shale are difficult to handle.¹

The soils at site 25BD1 and the surrounding areas are of special interest to this study. The flat-topped upland of the Lynch Village has soil belonging to the sandy Thurman series of soils; the nearby bottomlands have soils usually belonging to the Cass, Hall, and Verdel series. The soils of the slopes are classed as rough and broken land.

The soil of the northwestern part of 25BD1, including the Jehorek area, is classed as Thurman fine sandy loam. It has developed from slightly silty sand where the loess cover has been removed. Moisture is absorbed and the soil doesn't puddle in wet weather. The topsoil is a dark fine sandy loam with abundant organic material; it is not subject to wind erosion even in dry spells. The subsoil is mostly sand.²

The soil of the southern and eastern parts of the site, including the Stewart area, is classed as Thurman loamy sand, and has developed from sand deposits. Moisture soaks in and internal drainage is good. The topsoil of sand with little

1. Moran, Hayes, Lovald, 1937, pp. 12-13.

2. Moran, Hayes, Lovald, 1937, pp. 22-23, map.

other material, is highly subject to wind erosion once the ground cover is destroyed. The subsoil is usually loose gray sand.¹

The rough broken slopes combine patches of Pierre shale exposures, steep slopes, and gullies with soils developed from eroded shale. This land supports a growth of grass and brush.²

On the bottom lands of Whiskey Creek, now inside the town of Lynch, is a small patch of Verdel clay loam. This soil has developed from water deposited clay washed from Pierre shale. This soil is described not because it is a cultivatable soil of the bottom lands but because "In places there are scattered rusty-brown streaks and splotches and a few small iron concretions."³ making it, although it dries out rather unevenly in the fields, a possible source of pottery clay.

Much of the nearby bottom land of Whiskey and Silver creeks, and spots along Ponca Creek, have soil of Hall very fine sandy loam. It has developed from gray limey loess which has been redeposited by streams and then weathered. This soil is easily worked and a good producer; it is not subject to wind or water erosion.⁴

1. Moran, Hayes, Lovald, 1937, pp. 31-32, map.

2. Moran, Hayes, Lovald, 1937, pp. 30-31, map.

3. Moran, Hayes, Lovald, 1937, p. 24, map.

4. Moran, Hayes, Lovald, 1937, pp. 23-24, map.

Most of the other soil of the nearby Ponca Creek bottoms is Cass fine sandy loam which has developed from sandy alluvium and has enough organic material to be stable. It is an easily cultivated and productive soil.¹

Since the sandy soil of the southern and eastern part of 25BD1 has not yet accumulated enough organic matter to stabilize it against wind erosion once the ground cover is destroyed, then this soil has probably been subject to movement whenever the vegetation was killed in times past, as might have been the case during the occupation of the Lynch Village. The fact that water probably did not stand upon the surface for any length of time, and that it was not affected by floods may have enhanced the upland as a village site. While the upland soils are suited only to grass, the aboriginal farmer was interested in bottom land garden plots such as are present, and productive, now near 25BD1.

In addition to the outcrops of the Arikaree formation on the buttes farther west there are rock outcrops close to the Missouri River bluffs and at the head of either Whiskey or Silver creeks.² This is about 5 to 6 miles up these creeks from the Lynch Village and might possibly have served as a source of material for stone tools used by the village inhabitants.

1. Moran, Hayes, Lovald, 1937, p. 27, map.

2. Moran, Hayes, Lovald, 1937, map.

Geological Formations of Region

The geological formations exposed in northeastern Nebraska are all sedimentary in origin and are of the Cretaceous, Tertiary and Quaternary systems. The outcrops in the area appear to lie horizontally but they usually have a slight general inclination to the west and west northwest. The Cretaceous formations, the lowest exposed, are beds of wide extent with a nearly horizontal position or a slight dip to the west. These beds are composed of clay, chalk, limestone and sandstone of marine origin. It outcrops along the Missouri River and other streams and shows in well records. Sands and clays of Tertiary age, including the

DEPOSITIONAL SYSTEM	FORMATION
Quaternary	Dune sand Alluvium Loess Glacial Drift
Tertiary	Pliocene deposits Arikaree formation
Cretaceous	Pierre shale Niobrara formation Carlile shale Benton Group Greenhorn limestone Graneros shale Dakota sandstone

TABLE 1. GENERAL STRATIGRAPHY OF NORTHEAST NEBRASKA¹

1. Condra, 1908, p. 8.

Arikaree formation, lie upon the eroded surface of the Cretaceous deposits and are typical in western Boyd and Holt counties. On the eroded surfaces of the Cretaceous and Tertiary formations are wide areas of clay, sand, gravel, boulders, loess, and alluvium of the Quaternary.¹

The rocks of these various formations are described from the lowest to the uppermost as outlined in Table 1.

CRETACEOUS SYSTEM

The Dakota sandstone formation is of thick deposits of coarse friable sandstone, light buff to rusty colored, interbedded with clay of blue, gray, and yellow with numerous iron-oxide concretions; it has sandy iron-oxide deposits. Lignite occurs in thin beds.

The Benton Group has three formations. The Graneros shale is dark gray to bluish gray clay or soft shale grading above and below into harder shale; the Greenhorn limestone is fossiliferous limestone with some clay and sand, and is iron-stained in its upper beds. The Carlile shale is composed of dark gray and bluish gray stratified clays with two zones of fossiliferous chalky shale, some sandstone beds near the top and perhaps a thin stratum of volcanic ash near the middle. It has concretions and layers of iron pyrites; selenite crystals (mistaken for mica) occur from oxidation of the pyrites.

1. Condra, 1908, pp. 6-8.

The Niobrara formation is a conspicuous and characteristic feature of northeastern Nebraska. It dips gradually westward from outcrops along the Missouri River and rises toward Chamberlain, South Dakota. The Niobrara is a lead gray chalk rock which weathers to a yellowish color and has admixtures of clay and sand, and, in the upper part, a few thin limestone beds.

The Pierre shale formation is the thickest member of the Cretaceous in Nebraska; in western Boyd County it is 500 feet thick. Its base is nearly horizontal. This shale, called "gumbo" and "soapstone" consists of dark and bluish, plastic, finely stratified clays which carry lenses of limestone and beds of shale or impure chalk and "thin layers of concretionary ironstone,"¹ but few fossils. At its base a dark carbonaceous layer is exposed from Chamberlain, South Dakota, to eastern Knox County, Nebraska. The shale also has a seam of whitish clay and one of iron ore.

The highest beds of the Pierre, as observed in Boyd County, are bluish clay with some concretions of iron ore.... The beds do not rise steeply in bluffs but, weathering rapidly, form rolling hills and long slopes.²

These hills show light to dark bands depending on the color of the beds underneath. The Pierre is subject to landslides caused by the infiltration of ground water; this is especially true along the Niobrara River.

1. Condra, 1908, p. 15.

2. Condra, 1908, p. 16.

TERTIARY SYSTEM

The Arikaree, composed of grayish sand and sandy clays, local beds of sandstone, quartzite, conglomerate and fresh water limestone; is up to 100 feet thick on the ridges and thins on the slopes. The formation was once extensive but it has been widely removed by erosion leaving only a few remnants capping buttes on some of the northwest-southeast trending ridges. The sandy portion is in part unconsolidated; the grains are usually feebly cemented with calcium carbonate, with more complete cementing local beds of sandstone, usually cross-bedded, are present. The Arikaree sometimes contains pebbles. A hard greenish sandstone or quartzite with a silicious cement, identical with that found in the Bijou Hills of South Dakota or at Woodruff, Kansas, occurs in most buttes; its nature often changes within a few feet. This greenish quartzite weathers to a lighter color. Typical outcrops of Arikaree caps on Pierre shale are at Twin Buttes and Stoney Butte in Boyd County; the sand blocks break off and slide down the shale.

The Pliocene deposits of stratified sand with some gravel and clay were laid down after extensive erosion which occurred at the close of the Arikaree. This deposition may have extended into Quaternary time.

QUATERNARY SYSTEM

The Glacial drift consists of boulder clay, sand and gravel beds on Cretaceous or Tertiary deposits and below the

loess. The drift is of wide extent; along some of the principal streams the gravel beds appear as caps in northeastern Nebraska.

The loess which slopes away from the brink of the Missouri River bluffs is of fine sand and clay of uniform texture. Its principal depositional agency was wind but in some instances it has been modified by water.

The alluvium of sand, clay and some gravel floors the principal valleys, the flood-plains of the Missouri River and the alluvial-fan deposits of its tributaries.¹ Dune sand has been formed by the wind in some places.

In certain areas the wind has blown Arikaree, Pliocene, and alluvial sands into small dunes or sand hills. The principal area lies south of the Niobrara River and is from 5 to 8 miles wide, extending from the western part of Holt County to near Bazile Creek. A few small "blowouts" occur west of the town of Verdigre. Low sandy ridges extending in a northwest-southeast direction, occur at several points in Knox and Cedar counties; they were formed earlier than the dunes on the alluvial flats. At a number of places the loess is completely covered by drifting sands. A few small dunes are found on the Logan Creek bottom, near Laurel.²

Climate

The climate of Boyd County is continental. The summers are hot; the winters cold; spring is cool and rainy while the fall is long and usually dry. The frost-free season of 150 days is from May 6 to October 3. The precipitation

1. Condra, 1908, pp. 8-21.

2. Condra, 1908, p. 22.

averages about 22 inches per year; about 76 per cent falls during the growing season. From October to April the winds usually blow from the northwest; the rest of the year south winds are the rule. Strong winds are common, but tornadoes are rare. The mean annual temperature is 47.8° F.¹

These averages indicate enough rainfall for agriculture, and a moderate climate. In the Plains area averages do not happen, and the weather is apt to be changeable. Seasonal and yearly variations are great.

A few cases illustrate the range of variation of the area. While the average rainfall of 22 inches is sufficient compared to the minimum required precipitation of 15-20 inches annually² the total of 12.48 inches for a dry year, 1910, is below the minimum in contrast to 40.14 inches of precipitation for 1915.³ The records also show that storms of excessive rain occur most frequently from May through September and that rains of about 3 inches in an hour are not unusual.⁴

While the average frost-free season is ample for crops it can be severely cut by killing frosts as late as June 10 or as early as September 15.⁵ Dust storms occur in years of

1. Moran, Hayes, Lovald, 1937, pp. 4-5.

2. Wedel, 1941, p. 6.

3. Moran, Hayes, Lovald, 1937, p. 5.

4. Yarnell, 1935, pp. 12, 41, 22-24, 28, fig. 68-73.

5. Moran, Hayes, Lovald, 1937, p. 5.

severe drought; these storms antedate the coming of the white man to the Plains.¹ In spite of these vicissitudes of the weather the Indians adapted crops suited to the local areas in this region and even farther north.²

1. Moran, Hayes, Lovald, 1937, p. 5; Wedel, 1941, p. 24.

2. Will, 1924, pp. 203-204.

EXCAVATIONS AND FIELD WORK

Excavations of 1936

The greater part of the material used in this study was obtained from June 12 to August 6, 1936, by a party under the direction of Dr. Earl H. Bell. The method employed in excavation was trenching. Each area of excavation and each trench was designated by a set of letters and numerals. Sections of a trench were numbered. Concentrations of material, cache pits and other items of interest to the party were designated as an "F" or a "feature" of the section.

JEHOREK AREA

The first two days were spent in digging the exploratory trenches designated by the field party as JI₁, JI₂, JI₃ and JI₄ (Jehorek area, first season of work, trenches or excavation areas 1, 2, 3, and 4) in the SW1/4, NE1/4, Sec. 16, T33N, R10W (Maps 3, area 1; 4). In this paper these trenches of this area will be referred to as J1, J2, J3, and J4. Trench J1 was the largest of the excavations of the Jehorek area. This trench was toward the western side of the area and was 90 feet long and 5 feet wide, (Pl. 2; fig. 1). The excavation was carried below the bottom of the culture-bearing stratum, and at the east end of the trench a test pit was dug through 5 feet of sterile soil below the cultural

level. The bottom of the cultural level at its deepest part was 2 feet below the surface of the ground. The data are not sufficient to show clearly whether the cultural zone began at the ground level or below the present soil zone as it is shown on profiles or trenches S1 and S3. The maps and profiles do not show whether the field was unbroken sod or cultivated land but the photographs (Pl. 2, fig. 1; 6, fig. 1) and the map tracings indicate that the land of the Jehorek area was plowed.

The field catalogue lists J1-F1, J1-F2, and J1-F3. The profile of the north wall of the trench shows two "firepits", a "refuse heap" and a "charred line". On this profile the refuse heap is called J1-B. The field catalogue identifies J1-B as J1-F2, (Fig. 1b). The available specimens from this associated material were six pieces of pottery and four pieces of worked stone. The photograph of this concentration of material shows what appear to be several scapula fragments, (Pl. 6, fig. 1). This kind of concentration of refuse material seems to be characteristic of site 25BD1. J1-F2 was about 3 feet in diameter and about a foot through in its thickest part, and at the bottom of the cultural stratum.

The first firepit begins at about 25 feet from the western end of J1 (Fig. 1a). The ash deposit was about 15 feet across. The basin itself was nearly 6 feet across. The pit is shown to be about 0.5 feet in thickness. This fireplace is from 1 to 1.5 feet below the ground level and is at

the bottom of the cultural stratum about 10 feet west of the refuse heap, J1-F2.

The second firepit and the charred line are about 5 feet east of the refuse heap. This firepit and the basin-shaped charred line, which from the profile, looks like a slightly-used fireplace, are both about 0.5 feet below the ground level and almost a foot above the bottom of the cultural stratum. The charred line is slightly above and to the east of the second firepit. The firepit and the charred line are each about 10 feet across; the firepit basin has a depth of about 0.3 feet.

The data from the rest of the trenches in this area do not give any additional information. Trenches J2 and J4 were some 120 feet to the north of J1. Together they were about 45 feet long. A cache pit was found in J4. The three short trenches designated as J3 were dug toward the northeast corner of the area and some 900 feet north and east of J4. The field catalogue for 1936 has the notation between entries F2-165 and F2-166, "JI₃ excavated but nothing found". Two test pits were dug along the fence line about 500 feet north of J1.

The amount of material from the Jehorek area of 25BD1 is proportionate to the two days spent digging there.

STEWART AREA

The excavation on the portion of the Lynch site originally designated as the Stewart site (SI) yielded 95 per cent of the

materials used in this study. Two main trenches were dug. There is no record of other digging in this area. These two trenches were SI₁, 300 feet long on the west, and SI₃, 240 feet long on the east.¹ They are oriented north and south in the very northwest corner of the NW1/4, SW1/4, Sec. 15, T33N, R10W; their location is still plainly visible (Map 4). Excavated in unbroken prairie, these trenches were dug in sections 10 feet long and 5 feet wide. Portions of both trenches were widened. At its northern end SI₃, the east trench, was extended toward the west. In this paper the west trench will be written S1 and the east trench S3.

The culture-bearing stratum was a foot deep in the ends of the trenches, but in the center this level was overlain by some 5 feet of sterile deposit. The excavations in this area were carried below the cultural level, making an imposing hole in the ground (Pl. 3, fig. 2). This does not apply to the cache pits which had originally been dug below the occupation zone, but such pits were completely excavated wherever they were encountered. If there were evidences of any other structures the records give only hints of their existence.²

Trenches S1 and S3 were completed with the end of the 1936 season of work. Trench S2 was started during the early days of the dig, but this trench later became incorporated

1. Van Royen, 1937, pp. 639-641.

2. Discussed in the section on evidences of structures.

in trench S1; exactly what part of the trench S1 the trench S2 became is not clear. Material from S2 is discussed with that of S1. Material is catalogued from S4 (Stewart area, excavation unit 4) but the whereabouts of this trench is not recorded. Because of the field designation it is possible that it could be the same trench and section as S1-4.

Trenches S1 and S3 were dug in unbroken prairie (Map 5). The ground here slopes to the south and west. The sod was 0.7-1.0 feet thick and was consistent to the ground contour. Close to the ends of the trenches the cultural material was in a stratum next to the sod; toward the center of each trench the cultural stratum is separated from the sod by clean non-culture bearing sand which in some places is as much as 5 feet thick. All the drawings made of both trenches were referred to a constant datum or height of instrument. The top of the cultural stratum is surprisingly level and generally 2.5-4.5 below this datum.

Trench S1

The west trench of the Stewart area (Map 3, area 2) was 300 feet long, and dug in sections 5 by 10 feet (Map 5). These sections were numbered from 1 to 31, each section being assigned the highest number of the survey stations dividing it from the sections next to it. Station 0 was at the north end of the trench. The trench was extended to the west at its northern end: these sections were numbered S1-1w and S1-2w. The cultural material was concentrated toward the

southern end of S1; here the trench was extended eastward as sections S1-22-23E, S1-23-24E, and S1-24-25E were dug making the trench at least 10 feet wide for about 30 feet (Map 5). The field catalogue makes one reference to a "housepit" for trench S1; its location is not given specifically. At least 13 cache pits were encountered; these are discussed in the section on caches and pits, (Fig. 5-14; table 2-3) and the probable post molds are considered as evidences of structures (Table 4).

The method of excavation by section of trench left a standing wall between sections for some time (Pl. 2, fig.2; 3, fig. 1). Profiles of the trench walls were drawn as well as some maps.

From station 25 southward the cultural stratum of S1 lies next to the sod; the cultural stratum itself was thin, about 0.5 feet, except near cache 13 in section 27. Just north of station 25, in the east profile of section 24 is a "1 inch layer of pebbles". North of the pebbles the cultural stratum is separated from the sod by a zone of culturally sterile sand. From the north end of the trench, section 1, where the cultural stratum begins, as far south along the trench as station 15 this sterile sand is about as thick, 0.7-1.2 feet, as the sod layer. The cultural stratum as far south as station 15 is 0.5-1.2 feet thick although caches and other pits extend from the cultural horizon into the sterile sand or sandy clay beneath.

In section 16 the sterile sand increased suddenly until it was 2.5-2.7 feet thick; it was nearly this same thickness until it decreased in section 24 and had all but disappeared at station 25. Cross-bedding is indicated along the west wall of S1 for the sand from stations 17 to 22. The cultural zone, including cache 9, also shows cross-bedding along the same length (Fig. 3).

The cultural stratum as shown in the profiles remains nearly the same thickness, 0.7-1.0 feet throughout the length of trench S1; the profiles note that in some places it was more easily discernible than at others, and that at some points, notably in sections 16 and 17 near cache pit 8, it was nearly devoid of artifacts. In sections 21 through 23 the culture horizon thickens to nearly 1.7 feet near cache pits 9 and 10 (Figs. 3, 10). Sections 21 and 22 are the only parts of the trench where the profile shows any complexity of the deposits (Fig. 3). Unfortunately the profile was not completed after the excavation was finished (Pl. 3, fig. 1).

An artifacts location chart was prepared in the summer of 1950 using the materials in the Laboratory of Anthropology from 25BD1 including rim, decorated body, shell, tempered and miniature vessel sherds, and the worked bone and stone. While figures 5 to 14 have been based on this chart the problems of reproduction are such that it is filed at the Laboratory of Anthropology, Lincoln, Nebraska. Much of the information furnished by the chart is discussed in various parts of this paper; this is especially true of the sections

dealing with the artifact inventory of portions of the excavations.

The cultural horizon of sections 1 through 19, and 26 through 31 each contained up to 2-3 dozen artifacts of stone, bone, rim sherds or decorated pottery pieces; there seems to be no one section that had an overwhelming preponderance of any one kind of artifact. This distribution corresponds to the parts of trench S1 where the culture stratum is of a uniform depth and is not heavily overlain by sand. The caches and other pits of these parts of the trench contained varied amounts and kinds of artifacts, usually in greater quantities than were found in the trench sections themselves. This is true, for example, of cache pits 2, 3, 13 and basin pit C (Figs. 6, 8, 9, 11).

Section 21 is outstanding in that "Feature 1", as it is named on the map, was the location of the Upper Republican type pot. The pieces were found almost all together making the reconstruction and repair of the vessel relatively easy (Pl. 6, fig. 2; 7).

Sections 21 through 25, where the culture horizon is thicker and more complex, and overlain by more sterile soil, were richer in artifacts; four "Features", including cache pits 9 and 10 added to the specimen inventory. Apparently it was this richness and complexity which led to the eastward extension of the trench here (Pl. 5, fig. 2; Fig. 10, map 5). These sections contain more artifacts per section than do the thinner parts of the cultural horizon, but the relative

frequency of the various kinds of materials, and the kinds of rims represented remains about the same. Sherds of Oneota pottery come from these sections as well as from the more shallow ones.

Trench S3

Trench S3 was 240 feet long. Its survey stations and sections numbered from the south, -6 through 0 to 18 at the northern end of the trench. The westernmost section of the area extending from the trench at its northern end was S3-16w7 (Map 5).

Trench S3 presents the same general pattern as trench S1; the cultural stratum is thin and near the surface at the ends of the trench, but in the south central part the cultural zone thickens and becomes more complex, although specimens do not increase in number, and the sterile deposit is deeper. At the southern end of the trench the overburden abruptly decreases and the artifacts seem to run out although the cultural stratum continues southward.

At the north end the trench was extended; in this area cache pits 14, 15, and 17, and basin pits H-0 were uncovered (Pl. 4). The cultural horizon in this part of the trench was 1.0-1.5 feet below the ground surface.

Beginning close to station 11 and continuing southward the stratum of sterile sand increases gradually until it reaches a maximum of 5 feet near station 1 although it is 4.2 feet thick at station 4, 30 feet north of station 1; 40 feet

south of station 1 the sand at station-3 is only about a foot thick.

The records of the excavations indicate that a structure of some kind is responsible for the group of post molds near station 4, and that they represent the only identifiable "housepit" of those mentioned for the site. It seems entirely possible that a ruined structure would catch the sands being blown from an area whose vegetation had been worn away by the occupation of the site. The creation of such a drift, judging from present conditions in the Plains, would perhaps have taken only a few months (Pl. 3, fig. 2).

A wide variety of artifacts come from trench S3 (Pl. 5, fig. 1). One restorable pot and one that is now partially restored came from sections at the northern end of the trench (Pl. 16). Cache pits 14 and 17 (Figs. 12-13) contained abundant material.

Two separate rim sherds, each one a different kind, have been matched and put together from sherds which were excavated from both S1 and S3.

Reconnaissance

Site 25BD1 was surveyed in September 1935, by A. T. Hill, Waldo Wedel, George Wilcox, Earl H. Bell and John Champe. The site seems to have been regularly visited by archeologists from time to time.

In 1940 John Champe and Albert Spaulding visited the site and picked up a sample of the artifacts that they found

to the east of the 1936 trenches (Map 3, area 3). Here the cultural level is immediately below the plowed surface of the field. This material, part of the Laboratory of Anthropology collections, was used in this study.

During the summer of 1949 Paul Cooper stopped at 25BD1 and made a surface collection near the 1936 trenches and in the field to the north¹ (Map 3, areas 2 and 4). This sample, in the Missouri River Basin Surveys, Smithsonian Institution, collection, and the photographs in their files were examined by the writer.

On July 29, 1950, Mr. Freed and I spend the day making a surface survey of the Lynch site and the local terrain (Pl. 25, 26). It was not possible to carry out our plan to map the site. In the fall of 1950 it was possible to obtain aerial photographs of the area from the Department of Agriculture.² These photographs provided the needed map detail of the site (Map 4) and were used in preparing this section of the report.

July 29, 1950, was a moderately windy day; wherever the ground cover was thin or absent the sandy soil was blowing.³

The gullies along the bluff have straight steep sides and were floored with a thick layer of light-colored sand.

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1. Cooper, 1949, personal communication.
 2. Mr. Frank W. Reed, at that time chairman of the Nebraska Production and Marketing Authority Committee, aided in obtaining these photographs.
 3. Freed, 1950.

This sand shows white in map 4. These gullies cut through sand and/or gravel in some places as much as 30 to 40 feet thick. This is the case in the gully just south of the trenches dug in 1936.

These trenches are still plainly visible. The sides have slumped and the ground cover here is thin. It is about 200 feet from the trenches to the bottom land and Ponca Creek.

Whiskey Creek is, especially in relation to Ponca Creek, a sizable little stream incised in a deep, steep-walled and narrow valley. The eastward flowing tributary of Whiskey Creek north of site 25BD1 is the same kind of stream. The creek bottoms are well wooded, a few evergreen, many cottonwoods and willows and also a few elms and hardwoods. Most of the bluffs are too steep for much vegetation.

The point of land upon which 25BD1 is located seems to be easily defensible although the site covers a large area, at least 100 acres and more likely 200 acres since it extends for about one mile east and west and from one-quarter to one-half mile north and south. The trenches are about in the center of the southern edge of the site. Since these excavations were on the periphery the sample of material must be small and might not be representative.

The field to the north of the trenches was extensively examined (Map 3, area 4; Map 4). Quantities of material can be picked up in a short time. Much of it has been freshly broken and seemingly freshly turned up by cultivation.

Although the field appears to be flat it is covered with slight rises and depressions; most of the artifacts seem to be found on the rises. It is entirely possible that these differences might indicate structures or dwelling units of some kind such as earth lodges. Some of the material gathered here looked as if it had been badly weathered.

Although springs have been located in Boyd County;¹ we could not check for the presence of springs in 1950.

The aerial photographs show very few areas large enough for a village except for the bottom lands -- subject to flooding -- and the point of land where 25BD1 is located.

1. Moran, Hayes, Lovald, 1937, p. 3.

MATERIAL CULTURE

This section is devoted to a description and analysis of the artifact inventory; that is, the tools and utensils that were recovered. It deals mainly with the pottery since most of the specimens are ceramics. Only material of Indian origin is dealt with since there is no evidence of any contact material being in the artifacts from the Lynch Village.

Work in Stone

About 15 per cent of the artifacts are stone objects. These artifacts possess a common, and frustrating, characteristic of having little to distinguish them from artifacts of other Plains manifestations, or from rocks along the river. This trait may perhaps be partially the fault of the stone available for the manufacture of these implements or it may be due to the author's inability to do much more than distinguish between "stone, worked", and "stone, fragment". These non-diagnostic features have been noted elsewhere.¹

The stone work exhibits two non-typological characteristics. The first of these is the division of the stone materials used in relation to the kinds of artifacts manufactured from them. Thus many of the larger objects were manufactured from a gray-green quartzite which weathers to

1. Freed, n. d., p. 3.

a light gray and seems to be identical with the gray-green quartzite described from the Arikaree formation. Smaller implements are usually manufactured from flints, jaspers, and chalcedonys.

The second fact is that numbers of unworked stone pieces, of a nearly uniform size for the group, were found together in various places throughout the site. This is true of a number of cache pits (Figs. 8, 10).

CHIPPED STONE

After checking the material for errors in cataloguing and transcription 567 items were analyzed as chipped stone artifacts. Most of these were knives of various kinds, scrapers, and projectile points. The rest were classed as gravers, drills, celts, and modified flakes. Not all these items were whole, but enough of each specimen was present so its original form could be visualized.

Knives

Knives of the various kinds totaled 207.

Alternately-beveled knives numbered 34. The knives of this group are of varying shapes, but are usually diamond-shaped, 15 specimens, or triangular (Pl. 19, a, b, g). Eight of these are made of flint; 26, 70 per cent, are made of quartzite; one four-sided alternate bevel knife is of the badlands chalcedony type and is counted in that group. Six of the knives from the group were found in the excavation S4.

The Badland's knife¹ is represented by 13 fragments and one whole specimen (Pl. 19, e-h). Seven of these came from sections 23, 24, 23-24e of trench S1, two were collected from the surface of Area 4 (Map 3). The chalcedony plate used for these knives is a pale pink to lavender in color.

About half of the knives are more or less angular in shape; the cross-section is square or triangular and relatively thick. These are grouped into two classes.

Knives of class 1 are the uniface knives which are chipped or edged from only one surface (Pl. 19, n, o). There are 37 of these; 23 are chipped from quartzite; 9 are of flint; and 5 of jasper. About one-third of these knives are from "features"; the rest from the trenches.

There are 56 knives belonging to class 2; these are bifaced, or edged by chipping from both surfaces. The material of 38 is quartzite; 10 are of jasper, and 8 of flint. Only 21 of these knives were found in caches, pits and "features". Although their cross-section is flat due to the material from which they were made, most knives of the badlands' types are of class 2 (Pl. 19, e, f, h).

A second large group of knives are more or less ovoid or leaf-shaped in outline; the cross-section tends to be flat and thin especially when compared to the width of the knife. There are 66 of these knives; 10 of these are sub-triangular (Pl. 19, i, j, l, m). More than half, 36, of these artifacts

1. Hughes, 1949, p. 270.

are made of flint; 12 are of quartzite; 13 of jasper while 3 are made of chalcedony and one was fashioned from a quartz crystal and one from sandstone. While 19 are from caches, pits, and "features", 12 are from a single location (Pl. 19, c, d, i, m).

Scrapers

There are 159 items belonging to the various scraper groups. There is nothing distinctive about any of their characteristics (Pl. 19, c-d, k).

Flint was the favored material for making scrapers; 110 are of this material; 42 scrapers are of jasper; with only 5 of quartzite and 2 of chalcedony. Almost equal numbers of scrapers were found in the trenches, 83, and in caches, pits, and other concentrations of material, 76. A group of 30 scrapers along with other stone work, was found in trench S3, section 15w3, feature 1.

End scrapers are the most common, there are 124 (Pl. 19, d). Other groups include 10 parallel-sided end scrapers; (Pl. 19, c) 15 snub-nosed triangular scrapers (Pl. 19, k) and 7 which are concavo-convex when viewed from the side and 3 which are not further classed.

Gravers

Eleven specimens which have a very sharp tip or point have been termed gravers (Pl. 20, k-m). Four of these, all made of flint, were found in cache pit 10 (Pl. 20, k-1).

One of these is flat; the other three are rounded in cross-section. Of the total number, one graver is made of quartzite, one of jasper; the rest of flint. Eight are flat pieces with a sharp point, in addition to an extremely sharp point on one drill, (Pl. 20, q) but three are heavy, nearly cigar-shaped artifacts with a very sharp tip.

Drills

There are 10 drills; 5 of flint and 5 of jasper (Pl. 20, p-t). Eight of these are T-shaped, 3 are un-finished at the base, 4 are finished at the base, and one that is carefully finished at the base seems to be reworked. Two drills are made from what appear to be broken knives. Two drills were found in "features".

Projectile Points

The projectile points were classed following the system established by Strong.¹ Only 8 of the possible 32 types are represented in the 123 specimens which are included in this study. Of the points whose basal fragments permitted classification 95 per cent belong to the NA and NB series for they are more or less triangular or leaf-shaped with straight or concave bases; about 1/5 of the points have side-notches (Pl. 20, a-j, n-o; tables 5-7).

The tables (5, 6) give two classifications which are not Strong's. Since nearly 23% of the projectile points are

1. Strong, 1935, p. 89; Champe, 1946, p. 37.

represented by the tip only, it seems proper to include them in the discussion. Three of the points are listed as "short" points. These are resharpened, alternate beveled points apparently of the NAb1 or NBb1 types originally, but the reworking has left them with a base larger than the point (Pl. 20, E). These items are perhaps more suitable for drills.¹

The total points are about equally divided into those made of flint and those made of jasper with a smaller number made from various other material, mainly quartzite. This distribution is not maintained for each type. None of the NAb3 points are made of flint while nearly all of the NAb1 and NBb1 (side-notched) types are made of flint. Nearly all of the NAb2 and NBb type points were made from jasper. Except for the NBb type points each of the non-stemmed types has a small percentage made from quartzite (Table 5).

The distribution of points by material and location is irregular (Table 7).

Three concentrations of material yielded nearly 30 per cent of the projectile points. These were cache pit 10, and sections 23, and 23-24e of trench S1. The 10 point tips from cache pit 10 are 40 per cent of the total tips and 66 per cent of the points from the cache pit. Cache pit 2, which contained a large number of stone items, had only 2 points, both NAb2, both of jasper (Table 6).

1. Smith, 1953, pp. 269-270.

Celts

This group includes 17 large, leaf-shaped or rectangular stone artifacts which are edged from both faces and unfinished at the butt end. These are made from gray-green quartzite except for 2 of flint and one of jasper. Five were found in "features", the rest in trenches (Pl. 18c). In addition to this grouping there is a large bi-faced artifact of flint from 17 that is classed as a chopper (Pl. 18, d).

Chipped Flakes

There are 39 pieces of stone that have been worked and used but are not recognizable part of a definitely shaped tool. Of these 19 are quartzite; 14 are of flint; 4 are jasper and 2 chalcedony. Almost one-third are from caches and pits.

GROUND STONE AND MISCELLANEOUS

There are 252 objects in these groups.

Hematite

There are 9 pieces of cut and rubbed soft red stone that are apparently hematite and have been used for paint. These were found throughout the site although two came from cache pit 17. There is also a lump of what is apparently limonite, used for the same purpose.

Sandstone Blocks

Three large flat pieces of sandstone were found toward the north end of trench S1. They have been rubbed and worn. Near these, in pit C, an oblong piece of rubbed quartzite with 6 flat faces was found. These may possibly be grinding stones and a mano.

Abraders

There are 23 pieces of sandstone abraders. Three of these are somewhat shaped; there are no recognizable pairs. The grooves worn in 7 are broad, 1-2 cm. wide and 1-2 mm. deep. There are grooves on more than one surface of 12 abraders. Nine were found in caches, pits, and "features", but only 7 are from trench S1.

Miscellaneous Stone Items

This group includes 2 large smooth quartzite pebbles, and pieces of stone listed in the field catalogue or identified as obsidian, scoria, aragonite and mica schist which were scattered in the trenches.

Unworked Fragments

Up to 116 pieces of unworked stone were found together in 6 different locations. This was true of cache pits 2 and 10, pit C and concentrations of material in J1 and J4. In cache pit 2 there were 77 pieces of quartzite of a nearly uniform size. There is no way of knowing whether these pieces were merely the larger pieces of refuse from making

other implements or if they were to be used in making tools later on. These fragments total 211.

Work in Bone

The 98 bone specimens available for study furnished about 2 per cent of the artifacts which are the basis of this paper. Most of these specimens are scapula hoes or various kinds of awls or knives (Table 8).

KNIVES

Almost half of the bone specimens called knives are pieces of worked bone with a definite edge. Most of the knives whose shape could be determined resemble the modern meat cleaver. The blade of these one-piece knives is thin while the handle and back of the blade is heavy and comfortable in the hand, suggesting that they may have been used with much the same motions we use with a cleaver. These knives appear to have been made from a part of a bison scapula (Pl. 21, b). One knife is of a semi-lunate shape, but this apparently resulted from the utilization of a broken cleaver-shaped knife (Pl. 21, c).

The spatulate knives must have been shaped for some definite purpose. These carefully finished artifacts are long and narrow with parallel sides and one rounded end that is well-sharpened.

RIB TOOLS

Ribs from large animals -- presumably bison -- were used either "as is" or made into definite tools. The ends of about half the rib pieces either show scratches or use on one end, or else have one end that has been carefully finished. Two of the ribs are pierced and are the kind of

implement known as "shaft wrench" or "shaft straightener."¹ The size, 10 to 13 millimeters in diameter, and the worn or oval shape of the holes raises the question of whether or not all implements of this type were used for shaft straightening.

The second group of rib specimens were made into scored bone artifacts (Pl. 21, a). The hypothesis has been advanced that these scored bones were used as a means of producing the simple stamping on Plains pottery.² Experiments with the scored ribs from the Lynch make this use very plausible. The scored bones produce the ridges and grooves of simple stamping in materials such as plasticine. This also seems to be the case with Lower Loup materials³ where these artifacts are found although they have also been called "tally sticks".⁴

HOES

The scapula hoes -- also presumably bison -- have not been illustrated since they are little different from those usually found in Plains archeological complexes.⁵ Most of the hoes are well-worn from use. The articular end is present.

1. Champe, 1936, p. 268; Dunlevy, 1936, p. 197; Hill and Wedel, 1936, pp. 55-56; Hill and Metcalf, 1941, p. 199.

2. Wedel and Hill, 1942.

3. Wolfe, 1950, p. 18.

4. Dunlevy, 1936, p. 199.

5. Cooper, 1936, pp. 52-53, Pl. XXI.

ULNAE

Two large ulnae, well-worn, were recovered. These also seem to be bison.

HORNS, ANTLER

In addition to the bison skull which was found at the top of a cache pit in Sl-7, two other bison horns were recovered as well as three specimens of antler, two worn tines and a carefully finished cylinder.

JAWBONE

The one jawbone with teeth, apparently from a deer or similar animal, is polished from use. Similar specimens have been found in northeastern Nebraska.¹

AWLS

Awls include several kinds, the split metapodial, those split from long bones, those made from ribs or split ribs, heavy pieces which could be the butts of awls or made for another purpose (Pl. 21, e-g, i-k). One of the awls made from a rib has been reworked from a scored rib (Pl. 21, 3).

"BOBBIN"

A unique bone tool was found in Sl-22. It is a short bone -- possibly fish -- which is sharply pointed on each end with a broad, shallow, groove around the center. It is well-polished from use, especially on the tips. This specimen

1. Cooper, 1936, p. 54, Pl. XXIII.

might possibly be a bobbin or shuttle of some kind, or perhaps it would catch fish (Pl. 21, h).

The remaining miscellaneous inventory of bone work includes several teeth, called elk and canine in the field catalogue, a few small bones that could be fish or turtle, and some worked fragments that cannot be further classified.

FAUNAL AND VEGETAL REMAINS

There is no available study by a paleontologist and an ethnobotanist of the faunal and vegetal remains from 25BD1. Until such studies have been made, a few comments are given here to show the nature of these materials.

VEGETAL REMAINS

Many of the vegetal remains listed in the field catalogue are not in the Laboratory of Anthropology collections. The vegetal specimens remaining in the laboratory provide data that indicate that the people of the Lynch Village were farmers.

One specimen is a part of a charred cob of corn with some kernels still attached to it. The interior or pith of the cob shows most plainly. The kernels are about the same size as the kernels of corn grown in Nebraska at the present time upon "dry" land. This specimen came from S1-22.

One group of very small charred seeds from S2-1 north appear to be much like elderberry pits. The other group of seeds is a mixture from S2. This group contains charred beans which look like burned navy beans. The charred pits

of a fruit such as the wild plum are also included in this group of vegetal specimens.

There are also two samples of charcoal; they are both from the unlocated excavation S4.

FAUNAL AND MOLLUSCAN

The worked bone which has been discussed indicated some of the animals used by the people of the Lynch Village. The scapulae of a large animal such as bison or possibly elk were used for hoes. One bison skull was found at the top of cache pit 3. The use of bison is also indicated by the fragments of worked and unworked ribs.

Fragments of antler show that some member of the Cervidae was used. Small ulnae indicate Carnivora, perhaps Canidae. The bobbin-like object (Pl. 21, h) and a small unworked bone could be from some fish.

The bones available indicate that much the same assemblages of faunal material are present at 25BD1 as those which have been found in Aksarben Aspect sites, such as the St. Helena and Sweetwater foci.¹

Shell

The three pieces of shell in the collection of artifacts have been identified as Quadrutina sp. from S1-4 and Quadrutina pustulosa prosina (Conrad) and an unidentifiable piece from S1-5.

1. Champe, 1936, pp. 267-469; Cooper, 1936, pp. 50-56.

Ceramics

The discussion of ceramics is largely the ordering of data and the definition of certain classes and groupings -- types, since they correspond to certain usages of the term¹ -- of pottery vessels and their fragments. Pottery pipes, there are two, are described and discussed.

The ordering of these groupings is made clearer by referring many of them to complexes already known and described for the Plains or to types that have been recently described.

ANALYSIS OF POTTERY

Ceramic remains provide data for much of this report for two reasons. First, the greater part of the material is pottery, and, second, ceramic remains are the best studied index artifacts of the Central Plains.

The laboratory analysis of the pottery was carried out by repeated sorting of the sherds. The body sherds were separated from the rest and then grouped according to surface finish, temper, and color. Tests were made to determine hardness, and measurements to determine thickness. The decorated body sherds were grouped according to temper and the designs of decoration were recorded. The rim sherds were sorted according to profile or shape, temper, and decoration. These data were recorded in tabular form on

1. such as Krieger, 1944; Rouse, 1944; Newell and Krieger, 1949; Lehmer, 1951; Smith, 1951; Gunnerson, 1952.

record sheets which are now part of the site records of the Laboratory of Anthropology, University of Nebraska.

The presentation of the results of this analysis is given in outline form for convenience in comparison. The terms used in this presentation follow the suggestions and practices of workers in archeology.¹

The Lynch pottery presents no evidence to show that it was made by any other method than that of lump modeling with a paddle and anvil. This method of manufacture has been assumed for the other Plains manifestations. I have assumed that the Lynch pottery was made from the best of nearby clay and other materials.

TEMPER

The term temper is applied to the materials included in the paste to minimize the effects of the shrinkage of the clay when the vessel was dried and fired. Three kinds of tempering material are found in the pottery from the Lynch site. These are shell, sand, and a newly identified inclusion, now called Lynch temper.

The shell temper in the Lynch pottery gives a positive reaction to the test for a carbonate, the application of a dilute solution (one normal) of hydrochloric acid. The structure of the shell itself is readily discernible, even without the aid of a hand lens. The particles are as much

1. March, 1934; Griffin, 1943; Spaulding, 1948; Krieger, 1949; Newell and Krieger, 1949.

as 1 mm. in thickness and 4 mm. in diameter. The shell tempered sherds were divided into two groups, a coarse-tempered group which has larger pieces of shell evenly distributed throughout, and a fine-tempered group in which the shell particles rarely exceed 1 mm. in any dimension. The shell tempered sherds are a very small group which account for about 3 per cent of the ceramic items.

Thirty sherds have been excluded from this study. They present all the characteristics of shell tempered pottery which has been leached; but there is no reaction to the test for carbonate, even when the sherd is broken and the interior tested. Mrs. James H. Gunnerson has analyzed nearly identical sherds associated with shell-tempered ware at the Stanton Site, 25ST1. The identification of the tempering material in the Stanton pottery will assist the determination of the relationship of these sherds to the shell tempered ware.

Sand temper was found in nearly one-half of all the sherds. Sand is smooth small rock particles as distinguished from grit, small rock fragments exhibiting fresh fractures and sharp corners. These sand particles are fine, less than 1 mm. in diameter, through medium, 1-2 mm. in diameter. Occasional grains may be as much as 5 mm. in one dimension.

"Lynch temper" is psilomelane,¹ a concretionary form of iron and manganese oxides, with occasional lumps of magnetite

1. The mineralogical identification was made by Professor E. F. Schramm, then Chairman of the University of Nebraska Department of Geology.

and hematite. Nodules of this material may be found in deposits of Pierre shale, and such deposits are common in Boyd County where several soils have been developed upon this formation.¹ The uplands soils as well as the valley soils of re-deposited materials are described as having rusty splotches and spots.² The Verdel clay loam -- a valley soil developed on water deposited clay washed from Pierre shale -- is described as having "a few small iron concretions".³ A patch of this soil is located in Section 15 along Whiskey Creek just to the east of the Lynch site.

In the potsherds the nodules of Lynch temper always occur in addition to sand, which is nearly always fine sand. The most easily discerned nodules of Lynch temper are dark brown or black, and are rounded. They are easily cut or broken open with a dull penknife or with a fingernail; the fracture shows plainly the layers of lighter and darker brown due to the concretionary nature of the nodules. The included iron and manganese oxides show plainly when a broken nodule is viewed through a microscope. The nodules are between 0.5 and 1.5 mm. in diameter. Occasional larger nodules may be as much as 7 mm. in diameter. It is usual to find groups or clusters of these nodules about 1 mm. in diameter in one edge of a sherd.

1. Condra, 1908, p. 10-20, map.

2. Moran, Hayes, Lovald, 1937, pp. 2, 18-19, 24, 30-31, map.

3. Moran, Hayes, Lovald, 1937, p. 24, map.

Lynch temper is found in about 45 per cent of the sherds. In the present study positive identification of the Lynch temper was necessary for the placement of a sherd in this category. Sherds in which this material could not be identified in the existing edges of the sherd were placed in the sand tempered group.

TEXTURE

All of the Lynch site pottery is flaky; i.e., the paste has been worked to such an extent that the edges of the sherds present a laminated appearance. The layers are easily traced around the particles of tempering. The amount of flakiness varies from that which is just discernible to the other extreme at which the sherd has partially or completely split into halves. Some sherds are friable, but these exhibit the flaky texture of the rest of the pottery.

SURFACE FINISH

"The term surface finish refers to the dominant feature of a ceramic specimen which is the result of a uniform treatment of the major part of its surface."¹ It is the result of a complex of techniques rather than one step in the construction of the vessel. The surface finish is the end product of the manipulating of the surface of the paste or the coating of the paste with some other substance. The

1. Guthe, 1934, pp. 2-3.

outer surface finish of the pottery from 25BD1 has been produced by random cord paddling, simple stamping, and smoothing.

One-half of all the sherds from the site are random paddled cord body sherds. This is a common surface finish for Plains pottery; and, although the name applied varies, it has been well described.¹ The cord paddled sherds vary in texture from heavily ridged to nearly smooth, but the marks of the cords plainly show. Cord paddled surface finish is characteristic of the pottery of the Upper Republican aspect.

One sherd in ten is a simple stamped body sherd. Short, parallel ridges and grooves mark the surface of simple stamped wares. These ridges and grooves may have been produced by paddles of scored bone.² The notched bone artifacts from the Lynch Village produce similar ridges in plasticine but use of devices other than scored ribs cannot be ruled out. Simple stamping is also a common surface finish in the Central Plains and is characteristic of Mandan as well as Cheyenne, Pawnee, Arikara, and Dismal River and Lower Loup ceramics.³

1. Strong, 1935, pp. 83, 131, 139-141, 149, 247; Cooper, 1936, pp. 34-35, Pl. IV-XIII; Champe, 1946, p. 111.

2. Wedel and Hill, 1942.

3. Strong, 1935, pp. 58, 65, 216; Wedel, 1936, p. 66; Dunlevy, 1936, p. 173; Strong, 1940, pp. 364, 369, 373, Pl. 5, 7, 8; Hill and Metcalf, 1941, pp. 131-182; Wedel and Hill, 1942, pp. 91-97, Pl. 8, 9, 13; Metcalf, 1949.

The smoothed body sherds comprise another 10 per cent of the ceramic remains. The sherds of this group have been smoothed until all traces of any other surface treatment have been obliterated. Some of the smoothed sherds present an almost polished surface; others are more sandy-feeling when rubbed with the fingers.

Seventy-five of these sherds have been so smoothed that they present the appearance of a slipped or clay-coated ware, but the effect was probably produced by "floating" the fine particles or the paste to the surface by smoothing, in much the same manner as the surface finish of concrete is sometimes produced. The surface layer tends to crack and flake off, but this is probably the result of a lack of tempering material near the surface in addition to the extra working of the paste.

The division of the sherds according to the surface finish did not correspond to the division according to temper. Both the simple stamped and the random paddled cord sherds were about equally divided into sand tempered and Lynch tempered lots. The smoothed sherds are characterized by shell temper as well as Lynch and sand temper.

The smoothed sherds which have been discussed were Lynch and sand tempered. The second group of smoothed sherds was shell tempered. All of the shell tempered ware is smoothed to a greater or lesser degree, although a very few sherds suggest that part of this group may have been subjected to simple stamping or some similar treatment previous to the

smoothing. This group also varies in the degree of polishing or burnishing that is shown, although most of it is well-smoothed and polished.

In contrast to the varying surface finishes of the outside of the sherds, the inside surface of all sherds is somewhat smoothed. The irregularities include small depressions or ridges, fingernail and other scratches and a few very excellent finger prints. The inside of the rims and interior of the vessels near the necks show smoothness and care in finishing.

The inside surface of one group of sherds presented a peculiarity which has been discussed by other workers.¹ Nearly 5 per cent of the sherds have been colored or stained red on the inside surface. The red coating adheres firmly to the surface of some of the sherds; but, it is easily rubbed off of others, and is found associated with all types of exterior surface finish of the sand and Lynch tempered pottery. Various interior red coatings have been noted for the pottery of the Central Plains, especially for the Pawnee, and for the Lower Loup focus and the Upper Republican aspect.²

The surface finishes of the Lynch Village pottery vary in kind and amount. Cord-paddled ware has been thought of as

1. Strong, 1935, pp. 59, 65, 247; Wedel, 1936, p. 70.

2. Strong, 1935, pp. 59, 65, 247; Champe, 1936, p. 274; Wedel, 1936, p. 70.

characteristic of the Middle Ceramic period; simple stamped pottery, of the Late Ceramic period.¹

HARDNESS

The tests of hardness were made following the suggestions by March.² Three samples of 100 sherds each, selected at random were tested. Two samples were of cord paddled sherds, one of simple stamped. One small sample of shell tempered sherds was also tested. Except for the shell tempered ware the results of these tests were the same.

Two out of three of the cord paddled sherds and four out of five of the simple stamped sherds were between two and three in hardness. The range of hardness of these two groups was from below two to between four and five. No difference could be shown which corresponded to temper, surface finish, or color. At three in the hardness scale there was much mutual scratching between the sherd being tested and calcite crystal used for the testing. These sherds are softer than other Central Plains ceramics (Table 9).

Three-fourths of the shell tempered sherds tested three or above three in hardness. The range for this group was from two to five with half of the sherds having a hardness of just below four; at this point there was some mutual scratching (Table 9).

1. Wedel, 1940, pp. 324-339; Champe, 1946, pp. 85, 89-90.

2. March, 1934, pp. 17-22.

THICKNESS

Five groups of 100 sherds each, chosen at random, were measured for thickness. Two of these groups were simple stamped; three were cord paddled. The total range of thickness for all groups was from 2 to 11 mm. Three out of five sherds were between 4 and 6 mm.; and 90 per cent of the sherds were less than 7 mm. thick.

When these groups were subdivided and rearranged according to tempering material and surface treatment and the groups were arranged by their means from thin to thick the resulting chart presents some interesting regularities (Table 10). The simple stamped sherds form a group preceding the cord paddled sherds; while within each group the sand temper is at the top, then the mixed group containing both sand and Lynch tempering and lastly the sherds with Lynch temper.

The shell tempered sherds which were measured ranged from 2 to 7 mm. in thickness. Two-thirds of this group were from 2 to 4 mm. in thickness, confirming the impression that the shell tempered sherds were somewhat thinner than the Lynch and sand tempered sherds (Table 10).

COLOR

The color of a sherd may vary from the exterior surface through the core to the interior surface. The interior surface of the pottery from 25BD1 is nearly always dark gray; this surface and the core are almost without exception the

same color. Both the core and the interior surface are usually darker than the exterior surface. A tray of Lynch sherds with interior surface up gives much the same impression of color that is received from looking at the surface of a street of much-patched black-top pavement.

The sherds were grouped according to two ranges of exterior color, buff and gray. The buff range included all the warm tones; the gray, all the cold tones. The buff range was from a tawny buff through umber to a warm brown -- no really dark browns were distinguished. The gray range was from a gray-white to black, and included some gray-blue tones. The number of sherds in each color group was approximately equal.

About one-fourth of the buff sherds were warm-toned through the core and interior surface. More of the buff sherds showed Lynch temper than sand temper; the reverse was true of the gray sherds. The ratio was about five to seven. The Lynch temper is more easily seen in the buff sherds and the black nodules do not show up to advantage in the dark gray sherds. Thus this ratio is close to the other divisions of the sherds into half Lynch temper, half sand. Almost all of the red-stained sherds are buff.

FORM

The ceramic inventory includes two restored vessels and another which has been partially restored. These, together with the larger and the indicative sherds, provide the data

for the discussion of body and shoulder form. The rim sherds provide the data for the rest of this discussion.

The sherds and the reconstructed vessels were easily divided into two different forms. In general, these two forms correspond to the division into the shell tempered and the Lynch and sand tempered sherds.

Body

By their curvature the sherds from 25BD1 indicate vessels which were globular or hemispherical in shape. This is further illustrated by the two reconstructed pots and a basal sherd aggregate. This base fragment and five other large sherds are shell tempered. Below the shoulder they are globular in outline and appear to be somewhat flattened at the base. The sand tempered pot (Pl. 16) has the same shape as that suggested by the shell tempered sherds. The other pot (Pl. 7) is Lynch tempered; and below the shoulder it is globular or conoidal. Two basal shapes are evident, one more pointed than the other.

Shoulder

The shoulders of the Lynch Village pottery are distinct but rounded off as though they are the rounded juncture of two curved surfaces. The shoulders are high on the vessels. The area between the shoulder and the neck is flat; the slope of the shoulder area is about 20° .

Neck

Two kinds of neck form are readily discerned in the pottery from 25BD1. The first is a sharp, angular, junction between the shoulder area and the rim. The angle of the neck between the plane of the shoulder area and the rim varies from 90° to 110° . Included in this group are the sherds on which the sharpest portions of the angle have been smoothed off, but there is no doubt as to the exact location of the neck. The form of this 80 per cent of the usable sherds gradually grades into the form of some 10 per cent of the neck sherds. This kind of neck is best described in geometric terms as the line of points forming the smallest diameter of the orifice of the pot. The exact juncture is in these cases indeterminate because the sherd curves gradually from the shoulder area through the rim, and its placement depends upon the position of the sherd in the vessel; this position can only be approximated by the worker.

Both of these forms are constricted necks, but the difference between them can be more readily seen in the illustration of rim profiles. (Pl. 10-12, a-d, figs. 15-17)

Rim

The rim sherds were sorted into five different groups. The sorting criterion was the cross-section or profile of the rim. These five groups represent five ranges of variation which seemed to be most representative of the Lynch Village pottery during the repeated sorting of the rim sherds. Each

of these groupings grades into the next; the division between any two was a matter of arbitrary decision.

In sorting the sherds and tabulating them an estimate was made of the maximum number of vessels represented in each group and its divisions which were sorted out as well as counting the number of items. Percentages were figured upon both sets of figures for each group and division.

For the purpose of clarity in description these groupings will be discussed as braced and channeled, flaring or curved, and straight or direct rim forms.

The rim sherds discussed in the first group are those which conformed to the definition of the braced or wedge-shape rim which is common in the Upper Republican manifestations of the Central Plains.¹ At 25BD1 two means were employed to achieve the same outside appearance in this group. The first of these methods utilized the heavy wedge to achieve the braced or deeply collared effect on the outside. The second method employs a more lightly wedge-shaped or S-shaped rim. The heavily braced rim is designated braced rim form A while the lighter, more nearly S-shaped rim is form B; although the form B variation has been called a "channeled" rim.² The form A and form B rim profiles grade into each other to such an extent that no arbitrary division

1. Strong, 1935, pl. 5, 9, 21; Wedel, 1935; Champe, 1936; Cooper, 1936.

2. Cooper, 1949, p. 106.

between them was satisfactory. This is well illustrated by noting that one side of the rim of the Lynch tempered pot (Pl. 7) is more deeply channeled than the other; had its pieces been scattered instead of found in one place it would have been divided into the two categories if an absolute division of the two had been insisted upon.

The braced rims, forms A and B, account for nearly 20 per cent of the rims. The numbers and percentages are given in Table 11.

This group is predominantly Lynch tempered, three out of four sherds or vessels, and has a cord paddled surface finish in about one-half of the sherds or of the vessels. The form A rims vary in neck to lip height from 4 to 5.5 cm., most of them are nearly 5 cm. The range of thickness is from 1 to 2.5 cm., 1.5 cm. is the usual thickness of the lower part of the wedge. The form B rims are the same height, and the wedge formed by projecting a line from the inside of the lip to the interior of the inward curve is of the same thickness as the wedge of the form A rims. The braced rims of both forms flare only slightly above a well defined and constricted neck.

The flared rims are curved outward and are usually part of a continuous curve from the shoulder area to the lip. While the neck associated with this rim form is constricted it is not sharp or well defined. The flared rims are from 2 to 6 cm. in height, and average height is about 4 cm. The uniform thickness of these rims is about 1 cm. The flared

rims account for 15 per cent of the total rims. Two-thirds of the flared rims are Lynch tempered; the rest are sand tempered. The surface finish is cord paddled, simple stamped and smoothed (Pl. 12, fig. 17, a-f).

The direct or straight rims are those which do not curve above the neck and which are straight in profile. Any increase in the diameter of the mouth between the diameter at the neck and the diameter at the lip is caused by the angle at which the rim joins the shoulder area. A pronounced increase in the diameter resulting in a definite flare is rare. As the neck area is usually broken off, the sherd is straight and included in this grouping and discussion.

The direct rims account for some 64 per cent of the rim sherds or of the maximum number of vessels. All of the surface finishes have been used although it is usual for the rim to be smoothed while the body is cord paddled or simple stamped. About two-thirds of the direct rims are Lynch tempered. The rest are sand tempered except for 12 rim sherds representing 8 vessels which are shell tempered (Pl. 10, 11, 16, 17; figs. 16, 17h; tables 11-12).

Eleven of the direct rims have been thickened on their upper outer edge. This thickened part is shaped like the wedge of the braced rim, but it is too short in proportion to the rim height to be included in the braced rim group. The wedge-shaped part is much too large to be considered as a variation of the beveled-to-the-outside lip; this group of

11 rims is between the 2 direct rims with a beveled lip (Pl. 12e).

Lip

The lip forms of the rim sherds from 25BD1 are rounded, flattened and beveled to the outside. In 90 per cent of the rims the lip form has been finished in the course of decoration. The form seems to be an incidental matter, for the flattened and rounded lip forms are found in the same vessel. The rounded form is a smooth curve from the exterior to the interior of the rim, the flattened form of lip has been smoothed so that it is flat with rounded edges. Twenty-five sherds have a lip that is sharply beveled to the exterior of the sherd. These almost grade into the wedge finished direct rim. About the same number of rims have a very flat lip with angular edges (Pl. 10, b, c; 11; 12; 14, b, c; figs. 15-17).

Handles and Lugs

Ninety-four of the 6300 sherds have some kind of handle or lug on them or are part of a handle or lug. These include strap and round or loop handles, lugs and tabs. Not all of the lugs and tabs are pierced (Pl. 13 a, f, g, h). Handles are riveted as well as welded to the pot (Pl. 13 j). Variety in form is the outstanding feature of the handles and lugs (Table 13).

Forty-three handles were on classified rim sherds. These were divided between flared rims and direct rims. The one appendage found on a braced rim had been broken, and the

rim itself was small and not typical of the braced rim. No traces of handles or lugs were found upon the usual kinds of braced rims of either form or on the direct rims with a wedge (Table 14).

The strap handles are broad and flat. They are attached at the one end to the upper rim just below the lip, or sometimes farther down on the rim and are attached at the lower end to the neck or shoulder area. Strap handles are up to 1 cm. in thickness and 5 cm. wide although 3 to 4 cm. wide is more usual. The shell tempered handles are strap handles (Pl. 13 a, d; 14 a; 15 f; 16; 17 b; fig. 17 f, g).

The angle strap handles are those which, instead of curving smoothly from the upper to the lower points of attachment, have a sharp, nearly 90° angle at the most projecting point away from the rim and shoulder area of the pot. Thickness at the angle ranges up to 2 cm.; these handles are usually 2 to 3 cm. wide (Pl. 15 b).

One variation of the strap handle I have called a "barrel" handle. These handles are round in shape and attached to the upper rim. They are 3 to 4 cm. long, about 2.5 cm. from one attachment point to the other, and 1.5 cm. thick. They have all the appearance of a small keg attached to the rim. These handles are on direct rims (Pl. 13 e).

The mid-rim handles are also found on direct rims. These are semi-cylindrical in shape, 2 to 2.5 cm. long and 1 to 1.5 cm. from one point of attachment to the other. The

perforation, made with a small round object, is about 0.5 cm. in diameter (Pl 18 b).

One-eighth of the handles and lugs have the perforation vertically instead of horizontally. Where the rim form can be determined it is direct (Pl. 18 a). Only six handles are round in cross-section; i.e., as thick as they are wide (Pl. 13 c).

One fragment which is pictured with the handles seems to be a portion of the bowl and handle of a small ladle-shaped object. The fragment is 3 cm. long (Pl. 13 k).

DECORATION

No matter how it was executed, decoration of some kind is found on all but a few of the vessels from 25BD1. Only one-tenth of the vessels were left plain without any decoration other than surface finish. The number of vessels was determined by the matching of rim sherds during the sorting process.

Placement

Decoration was applied to only two areas of a pot. These areas are the shoulder and the rim.

Any or all parts of a rim are sometimes decorated. The lip and the braced portion of the braced rims, forms A and B, are almost always decorated, but the shoulder is not. The other rim forms are sometimes decorated upon the shoulder and the rim, and also upon the vessel's handles or lugs. If no other part of the rim is decorated other than with the

surface finish of the vessel the lip or the upper inside rim may have some design upon them.

Preparation

One of the traits which is noticed for the Lynch pottery is the frequency with which the original surface finish underlies the decorative design. Similar cases are illustrated by Griffin in The Fort Ancient Aspect.¹ This is the case in about 20 per cent of the rim sherds and in about the same proportion of the decorated shoulder sherds. On other specimens the decoration was applied to a smoothed or prepared surface. In a few instances (about 20) the lip has been flattened prior to the application of the design (Table 6).

Techniques

The pottery from the Lynch Village was decorated by using the techniques of incising, impressing, punctating, pinching, and painting.

The incising was done with an implement which left a straight-sided, flat bottomed groove from 2 to 5 mm. wide and 1 to 3 mm. deep. The incised lines are usually somewhat wider than they are deep (Pl. 8; 11 a, c; 12 d; 14; 15 a, b, c, d; 16; 17; 18 a, b). Part of the lines incised upon some of the braced rims of both forms resemble drag-and-jab work (Pl. 8 b).

1. Griffin, 1943, Pl. V, IX, XXVI, XXXVI, C, CXXXVIII.

The short lines decorating the rims and handles of vessels were usually impressed (Pl. 11 d; 12 d, f, g; 13 f; 15 b; 16; 17 b). The implement used for this work frequently left a ragged end in the depression. The impression is frequently angular as though the implement were square or triangular.

Punctations were used on the lips, handles and shoulders of pottery from 25BD1 (Pl. 10 a; 13 a, c, j; 14 a, c, e, g, j, k; 16). They were also occasionally used upon the outside of a direct rim. Some of these were made with a tubular instrument, (Pl. 14 j) and some were made with the tool held at an angle so that the punctations are hemiconical (Pl. 13; 14 k).

The pinching is used along the lower edge of the braced rims (Pl. 9 b, c, e, i-k). Two effects are produced; the first is a series of ridges and rounded depressions which may have fingernail marks, the second is a scalloped edge (Pl. 9 i).

Except in a few instances the painting is hard to distinguish from pottery which has been blackened by use for whatever color the paint may have been when it was applied it is now a dull black (Pl. 9; 15 e-j). A very few sherds have a design in red on the outside surface. Most of the designs are ill defined, but some resemble a leafy tracery, (Pl. 15 h) or a circular pattern (Pl. 15 j). Both body and rim sherds are painted. A broad band of paint was applied just below the lip of one rim (Pl. 15 e).

DESIGN ELEMENTS

With very few exceptions the designs upon the pottery from the Lynch Village are made up of linear elements. None of the rim sherds show curvilinear designs. The punctations may be round or oval, but these are arranged in lines rather than in groups (Table 15).

The exceptions, occurring on shoulder sherds, are several on which the lines curve, almost following the curved neck-line of the vessel, an example of hemiconical punctates filling a geometrical space, and one sherd showing zonal decoration of punctations outlined by a free-form line (Pl. 14 a, d, e, k, l; 15 c).

The surface finish, whether smoothed, simple stamped or cord paddled, provides the only design element on a few of the rim sherds. In many more instances it is one element of the over-all pattern by providing background for other elements.

Short parallel diagonals are one of the more common design elements (Pl. 8 a, e; 9 a-h; 11 a-d; 15 b, e, f). These are short lines, either right-handed (from upper left to lower right) in three-fourths of the cases, or left-handed. This element frequently decorates the lip or is on the upper part of the rim or the lower edge of a braced rim forming a border for other elements of design.

A zigzag pattern is on a small group of rims (Pl. 12 a). The sharply angular lines are incised on the lip of direct or flaring rims.

Punctates of varied forms are used to produce different effects (Pl. 9 f; 10 c; 12 b; 13 a, c, h; 14 a, c-e, g, j, k; 16; 17 b). A hollow tool has been used to produce small circles with raised centers. A few of the depressions are large and shallow. This form of decoration is not found on the inside of the rim, but it occurs on the lip, the outside rim, and the shoulder area, and on various handle forms.

Horizontal bands are used frequently on both direct and braced rims of both forms, and occasionally on flared rims. Groups of 3, 4, and 5 lines were usually incised on the braced portion of the braced rim forms. This is the most common outside rim decorating (Pl. 7; 18 a).

Pinches, produced by the thumb and forefinger, were placed along the lower edge of the braced rims or as a border just below the lip on the outside rim (Pl. 9 b, c, e, j-k).

A few rims were decorated by impressing the clay with the fingernail leaving a half-moon shaped impression. These were used as borders.

Some rims, usually braced rims, are decorated by diagonals running in two directions forming a cross-hatched pattern. The space between the incised lines is usually several times the width of the line (Pl. 9 j).

Straight parallel lines are used in non-horizontal groupings. On the shoulder area they occur as opposed diagonals or opposed horizontals and verticals, or a group of vertical lines is used to set off an area decorated by the surface finish. Vertical lines are used alone or in

combination on handles (Pl. 9 c; 11 a; 13 b, e; 14 a-c, f-i; 15 a, b, d, f; 16; 17 a-d; 18 b).

Occasionally the parallel lines follow a curve as though approximating the curve of the neck-line of the vessel. Usually these are grouped with other lines; they are used only on the shoulder area (Pl. 12 d; 14 d; 15 c).

Triangles are a basic unit of design for decorating the shoulder area. These are usually filled with straight lines in opposing diagonals forming what has been termed a hatched triangle (Pl. 11 c; 14 c; 15 a, d).

The inside of the rim is frequently deeply notched or impressed with short vertical lines. This element of design is found on both the Lynch and sand tempered rims as well as the shell tempered pottery. A very small group of rims have the lines impressed diagonally instead of vertically (Pl. 9 b, f; 10 a, b; 12 d, f; 13 b; 16; 17 a, b, e).

One of the braced rims is finished at the edge of the brace with a precise scallop (Pl. 9 i).

Some of the rims and shoulder area sherds are painted. The colors as they appear now are black, pale yellow-green, and red. The paint was put on in broad bands, in fern-like patterns, and in dots and circles (Pl. 15 e-j).

Handles on the Lynch Village pottery probably served their useful purpose; but many of them are decorative in themselves as well as providing a place for additional decoration (Pl. 13).

Zoning, decorating only a part of a lip or shoulder, for example, is also an element of decoration on the pottery from 25BD1 (Pl. 7; 8 a; 11 a; 12 e).

DESIGN MOTIFS

The design motifs or repeated patterns are in a large part the same as the design elements. They are the basis in a large part of the characteristics of the various types and are listed there.

The most characteristic motif is the combination of the braced rim decorated with horizontal bands, and with or without borders of other elements above and below the bands (Pl. 7).

Other common patterns are the diagonally incised lip, the hatched triangle and the combination of straight lines and chevrons with punctates to form a festoon (Pl. 16).

The pottery of 25BD1 was apparently incomplete unless it was decorated. The design is sometimes sloppy and frequently unbalanced, although many show an appropriately rhythmic design; but there are very few examples that can be considered as perfectly plain.

There are about 250 decorated sherds which are not parts of rims.

Included in the un-typed pottery are all, or part of, at least 12 miniature vessels, perhaps play things, experiments in pottery-making or ceremonial objects.

Classification of Pottery

This classification is presented as a series of pottery types,¹ based upon characteristic and distinctive groupings of the various attributes of the pottery such as surface finish, tempering material, hardness, and decorative motif.

There are several rim sherd groups which are not included in any type. Some of these seem to be hybridizations, others represent such a small group that establishing a type for them seems unwarranted, especially since they may sometime be recovered in quantity from a site not now reported. These groupings are listed.

Pottery types which fall within the range of the pottery of certain established manifestations are related to the pottery type, aspect or focus already established, or to sites already reported. They are listed here for ready reference, they will be discussed in following sections of this paper.

LYNCH WARE

(sample: 757 rims, 3 vessels, ca 5000 body sherds)

PASTE:

Tempering: sand and/or Lynch

Texture: flaky

Hardness: 1-5, mean 2.57

-
1. Following the form given in Lehmer, 1951; Smith 1951. Mary Kiehl helped in making comparisons to the pottery from the Talking Crow site.

Thickness: 1-11 mm., mean 5.42

Color: buff to dark gray

FORM:

Shape: olla

Lip: round to flat

Rim: direct, braced (includes channeled), flared

Neck Line: usually sharp

Shoulder: nearly flat

SURFACE FINISH: paddle cord, simple stamped, or smoothed;
interior red filmed present

DECORATION: varied on rim and/or shoulder area

COMPONENT TYPES: Lynch series
Jehorek series
Boyd series
Silver Creek series

JEHOREK DIRECT RIM

(sample: 107 items representing 96 vessels)

SURFACE FINISH: paddled cord marked

FORM:

Rim: direct

Lip: rounded or flat

DECORATION: rim, surface finish, very neatly parallel
paddled cord marked, occasionally decorated just below
the lip, outside with a band of punctates; lip diagonally
incised, punctated, zigzag or paddled cord marked;
shoulder, paddled cord, neatly done, occasionally incised
designs, zoned.

HANDLES: sometimes present

Plate: 10c; 11 a, c, d

Relationship:

JEHOREK BEVELED DIRECT RIM

(sample: 11 sherds representing 8 vessels)

SURFACE FINISH: paddled cord or smoothed

FORM:

Rim: direct

Lip: deeply beveled, a small collar

DECORATION: zoned diagonals or diagonal impressions on the beveled lip; outside rim, surface finish; shoulder, decoration not known.

Plate: 12 e

Relationship:

LYNCH DIRECT RIM

(sample: 7 items)

SURFACE FINISH: simple stamped

FORM:

Lip: flat

Rim: direct

DECORATION: sometimes on lip; on outside rim the surface finish; shoulder, surface finish.

Plate: 11 b

Relationship: Lower Loup

BOYD DIRECT RIM

(sample: 113 items representing 93 vessels including 1 reconstructed vessel)

SURFACE FINISH: smoothed rim, possibly simple stamped body

FORM:

Rim: direct

DECORATION: lip, plain; rim, outside plain; inside, vertical impressions below the lip

HANDLES: occur, are incised

Shoulder: incised, opposed diagonals, possibly painted

Plate: 12 f; 13 d; 16

Relationship:

BOYD CORDED DIRECT RIM

(sample: 45 items representing 33 vessels)

SURFACE FINISH: paddled cord marked

FORM:

Rim: direct

Lip: flat, plain

DECORATION: inside rim, vertical impressions, outside rim, surface finish.

HANDLES: occur

Plate: 10 a

Relationship:

BOYD BANDED DIRECT RIM

(sample: 42 sherds representing 34 vessels)

SURFACE FINISH: smoothed

FORM:

Rim: direct

DECORATION: lip plain; inside rim, impressed verticals high; outside rim, horizontal bands, incised or occasionally single cord impressed.

HANDLES: occur, incised

Plate: none

Relationship: Cooper's Category B ware

BOYD STAMPED DIRECT RIM

(sample: one partially reconstructed pot; 71 sherds representing 63 vessels)

SURFACE FINISH: simple stamped, body and/or rim

FORM:

Rim: direct

DECORATION: outside rim, surface finish; inside rim impressed vertical lines just below lip; shoulder, plain or incised, opposed diagonals, possible some sherds painted.

HANDLES: occur

Plate: 10 b

Relationship:

SILVER CREEK DIRECT RIM

(sample: 102 sherds representing 93 vessels)

SURFACE FINISH: smoothed rim, shoulder area paddled cord or simple stamped; color predominately buff

FORM:

Rim: direct

DECORATION: rim, surface finish; lip, flat to rounded, diagonally incised, diagonals may extend over onto inside rim, punctates, or zigzag; shoulder, usually smoothed, may be incised.

HANDLES: 6 associated with 102 rims

Plate: 13 e; 14 c; 15 a; 18 b

Relationship: Lower Loup focus for the smoothed or simple stamped sherds

SILVER CREEK BANDED DIRECT RIM

(sample: 27 sherds)

SURFACE FINISH: smoothed, sometimes corded

FORM:

Rim: direct

Lip: flat

DECORATION: outside rim, horizontal incised bands; lip,
right or left hand incised or impressed diagonals;
shoulder, unknown

HANDLES: occur

Plate: 18 a

Relationship: Cooper's Category B?

SILVER CREEK NOTCHED DIRECT RIM

(sample: 21 sherds)

SURFACE FINISH: textured, either simple stamped or paddled
cord

FORM:

Rim: direct

Lip: flat

DECORATION: outside rim surface finish, plus deep notches
impressed or pinched in a band just below the lip.

Plate: 12 g

Relationship:

JEHOREK FLARED RIM

(sample: 39 sherds representing 34 vessels)

SURFACE FINISH: paddled cord

FORM:

Rim: flared

Lip: flat, occasionally beveled

DECORATION: rim, surface finish, occasionally punctates or
impressions, plus various motifs including line on the
lip; shoulder.

Plate: 12 a, c; 15 f

Relationship: Aksarben Aspect

BOYD CORDED FLARED RIM

(sample: 11 sherds)

SURFACE FINISH: paddled cord

FORM:

Rim: flared

Lip: beveled

DECORATION: lip, punctates or paddled cord; outside rim, banded or plain; inside rim, impressed vertical lines below lip; shoulder, linear incised.

HANDLES: present

Plate: 12 d

Relationship:

BOYD FLARED RIM

(sample: 19 sherds)

SURFACE FINISH: smoothed

FORM:

Rim: flared

Lip: flat

DECORATION: lip plain; inside rim, impressed vertical lines below lip; outside rim; smoothed shoulder, incised.

HANDLES: common

Plate: 13 b; 14 a

Relationship:

SILVER CREEK FLARED RIM

(sample: 61 sherds representing 55 vessels)

SURFACE FINISH: smoothed, possibly simple stamp body

FORM:

Rim: flared

Lip: flat or beveled

DECORATION: lip, diagonally incised or punctated; rim, usually plain, but may be incised, single cord impressed, fingernail impressed, possibly sometimes painted; shoulder, occasionally incised.

HANDLES: occur

Plate: 12 b; 13 c; 14 b; 15 b

Relationship: Lower Loup focus

JEHOREK BRACED RIM

(sample: 17 items, 17 vessels)

SURFACE FINISH: paddled cord, sometimes smoothed

FORM:

Rim: Braced, forms A and B

DECORATION: rim, plain or surface finish, various designs and motifs, cross-hatch, zoned diagonals, may be scalloped, pinched or impressed at the lower edge of the brace; lip, usually plain, occasionally a band of impressions just below the lip on the outside; shoulder area, surface finish.

Plate: 8 c; 9 d, i, j

Relationship: Aksarben Aspect

JEHOREK BANDED BRACED RIM

(sample: 117 items representing 99 vessels)

SURFACE FINISH: paddled cord, sometimes smoothed over

FORM:

Rim: Braced, forms A and B

DECORATION: rim, horizontal bands, incised, drag and jab, or single cord impressed, with or without parallel diagonals on lip or as border at lower edge of braced portion, or punctations, pinched detail or fingernail impression for the lower border, decoration on lip may be zonal; shoulder area; surface finish only.

Plate: 7; 8 a, b, d-g; 9 c, e-g, k

Relationship: Aksarben Aspect; Campbell Creek Collared

LYNCH BRACED RIM

(sample: 11 rims representing 5 vessels; part of the simple stamped sherds)

SURFACE FINISH: simple stamped

FORM:

Rim: Braced, forms A and B

DECORATION: rim, horizontal bands, with or without treatment above and at the lower edge of the brace, impressions high inside rim usual, lip may be decorated; shoulder area, stamped, possibly smoothed.

Plate: 9 a, b, h

Relationship:

WHISKEY CREEK WARE

(sample: 11 rim sherds representing 6 vessels, 23 shoulder sherds, 51 body sherds, total 85)

PASTE:

Tempering: fine shell, frequently leached except in center of sherd

Texture: fine, flaky

Hardness: 2-5, mean 3.37

Thickness: 1-7 mm., mean 3.50 mm.

Color: gray to very dark gray, occasionally buff

FORM:

Shape: flattened olla with slightly rounded shoulder area, sharp shoulder, sharp neck, and (indicated) a rounded, hemispherical base; height less than maximum diameter.

Rim: direct to slightly flared due to the angle between neck and rim

Lip: rounded

Neck: sharp juncture between rim and shoulder area

Shoulder area: flat to slightly rounded; marked difference in the plane of the vessel walls and also the kind of curve above and below the shoulder

HANDLES: strap, apparently paired

SURFACE FINISH: smoothed, almost polished

DECORATION: on the inside of the lip, and/or the outside shoulder area, short lines incised on the upper inside rim, lip occasionally incised, zonal decoration of the shoulder area, groups of incised lines opposing other groups, including chevron and festoon motifs.

Plate: 17 a-g

Relationship: Oneota Aspect, Leary and Ashland B (?) components, Blue Earth focus, Minnesota

Untyped pottery from 25BD1 includes the following groups or single sherds:

1. Direct rims with mixed sand and shell tempering material; 3 atypical sherds.
2. Direct rims, various miscellaneous corded or smooth sherds; total 15.
3. Direct rims, Boyd grouping, with plain lip handles, and

various designs on the outside of the rim; 3 items representing 3 vessels, not enough to warrant a type grouping.

4. Braced rims from Boyd grouping, with decorated lip and handle (1 for group) and horizontal bands on the braced part of the outside rim; 3 sherds.

5. A direct rim, smoothed and decorated with grouped vertically incised lines, alternating with a band of fingernail impressions just below the lip.

The types which have just been listed define two wares, and a group of rim forms plus distinctive decoration for the predominating ware. These cannot be termed pottery types, but the author is less easily confused by descriptive names than by arrays of classes and categories.

Table 16 shows the variety of the rim types for the Lynch ware. The table indicated that a Silver Creek braced rim is a possibility; there is no corresponding occurrence.

The Whiskey Creek Oneota stands out as being distinctively different from the rest of the pottery. Its shell temper, hardness, thickness, dark gray color and smoothed surface finish are distinguishing characteristics. The Oneota ware seems to have been made elsewhere than at the Lynch Village.

The rest of the pottery, although it is both sand and Lynch tempered, and has both simple stamped and cord paddled surface finishes, is not further divisible into groups based upon these characteristics. This Lynch ware is characterized by the presence of several rim types. The same rim and

decoration may be associated with both surface finishes while the shape of the vessel was apparently the same (Pl. 10; 11). All of this pottery has the same "feel" when it is handled.

The Oneota ware seems to have influenced the making of the Lynch ware. Patterns of design and even shape were adapted to the Lynch ware. Less care seems to have been used on the finish and decoration of the Lynch ware. One pot is an especially good example of this. It has a shape similar to Oneota ware, and that kind of decoration, but it is sand tempered and simple stamped and belongs to the Lynch ware (Pl. 16).

PIPES

Two fragments of pottery elbow pipes were recovered. Both are tempered with fine sand. The one fragment is part of the interior side of the elbow; it has an outside diameter of 28 mm.; the bore of the bowl is larger than the stem hole, and both are somewhat larger than those of the second pipe. The second pipe fragment is the bowl of the pipe. It is 46 mm. long and 30 by 26 mm. in diameter at the top. The bore in the bowl is 11 mm. in diameter while the diameter of the stem hole is only 3 mm. where it joins the bowl. This pipe bowl has an incised line running around the outside near the top of the bowl (Pl. 13 1).

These two fragments were found in the east trench (S3-15 and S3-15w2) of the Stewart area of 25BD1.

Hard Clay

The east trench of the Stewart area (S3-5) yielded three items listed as "hunks of burned clay". They are irregularly shaped objects about 4 cm. in diameter. Their appearance raises conjectures that these lumps could give clues as to structures that have existed at 25BD1; but their origin is now unknown. The same kind of lumps were recovered from the surface of the field north of the Stewart trenches (Map 3, area 4).

Caches and Pits

In summarizing the various cache pits and other ground features encountered by the field party in 1936 I have retained the original field designation of cache, pit, or basin, but have added the numerical and alphabetical designations for clarity. Correlation of the various ground features given on the maps and profiles of the S1 and S3 trenches shows that a minimum of 20 cache pits were revealed or excavated although the excavation of several was incomplete at the time the drawings were made (Pl. 4, fig. 2; 5, fig. 2).

Since the difference between the field designations and the catalogue locations have not been resolvable with the data now available, it is possible to identify the contents of only six of these cache pits. The number of items in these caches ranges from 3 in cache 1 to 201 in cache 2. The size and shape of these cache pits is nearly as varied as the

items they contained (Table 2; figs. 5-14). The bottoms of the caches were from 3 to 5 feet below the cultural stratum for 14 of 17 caches. Eleven of 17 cache pits increase in diameter below the mouth but the other 6 are nearly cylindrical or decrease in diameter from top downward. The maximum diameter is usually above the floor of the cache pit.

The records show that a bison skull was found at or on the top of cache 3. The field maps show the cache extending to the ground level, but the photographs and other evidences indicate that it did not extend through the sterile sand zone that was found above the culture bearing stratum (Fig. 9).

Cache pit 2 contained a large amount of material. This included a large number of rather uniformly sized chips of gray-green quartzite and a quantity of Oneota pottery as well as other ceramic and stone items. Mott has mentioned caches of stone as typical of the Oneota complex under certain conditions¹ (Fig. 8). There are six other groupings of unworked stone in the Stewart and Jehorek excavations; these medium sized pieces of unworked quartzite, jasper and flint are found in quantity lots at 25BD1 rather than scattered singly throughout the site.

Besides containing a quantity of unworked flint and jasper cache pit 10 is unusual because it yielded 4 graters and 17 projectile points. Three of the 4 stemmed points

1. Mott, 1938, pp. 290, 298, 301.

found at 25BD1 were from this cache; 10 of the points are represented by tips only. Cache pit 10 is also the only location from which as many as 4 handles or lugs for pottery vessels were recovered (Fig. 10).

The various cache pits usually contained some worked stone, generally knives and scrapers, pottery of various kinds, and sometimes worked bone specimens (Fig. 7-14).

At least three other kinds of pits were excavated by this field party in 1936. These included two variations of a shallow pit or "basin", as they were termed in the field, and "housepits". The housepit for which there is some data is further discussed in the next section on evidence of structures.

The basin pits are round or oval shallow depressions with either rounded bottoms or steep sides and relatively flat bottoms (Table 3). Including pit C, 5 of the basins have rounded bottoms; the sides of these pits slope gradually downward to the bottom (Fig. 6). The sides of the flat-bottomed pits are sharply defined, more or less vertical and form an angle with both the pit bottom and the cultural stratum. The pits range up to 18 feet across, but most of them are from 5 to 9 feet across and from 1 to 2 feet deep.

Pit C is the only basin of either kind for which the contents can be identified (Fig. 6). It contained a small number of pottery rim sherds, stone work including 7 knives of various kinds, 4 end scrapers of light-colored flint and

3 abrader fragments. Nearly 5 per cent of the projectile points from 25BD1 came from this pit; in addition to one point that is reworked into a drill there are 6 points, all of flint and all of the NB series.

Evidences of Structures

Houses of semi-subterranean earth-lodge kinds are usually found on the sites which have Aksarben pottery associated. There is no proof that houses of this kind were demonstrated at 25BD1 in 1936.

However, "house pit" is mentioned in the field catalogue and in the captions of the field photographs, and on the original field maps (Pl. 4, fig. 1-2). One such "house pit" was found in trench S3 sections 3 and 4 (Fig. 2). It appeared in these sections as a charred line and a series of 4 post molds (Table 4, c-f) which were from 0.2 to 0.5 feet in diameter and about 0.5 feet deep. The excavation of S3 was extended eastward following the charred line and more post molds were found (Table 4, g-1). These were also about 0.5 feet deep and up to 0.7 feet in diameter. There is no indication that the center of the "house pit" was excavated or that a fireplace was uncovered. The field crew seemed to question whether or not these were post molds but regularity of their placement is an argument in favor of their validity.

This "house pit", as shown in trench profile sections, is located on what was, at the time of occupation, a level piece of ground south of which there were a series of

depressions and irregularities, and, at the north, a large cache pit.

At the southern end of S3, sections -3 and -4, there was another group of 4 post molds plus a single one, about which the excavators had some doubts, but I again think that the identification is correct (Table 4, m-q). Two other post molds are at the north end of S3 (Table 4, a-b).

There were 4 scattered post molds found in trench S1; two of these seem to be associated with a pit (Table 4, r-u). The field catalogue records an unlocated "house pit" for this trench.

At present nothing indicates the sort of structure with which these post molds might have been associated, although the semi-circular arrangement in S3 seems suitable for a house. The posts represented by these post molds must have supported some building.

Since 1936 archeologists working in the Plains area have improved the technique for demonstrating the existence of structures. I believe that a trained crew should be able to find evidence for structures at 25BD1. The concentration of material upon the rises in the plowed portion of the site might indicate that excavation of the rises would aid in solving the question of the existence of structures.

Summary of Material Culture

The detailed description of the preceeding sections furnish the data which can be summarized in terms of the activities of the people living in the Lynch Village.

They occupied a large, defensively located upland, apparently unfortified but close to fuel and water, and to bottom land garden plots. The bone hoes and the seeds show that they were horticultural as well as gatherers. These people hunted the native game, perhaps also other Indians, and used the animal hides as well as making tools from the bones. These people fashioned a large number of stone tools for their activities. They made pottery and decorated it in many ways; they used pottery pipes for - we assume - smoking tobacco. Cache pits were dug for storage, later they were used for rubbish. Structures of an unknown kind were erected.

They either traded with other groups of people, visited with them or fought with them for one kind of pottery, Oneota, is entirely different from that presumably made from local clays.

RELATIONSHIPS

The areas that have been examined at 25BD1 yield the same kind of material showing that all areas are part of one site. No stratigraphy demonstrates evidence of more than one occupation of the site. There are no sharp breaks in the typological differences of the artifacts. What differences exist are in the pottery and form a continuum.

The small samples of stone work and bone work seem to form consistent inventories. The stone work is characterized by a lack of distinguishing features except for the facts that grinding stones are apparently present and that abraders are the only artifacts made of ground stone; no celts were produced by this method. The cleaver-shaped knife and the "bobbin" are distinctive bone artifacts.

The pottery inventory is formed from two wares, Lynch and Oneota. The latter, represented throughout the major excavations in small numbers, is evidently a trade ware which influenced pottery making at 25BD1. This certainly seems to be the case represented by the large Lynch pot with characteristic Oneota decorations (Pl. 16). The variations in rim form, surface finish, and decoration are all found in the Lynch ware; the Oneota is a very consistently homogeneous ware.

The Oneota pottery is the index artifact identifying an Oneota component at 25BD1. The presence of this component is well known.¹ The pottery is the only part of the artifact inventory that can be identified as belonging to this component.

The Oneota component will tentatively be designated as the Whiskey Creek component of an unnamed focus of the Oneota Aspect. It is perhaps advisable to retain the name Lynch for the predominating group of materials from the site rather

1. Van Royen, 1937; Wedel, 1940, 1941.

than to apply it to the small but significant Oneota pottery group.

The remainder of the artifact inventory probably belongs to a single cultural complex, indicating the remains of a group of people who lived at the Lynch Village for what was probably one occupation of the site. The pottery included in this inventory is the Lynch ware with its wide range of variations in rim form and surface finish. This artifact inventory will tentatively be designated as the Lynch complex. The term Lynch has been used in previous publications discussing site 25BD1.¹

PROBLEMS

The problems of the association of two distinct surface finishes used on the pottery seems to be at least partially explained by the fact that the Lynch Village represents a people influenced from outside their own group, and that here transition is taking place from the older paddled cord surface finish to the later simple stamped surface finish. The simple stamping is definitely in the minority. Although it might be found elsewhere I doubt that 25BD1 will yield the sherd or vessel that shows both treatments.

The problem of the overburden through which the trenches of the Stewart area were dug seems to be partially explained by the sandy soil of the site blowing and being lodged by

1. Van Royen, 1937; Wedel, 1940, 1941; Champe, 1946.

some sort of structural remains forming a drift; since two necessary requisites of deposition would thus be met, a source of material and a place for its deposition.¹

The problems of intersite relationship, chronology and dating cannot be discussed without comparing the Lynch complex with other manifestations.

1. Reed, 1950, pp. 64-66.

DISCUSSION OF PROBLEMS

In some instances the problems and relationships of the material from 25BD1 have been resolved insofar as the material remains from the site itself are concerned. Other problems which are largely those of classification and chronology, and are concerned with intersite comparisons rather than intrasite classifications, are to be discussed.

Classification and Relationship

This section presents brief comparisons of established as well as lesser known manifestations of the Plains area with the Lynch complex and Whiskey Creek component of 25BD1 in order to define similarities and differences between the Lynch Village materials and those of the other culture complexes. The results of these comparisons are stated in terms of the Midwestern Taxonomic System.¹

COMPLEXES OF LIKE MATERIAL CULTURE

The collections of the Laboratory of Anthropology include small samples indicating that at least two other sites in Boyd County have the same material complex as 25BD1.

1. McKern, 1939, 1944; Steward, 1942; Champe, 1946.

Site 25BD2

Site 25BD2 was surveyed in 1931. It is located on Ponca Creek $2\frac{1}{2}$ miles north of Butte, Nebraska. The additional data concerning this site are furnished by the specimens themselves.

Of the 146 specimens, 19 are stone, and the rest are pottery.

The pottery specimens include 65 rim sherds, 8 decorated body sherds, and 54 plain sherds. The shell tempered items are very few, but one is an especially good example of Oneota ware (Pl. 22 e). Cord paddled and simple stamped sherds are in the collection. Thickness and hardness are similar to the pottery from 25BD1. The decorated body sherds are incised, the Oneota sherd (Pl. 22 e) is also decorated with punctations. A half dozen sherds are colored red on the inside.

Direct, flared, and braced rims of both forms are present (Pl. 22). The direct rims have inside rim verticals, and also an inside diagonal which seems to be a variation from the use of the vertical line. The braced rims are decorated with the horizontal bands applied either on a smoothed or treated surface. The lower edge of the braced part of the rim sometimes has impressions or pinches (Pl. 22 c, d). One of the flared rims has a lug attached to the lip; and one direct rim has a large lug attached near the middle of the rim (Pl. 22 a, b). Decorated handles are

also present. One rim sherd that represents either a braced rim or a wedge-finished direct rim is decorated with single cord impressed opposed diagonals. A few of the direct rims are finished with a beveled lip.

The stone artifacts have been made from quartzite, jasper, chalcedony, and flint. Badlands knives are included in the inventory. Chipped celts and alternate bevel knives were made from green quartzite (Pl. 23). One four-sided alternate bevel knife was made from pink quartzite, (Pl. 23 d) and another of dark brown chalcedony (Pl. 23 e). Other items of stone include knives, (Pl. 23 c) an end scraper, (Pl. 23 h) a drill (Pl. 23 f) of flint, and a graver of badland's chalcedony (Pl. 23 g).

Site 25BD2 is not abundantly represented in the collections, but enough specimens are available to show that this site is of the same or nearly identical material culture as 25BD1.

Site 25BD4

The specimen collection from 25BD4 was made during the field season of 1936. The site is on the south side of Ponca Creek about $5\frac{1}{2}$ miles northwest of Spencer, in Boyd County, Nebraska. This site is in sections 21 and 22 of Township 34 North, Range 12 West.

The 110 specimens include 99 potsherds, 10 pieces of stone and a shell fragment.

The sherds include 10 rims and 5 decorated body sherds. The sherds are Lynch tempered and sand tempered. No shell tempered sherds are in the collection, but the sample may be so small that the absence of any shell tempered or Oneota pottery loses its significance. Cord paddled and simple stamped sherds are in the collection. The decorated body sherds are incised. Thickness and hardness are like the pottery from 25BD1.

Braced, flared, and direct rim forms are present. The braced rims are decorated with incised horizontal bands, and the direct and flared rims have inside rim verticals. Handles and lugs are associated with the material (Pl. 24 a, b, c, d).

The stone work includes fragments of badlands' knives, and alternate bevel and four-sided alternate bevel knives. The beveled knives are made from green quartzite and from brown jasper (Pl. 24 e, f, g, h).

Although the sample collections from 25BD4 is small, enough material is present to demonstrate that this site is of the same material culture complex as 25BD1.

Summary

A comparison of material from 25BD2 and 25BD4 with the material from 25BD1 shows that all these sites have the same material culture complex. The likeness is such that these three sites are all components of a recurring culture complex. This recurring complex will be designated the Boyd focus,

the Lynch complex belonging to this focus can then be called the Lynch component of the Boyd focus.

RELATIONSHIP TO PLAINS MANIFESTATIONS

The similarities and differences between the Boyd focus and other Plains archeological manifestations will be pointed out.

Aksarben Aspect

The traits of material culture of the Boyd focus present major similarities with those of the Upper Republican Aspect,¹ especially to the south and west of the Lynch site; it seems less closely related to the St. Helena focus.² This aspect is now included in the Aksarben Aspect.³

The general overburden above the cultural stratum at 25BD1 corresponds to that of the Medicine Creek Upper Republican.⁴

Comparison of the Lynch material with the traits listed for the Nebraska division of the Aksarben Aspect shows a preponderance of similarities.⁵ Many of the Jehorek and

1. Strong, 1935, pp. 245-248; Wedel, 1935, pp. 294-295; Champe, 1936, pp. 280-281; Kivett, 1949, pp. 279-284.

2. Cooper, 1936, pp. 72-77.

3. Stephenson, 1954, pp. 15-21.

4. Kivett, 1950, pp. 88-89; Thorp, 1950, pp. 73-77.

5. Strong, 1935, pp. 251-252; Gilmore and Bell, pp. 326-327; Hill and Cooper, 1937, pp. 249-251, 268-270, 290-292; 1938; Cooper, 1939; Keyes, 1949, p. 96; Rowe, 1950, personal communication; Gunnerson, 1952.

Silver Creek direct and flared rim types are comparable in form but less so in decoration. The incised shoulder area is very similar.

Oneota Aspect

The identification of the Whiskey Creek Ware as Oneota is well established,¹ and has been talked about since the site was dug. The large size of the site and the presence of stone concentrations are other traits found in the Oneota Aspect.² While there is variation in the pottery of the Oneota Aspect as defined in Minnesota³ the Whiskey Creek Ware seems very similar to that from the Leary site, and to that of the Blue Earth focus.⁴

Lower Loup Focus

The pottery from 25BD1, especially the Lynch Direct Rim and Silver Creek Flared Rim, shows similarities to the pottery of the Lower Loup focus.⁵ However, about 80 per cent of the pottery from 25BD1 is paddled cord marked; Lower Loup is simple stamped. The stone scrapers and knives are similar.

1. Wedel, 1940, 1941; Stephenson, 1954.

2. Hill and Wedel, 1936; Mott, 1938; Berry and Chapman, 1942.

3. Wilford, 1948.

4. Wilford, 1941, 1945.

5. Dunlevy, 1936; Wolfe, 1950, p. 38.

Manifestations of the Middle Missouri

The following observations based largely upon published pottery types cannot present the interpretations which one gains by handling the artifacts from a site.

A comparison of the plates given by Lehmer (1951) and Smith (1951) leads to the conclusion that the possibilities for relationship of the Talking Crow and Dodd site pottery with that from Lynch are excellent, and that some one person should familiarize himself with all the complexes, and that information in detail would show if there similarities other than in the pottery.

The Boyd Banded Direct Rims from 25BD1 appear to belong to Cooper's Category B pottery.¹

The author was kindly allowed to examine the sample collection from the Arzberger site (39HU6)² in the River Basin Surveys collections at Lincoln, Nebraska. This fortified site is located on a high point overlooking the Missouri River near Pierre, South Dakota. Although braced rims are rare, there are both cord paddled and simple stamped sherds, and Lynch temper as well as grit, instead of sand. While there are no handles and no pinched decoration in the sample some of the decorations on the shoulder area and the direct and flared rims are nearly identical, the banded rim, the diagonally impressed lip and the diagonal

1. Cooper, 1949, pp. 304-307.

2. Strong, 1940, p. 382, Pl. 10.

rather than predominantly vertical impressions on the upper inside rim. Some of the stone artifacts are from Badlands plate chalcedony. Further points of similarity and difference will no doubt be made, and the relationship between the two manifestations resolved at least partially by a full report upon the Arzberger site.

Other Manifestations

The Laboratory of Anthropology has collections from the Minoric sites in Knox County and the Redbird sites in Holt County, Nebraska as well as several others that may be similar. Superficially there appear to be similarities to the material from 25BD1 but so far a closer examination has not confirmed these first impressions.

SUMMARY

Typologically the Boyd focus most closely resembles the Aksarben aspect, but the presence of simple stamped pottery seems to indicate that additional study is needed before it can be definitely included in the aspect as focus and aspect are currently used. The relationships between the Boyd focus and manifestations in South Dakota also need further study.

Chronology and Dating

REVIEW OF STATEMENTS BY OTHER WORKERS

In view of the facts that the Lynch site received considerable attention in 1936, and at that time there was some speculation as to the age of the occupation of the Lynch

Village as well as the relationships of the materials found at the site to other Plains manifestations,¹ the review of previous statements is in order. The passage of time gives a certain sense of order and continuity to collections which seem startling when they are first recovered; or workers get used to the idea that such associations exist.

William Van Royen,² then of the University of Nebraska, studied the conditions at the Lynch Village at a time when the drought of the 1930's seemed to be blowing the Plains away. In exploring the area to the west of 25BD1 on the terrace north of Ponca Creek between Lynch and Bristow several areas similar in topography to 25BD1 were noted. A comparison of these areas with the soils of the district show that these soils are classed as either Thurman loamy sand like the soil found in the Stewart area of 25BD1 or, in one instance, as Valentine sand, a soil less stable and with more relief than the Thurman series discussed in the first section of this paper but similar to them.³ These soils are given to blowing if their vegetation is removed. Van Royen gives Pleistocene deposits as the source of these wind-modified sands.⁴ It is not now known if components of the Boyd focus occur at any of these places.

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1. Champe, 1950, 1954, personal communications.
 2. Van Royen, 1937.
 3. Van Royen, 1937, pp. 639, 643, fig. 1;
Moran, Hayes, Lovald, 1937, pp. 32, map.
 4. Van Royen, 1937, p. 639.

Describing the excavations at the Lynch Village Van Royen
says--

The excavation is in an area of prairie that has never been disturbed by the plow. Although just north of the trenches the culture stratum lies at a very moderate depth and in the fields beyond the road has even been exposed and partly destroyed by plowing and wind erosion, at the site of the trenches and to the southeast this stratum is covered by two low dunes. The excavations reveal from top to bottom, first, 1 foot to $1\frac{1}{2}$ feet of sandy material colored gray by plant matter; next, as much as $6\frac{1}{2}$ feet clean, sterile yellow sand; and, last, the culture stratum, from 1 inch to 26 inches thick, colored dark by cultural debris and bearing all the earmarks of an old soil horizon. Toward the north end of the east trench under an overburden of about 3 feet of sand, cultural detritus was lacking over a stretch of 10 to 15 feet. Here the old soil horizon showed distinctly. The presence of these recent sand accumulations on what is locally the highest point of the terrace pleads against water deposition, and a detailed study of the trenches has confirmed that view. The coarsest sand particles were not more than a few millimeters in diameter, and these larger ones were sparse. The contact between the top of the culture stratum and the barren sand is irregular and points to wind rather than to water action. The slight depressions of the culture horizon were filled, not with water-laid, dark-colored material derived from the adjacent higher parts of the culture stratum, as would be expected in the case of action by water, but with clean and evidently wind-borne sand. The presence of clean, light-colored sand in the top part of the culture horizon seems to point to increasing wind activity toward the close of the period of occupancy.¹

and that

This sand was not blown out of the present flood plain, which is 200 feet below the terrace, is well covered with vegetation, and lies against the direction of the prevailing winds, but was derived from the old, water-laid Pleistocene sand of the high terrace on which the sand accumulations are located.²

1. Van Royen, 1937, p. 640-641.

2. Van Royen, 1937, p. 643.

Explaining that this deposition of sand must not be recent he continues:

At present some sand blows from plowed lands north of the Lynch site and in some other places on the terrace, but nowhere have I observed any signs of active accumulation of sand dunes, except for some small deposits along fences and in ditches. There is hardly any blowing from grasslands. Present wind activity cannot possibly account for the quantity of sand in the areas of low dune topography mentioned above. Besides, it is impossible that 12 to 18 inches of topsoil, which was found at the site, could have formed in a few decades. Hence the formation of these eolian-sand areas, most of which have never been plowed are still covered with poor to good stands of native grass, must predate the white man.¹

Concluding that "in the light of present conditions a severe drought 25 years long seems hardly sufficient to account for the amount of wind work observed."²

The occurrence and duration of such a drought was considered:

In the case of the Lynch site it is highly probable, as was pointed out above, that the sand accumulation immediately followed, and was even partly contemporaneous with, the occupation of the site. The culture stratum does not show any influence of the white man, i.e. the site is archeologically prehistoric, since it predates even the indirect influence of the whites. Among the cultural materials found here there are, however, fragments of pottery closely resembling the so-called Oneota pottery. If this identification should prove to be correct and if all the other material discovered should corroborate this, the Lynch site may be fairly late prehistoric. If, on the other hand, the cultural remains should belong to a different category, the site may very well date back many more

1. Van Royen, 1937, p. 643.

2. Van Royen, 1937, p. 645.

centuries. From the geographer's point of view a comparatively youthful age to this site would be interesting and instructive, since it would bring a period of very severe drought much closer to the time of the first occupation of this area by the white man than we have heretofore suspected. It would also indicate a much more rapid formation of soils in the central Great Plains than is generally accepted.¹

The droughts of the southwest, including those of 1276-1299 and 1573-1593, are not considered to fit the case of the Lynch site.

The later of the two seems to be improbable because of the clearly prehistoric aspect of the Lynch culture, and an objection to both is their short duration. Twenty to twenty-five years of drought would hardly suffice for the topographic changes noted near Lynch in an area where the present precipitation is about double that of the Southwest.²

There seemed at that time little chance of recovery of sufficient archeological material for dendrochronological studies and it was doubted if there would be any great contemporaneity between droughts of the Southwest and the Plains.³

Subsequent writers have been more optimistic.

Wedel has used the Lynch site and its material at least twice to illustrate the presence of climatic cycles, including droughts, before the white man arrived on the Plains, and to support his thesis of discontinuous occupation of

1. Van Royen, 1937, p. 647.

2. Van Royen, 1937, p. 648.

3. Van Royen, 1937, pp. 647-648.

various areas of the Plains.¹ He points out that the Plains area was geographically situated so as to be accessible to peoples and diffusion from the East.² In the Northeastern part of Nebraska he places the Aksarben as later in time than it is in southern and eastern Nebraska; its relationship to the Mill Creek complex in Iowa is obscure.³

Regarding the Lynch site Wedel states:

Widely circulated press dispatches in the summer of 1936 announced the discovery on Ponca Creek in Boyd County, Nebraska, of an extensive artifactiferous stratum deeply duried beneath 1 to 8 feet of wind-laid sands. On physiographic grounds---chiefly the unusual depth of overburden---the possibility has been advanced of a "moderate antiquity", whatever that may imply. The cultural manifestation has not been described in detail, but a rather varied ceramic complex, remains of charred maize and beans, and what seem to be evidences of earth lodges argue for a fairly sedentary horticultural mode of life. Drought conditions are strongly indicated, but it is not known whether these were widespread or only locally serious enough to affect community life.

In view of the rather startling claims set forth at the time of discovery, it may be remarked here that the archeological evidence is incompatible with the millenial antiquity once imputed to the site. Although the depth of overburden is striking, it must be remembered that the factors that determine the rate of such accumulation are very imperfectly known. On the other hand, the evidence from ceramic remains seems fairly clear-cut in the present instance, so that the findings of archeology promise to be a more reliable yardstick than interpretations of the geographer. Artifacts said to be representative were seen by the writer on three

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1. Wedel, 1940; 1941.
 2. Wedel, 1940, pp. 294, 303.
 3. Wedel, 1940, pp. 315-316.

visits to the site before and during excavation and again at the Third Plains Archeological Conference at Mount Vernon, Iowa, in November 1936. If truly characteristic, these indicate a comparatively recent date. Specifically the ceramic remains suggest a mixture of Upper Republican and Nebraska aspect traditions, besides which definite Oneota influences are apparent. From what is known of Oneota archeology elsewhere, an estimate of not over 3 to 5 centuries at the very most would seem more in keeping with the archeological data at Lynch. At the moment it is impossible to say whether the non-ceramic remains bear out this conclusion. As for the absence of White man's manufactures, cited in support of a prehistoric dating, it may be pointed out that direct trade contacts with tribes in the central Plains, to judge from Spanish and French documents, were probably not established until the latter half of the seventeenth century. Prior to that time the trading posts and settlements of the Europeans were so remote, relatively speaking, that metal and glass articles received indirectly by the Nebraska tribes must have been quantitatively insignificant. Sites inhabited into the first half of the seventeenth century might easily prove to be precontact as far as the findings of archeology are concerned.

In the writer's opinion, the prospects seem promising for linking the physiographic phenomena noted at Lynch with one or another of the late pre- or very early post- Colombian droughts revealed by unpublished tree-ring and other studies in the upper Mississippi-Missouri valley area. From such evidence as has been made available there seems no adequate basis for comparing the site with Signal Butte, with regard either to age or to the depositional processes involved. As to the cultural implication, moreover, there is no reason whatever to regard this site or the cultural complex manifested, as older than the Upper Republican in southern Nebraska or the Nebraska aspect, much less as ancestral to either. At the same time, the data offer some extremely alluring possibilities concerning cultural fusion, ecological adjustments and recent geological processes.¹

1. Wedel, 1940, pp. 316-318.

The overburden at the two sites of Lynch and Signal Butte, in western Nebraska, leads to the consideration of climatic changes in the border zone, the Great Plains.

Concerning 25BD1 Wedel says:

The observed conditions would imply a prolonged period of lower rainfall and destruction of the grasses, followed by increased wind action on the denuded ground surface.

The question of dating even approximately the Indian occupation at Lynch, and through this the drought which must have followed it closely, hinges very largely on accurate identification of the archeological materials in the dark stratum. A detailed report on these has not yet appeared, but certain generalizations can be ventured on the basis of sherds collected on the surface during several visits I made before and at the time of the excavation. The sandy overburden has been blown extensively wherever modern cultivation is under way. This, being especially true on fields a few hundred yards east of the diggings. On the denuded village surface there were abundant remains and hearths could be found only a few inches below the plowed topsoil. A collection of several hundred posherds including numerous rim pieces, as well as many end scrapers, projectile points, and other chipped forms indicated an interesting mixture of types. One group of sherds exhibited features characteristic of Upper Republican horizon; others, including a few rim pieces with handles, were reminiscent of Nebraska culture remains. A third group in which shell tempering was noted, included incised or trailed decoration, rims, and handles resembling in most particulars the Oneota wares of the upper Mississippi and Missouri valleys. A few sherds bore parallel ridges on their exterior surfaces, apparently produced by the same paddling technique used so widely by the Pawnee, Mandan, Arikara and other tribes in the protohistoric and historic times.

The Upper Republican and Nebraska culture manifestations throughout the Central Great Plains have been extensively worked and in no case has iron, glass, or other evidence of contact with white men been noted. On the other hand, Oneota village sites in Iowa, Missouri and Kansas have

yielded small amounts of such material. All the available evidence indicates that in the Missouri Valley and westward, the Oneota remains are late. Some of the sites may antedate slightly the arrival locally of the white men, but the strikingly uniform character of the remains over most of the area occupied would indicate that they were not spread over a very long period of time.

It is not clear whether all the several pottery types noted at Lynch occur together or whether there was a stratified succession of wares. It is possible that a late phase of the Upper Republican survived here for a time alongside an unclassified peripheral variant of the Oneota manifestation. In any case, the fact that the pottery with definite Oneota affinities underlies the sand deposits is strong evidence that the latter were laid down within the last three to five centuries.¹

Upper Republican manifestations are blanketed with a dark humus zone from 10 to 30 inches deep.

The present surface of this soil cover is usually flat with no suggestion of dunes or drifts. The material itself is finer than that at Lynch, and superficially resembles rather closely the sterile layers separating cultural horizons at Signal Butte.²

Neither Pawnee nor Nebraska culture in the eastern part of the state are covered by such deposits.

The dust storms of the 1930's did not produce drifts and dunes in the Republican and Loup river areas, except where they were formed along fences and other obstructions. As regards the archeologically connected deposits:

It is not certain that these deposits result from a single short intense drought such as that evidenced at Lynch. It has been suggested to me that they can more reasonably be interpreted as a gradual accumulation over a period of many years.

1. Wedel, 1941, pp. 16-18.

2. Wedel, 1941, p. 18.

At the same time, the fact that the dust covers a dark humus stratum which often contains archeological remains would seem to indicate that a period of fairly rapid deposition followed a more humid interval which lasted long enough to produce a vegetative cover and to become the home of sedentary farming peoples. In other words, I see no reason why the different strata cannot be viewed as evidence of climatic fluctuations analogous to those inferred from the findings of Signal Butte.¹

In estimating the approximate amount of time involved in the droughts and soil depositions represented by these various deposits, the dry periods at Signal Butte may be assigned to millenia.

At Lynch, on the other hand, the archeological evidence points toward a very much more recent drought--one that might have occurred as late as the sixteenth or seventeenth century.²

Dendrochronology has given some clues to the time and duration of drought periods. In western Nebraska four major droughts occurred between 1439 and 1605; Upper Republican must have been previous to all these periods.³

The relation between the prehistoric Upper Republican peoples and the historical Pawnee is still a puzzle. There is nothing in Pawnee traditions to suggest that this group was a late arrival west of the Missouri, and it is generally believed that they were firmly established in or very near their historical locale at the time of Coronado's march into the Plains. Strong has suggested that the Pawnee may have been the lineal descendants of the Upper Republican peoples. This based on a number of resemblances involving basic house types, pottery, and a general semi-sedentary horticultural mode of life. Persistent search has so far failed to produce

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1. Wedel, 1941, pp. 19-20.
 2. Wedel, 1941, pp. 19-20.
 3. Wedel, 1941, pp. 24-25.

a single site in Nebraska which could be regarded as intermediate between the Upper Republican horizons and the earliest protohistoric remains attributable to the Pawnee. On the contrary, the small, open, undefended villages, prevaillingly rectangular pit houses, cord-roughened pottery, and the communal ossuary burials of the Upper Republican peoples are consistently in contrast to the large defensively situated, fortified town, invariably circular earth lodges, corrugated paddle pottery, individual flesh interments of the Pawnee. The much sought "clear and unbroken line of ceramic and other development" foreseen by Strong is not yet at hand, nor can we say how long the gap in the proposed sequence is. The data on physical anthropology, which may well be crucial in this connection, are either nonexistent or unpublished.

Recent excavations in Rice County, Kansas, have shown that small but consistent amounts of Upper Republican-like-cord-roughened pottery occur here, along with puebloan sherds of ca. 1525-1650, at village sites tentatively ascribed to the Wichita. There is also some evidence of ossuary burial. Strong has recently proposed that the Arzberger site near Pierre, South Dakota, represents "a late prehistoric horizon basically Upper Republican, but in process of development into the more specialized and later protohistoric Pawnee (to the south) and Arikara (in the north)". As I have indicated in this paper, there is also a strong possibility that a late phase of the Upper Republican culture survived into virtually protohistoric times in northeastern Nebraska, as shown by the pottery remains at Lynch. Traits which may be regarded as of Upper Republican derivation appear to have survived later in the eastern Plains and in South Dakota and Kansas than in the Upper Republican-Pawnee region in Nebraska. One wonders, therefore, whether the postulated development from a prehistoric to a historic entity or entities, may not have taken place outside the Nebraska area, with the Pawnee on the Loup and Platte rivers representing a backwash. According to their traditions, the Pawnee entered Nebraska from the east and south rather than from the north which might explain certain ceramic (as for example, the cloistered rims) and other elements in their material culture which have an easterly rather than an Upper Republican flavor. This is admittedly a thorny problem and one which cannot be certainly answered with the information now at hand. As a working hypothesis, it may be well to bear in mind the possibility that the threads running from

the Upper Republican to the Pawnee, if they exist, may have to be traced out of Nebraska and then back at a somewhat later period, which, in any case, should precede 1541.¹

Wedel, then, considers that for probably not more than the last ten centuries the Plains were intermittently occupied by distinct groups of semi-sedentary, pottery-making, horticultural peoples who occupied small villages for a few decades at a time. Rather than supporting a claim for great antiquity the sterile zones between occupational levels or above them can be interpreted in terms of ordinary present day processes involving comparatively local climatic or other fluctuations, but not necessarily changes involving larger regional or continental areas.²

Champe's comment on 25BD1 is to the point:

University of Nebraska field parties, in 1936, cut two long trenches through the southern part of the Lynch site in Boyd County, northern Nebraska. No stratification was reported, but Wedel has discussed the several ceramic types from the site. Early estimates of considerable antiquity gained some prominence but are not highly regarded at this time.³

The dates he gives for the Upper Republican manifestation are from 1300 to 1500, based upon the dendrochronological work for Ash Hollow Cave.⁴

The generally held opinion at present seems to be that the Aksarben aspect was present in the Central Plains from

1. Wedel, 1941, p. 26.

2. Wedel, 1940, p. 303.

3. Champe, 1946, p. 119.

4. Champe, 1946, p. 90.

slightly before 1300 to just after 1500; in the Middle Missouri area it begins at about 1400 and ended around the same time there as in the Central Plains.¹

Dendrochronology has been mentioned as aiding in the determination of the dates of both archeological materials and climatic changes. Weakly, working with material from western Nebraska, has obtained a high correlation with the records of the North Platte weather station as far back as the records go, although an occasional lag effect is observed.² Weakly makes the following comments upon the climate of the area.

The recorded droughts of 1856 to 1860, 1869 to 1873, 1893 to 1894 and the one culminating in 1910 are all reflected in tree growth very faithfully. The periods of 1676-84, 1765-70, 1795-1800, 1820-24 and 1839-43 were also apparently deficient in precipitation. The period from 1820 to 1824 is of special interest because of the apparently extreme severity of the drought and the fact that it was extraordinarily widespread, being a matter of record in the diaries of several persons in the New England States and showing in the growth of trees studied by Douglass at Flagstaff, Arizona.³

A single dry year in a group of moist years may have little effect on tree growth, which is influenced both by the storage of moisture in the soil and by the distribution of the rainfall. During a period of years when the rainfall is below the long-time average, any annual deficiency will be greatly magnified in the reduced growth of trees. As rainfall rises above the normal, the changes in tree growth become somewhat less marked.

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1. Stephenson, 1954, p. 20.
 2. Weakly, 1950, p. 19.
 3. Weakly, 1940, p. 19.

The specimens used in this study show a gradual increase in growth from a minimum to some maximum followed by a decline to another minimum, which arrangement is repeated irregularly throughout the entire period covered. Their chief value lies in the fact that they show an alteration of wet and dry periods over a considerable extent of time, with no evidence that climate has changed greatly in the relatively recent past or is changing radically at present. In other words, droughts have occurred at more or less frequent intervals over the past 400 years and will in all probability continue to do so in the future. When these periods will occur and what will be their intensity and duration remains yet to be discovered.

The above discussion applies as well to the older tree-ring records as to the more recent Weather Bureau records. In short, there have always been frequent dry years or short periods of dry years which have been of relatively minor importance to the country, and there have been the less frequent protracted droughts which have profoundly affected the country and its inhabitants. It is probable that during some of the protracted droughts of the past the country approached an absolute character, as in 1539 to 1564 when the heavy filling of canyons by wind-blown soil apparently took place. In all probability, the native grass cover of the country was very largely destroyed and great dust storms were doubtless common.¹

In working with the material for the western part of the state of Nebraska, Weakly finds that the width of tree rings of the specimens studied agrees closely with both the annual rainfall and precipitation for the rainfall year, October 1 to September 30, as recorded at the North Platte office of the United States Weather Bureau.² There is also close agreement between tree growth in the North Platte area and the average annual rainfall from 38 western Nebraska stations,

1. Weakly, 1943, pp. 818-819.

2. Weakly, 1950, p. 91.

indicating that the entire western end of the state tends to act as a climatic unit.¹

Some of the severe droughts which are shown for western Nebraska listed with the duration of the drought:

1439-1454	15 years
1539-1564	26 years
1587-1605	19 years
1688-1707	20 years
1761-1773	13 years
1822-1832	11 years

Other less severe droughts occurred during the period covered by tree-ring and weather bureau records. The drought of 1539-1564 is apparently one when the canyons were heavily filled with wind-blown soil.²

During a conversation with Mr. A. T. Hill, director of the State Historical Society Museum, in January 1941, the possibility of using archeological material such as charcoal in these studies was discussed and as a result Mr. Hill suggested that he might furnish some material for study and the author readily agreed to work on it. Mr. Hill first supplied a considerable number of specimens of red cedar logs and poles from certain Historic Pawnee burials. The actual dates of this material were not known to the author until working them over and establishing a dating which agreed exactly with the known dates.³

1. Weakly, 1950, p. 92.

2. Wedel, 1941, pp. 24-25; Weakly, 1950, p. 93.

3. Weakly, 1949, p. 112.

While the locations of the Pawnee sites are not given it should be noted that such sites are located farther east along the Platte and Loup rivers as in Platte, Nance and Butler counties and south, in Webster County along the Republican River.¹

Working with material from North Dakota George Will finds that the tree-ring record shows wet and dry seasons.

Although there are long periods of years that average a little above or below the average, I have found no tree growth record of droughts which could compare with those shown from areas farther south.²

The Northern Plains seemed to have more favorable living conditions due to lessened evaporative action and retention of moisture in the soil.

The tree ring material collected by Will from around Bismark, North Dakota, seems to correlate with a specimen from the Little Missouri Badlands in the western part of North Dakota. Besides being able to date archeological material from North Dakota, the charts prepared from this material have given satisfactory enough correlation to date archeological material from sites in the central part of South Dakota, including the La Roche and Thomas Riggs sites.³ The South Dakota specimens seemed to correlate better with

1. Wedel, 1936, pp. 29-38.

2. Will, 1950, p. 96.

3. Will, 1949, p. 69.

the Little Missouri Badlands specimens rather than with the Bismark area master chart, even though the distance is greater.¹

The apparent spread of the tentative dates for the Thomas Riggs site established by Will is made understandable by Meleen's comment that the timbers sent to Will were from two superimposed houses and that the two series of dates corresponded to the two different building periods.²

SUMMARY AND CONCLUSIONS

The materials from 25BD1 do not include any articles of white manufacture; the Lynch Village must therefore be precontact in so far as the time of its occupation is concerned. The problem of providing a suitable dating thus becomes how long prior to the historic and protohistoric periods was the occupation? Certain of the ceramic specimens, notably the Oneota ware, are considered as extending into historic times so that while the site may be old compared with the white settlement in Nebraska it is by no means of extreme antiquity. In other areas of the Central Plains and Missouri River materials of a similar nature are considered to have been from active villages of 400 to 600 years ago.³

The great depth of the overburden at 25BD1 has added to the problems of dating the cultural complex of the Lynch

1. Will, 1949, p. 70.

2. Meleen, 1949, p. 321.

3. Champe, 1946, p. 85; Stephenson, 1954, p. 20.

Village. In describing the excavations of the site it has been pointed out that the heavy overburden is present in the central portions of the trenches, and is especially heavy only near the location of the "housepit"; data have been presented that show that some kind of structure had been erected. A decaying structure would be an excellent place for the shifting sandy soil of the site to form a drift. Such drifting would not need any great changes in conditions from those now present at the site where in 1950 the road grade was being drifted with sandy soil from the stubble field to the north of the trenches.

Over most of the site the cultural stratum lies next to the sod and at the surface of cultivated fields, or is overlain by about a foot of sterile sand which is not unusual at other, particularly Upper Republican, sites in the Plains areas.¹ Site 25BD1 is comparable with the generalized Upper Republican complex in depth of overburden.

The Aksarben aspect has been characterized as belonging to the Middle Ceramic period² whereas the Oneota as represented at the Leary site is thought to fall into the Late Ceramic between 1500 and 1700 A.D. Oneota materials are found farther east and south, in Iowa and Missouri, with trade

1. Champe, 1936, p. 257; 1946, p. 96; Cooper, 1936, Pl. 2, fig. 3; Kivett, 1949, p. 279; Meleen, 1949, p. 313.

2. Champe, 1946, pp. 89-90.

materials of European and American manufacture¹ although this is not the case in Minnesota.²

The Blue Earth country of Minnesota is as close to the Lynch Village as the location of the Upper Republican villages along Medicine Creek in southern Nebraska; the potters of Lynch, working in the ceramic tradition of the latter were influenced by ceramic traditions allied to the former. The time-spread of the Oneota aspect farther east as well as on the Plains becomes one of the deciding factors in dating the material found at 25BD1.

Since the Boyd focus is closely related to the Aksarben aspect it cannot be placed earlier than that in Central Plains chronology. In as much as associated with it are a few traits characteristic of later periods, and 25BD1 is located near the periphery of the Upper Republican area, the focus must not fall in the early part of the period, near 1300, but rather toward the close of the Middle Ceramic period, near 1500 or perhaps just a little later.

Weakly has given evidences that the climatic cycles of western Nebraska, as shown from dendrochronology, have not changed greatly from those shown in Weather Bureau records but have changed from dry to wet to dry in cycles that approach 30 years in length.³ It may perhaps be inferred

1. Mott, 1938, pp. 290-295; Berry and Chapman, 1942, p. 305.

2. Berry and Chapman, 1942, p. 305.

3. Weakly, 1943, pp. 819.

that northeastern Nebraska was somewhat more favorable during drier periods of longer than usual duration, so that peoples from the southwest would be attracted north and east during drier periods. This explanation for the seeming discontinuous occupation of the Central Plains has been given before.¹ If the carriers of the Upper Republican material culture were in northeastern Nebraska just after 1500 this would fit well with the droughts of western Nebraska. Whatever the year date the Lynch Village will fall chronologically on the border line separating the Middle from the Late Ceramic periods or the Aksarben from the Lower Loup.

1. Wedel, 1940, 1941; Champe, 1946, pp. 95-97.

SUMMARY AND CONCLUSIONS

The Lynch site, 25BD1, is located in a region of steeply rolling hills and small stream courses in the northeastern corner of Nebraska. The Pierre shale formation is the most characteristic local outcrop; some of the buttes are topped by the Arikaree formation which includes a gray-green quartzite. The sandy soils of the uplands blow in the winds of the continental climate. Except for the trees of the stream valleys the native vegetation of the area is grasses.

25BD1 is on the large flat-topped upland at the confluence of Ponca and Whiskey creeks just northwest of the town of Lynch. This upland, seemingly the only large, level location of the area, may have been selected because it could easily be defended since it is nearly separated from the other upland areas and is well above the flood plain of the creeks. The village, apparently unfortified, was close to fuel and water and to bottomlands suitable for garden plots.

The excavations were carried out in 1936 under the direction of Dr. Earl H. Bell. Test trenches dug in the cultivated ground of the Jehorek area encountered characteristic concentrations of refuse, firepits, and a cache pit. The excavations were continued below the cultural stratum which was encountered at the plow line and was as much as

2 feet thick. The two long trenches, S1 and S3, dug in the prairie sod of the Stewart area, yielded 95 per cent of the artifacts. These trenches were excavated in sections with profiles left standing between the sections. The two trenches had the same general conformation. Near the ends of the trenches the culture stratum was next to the sod; in the central portions of the trenches the cultural material was separated from the sod by a layer of sterile sand. The cultural stratum had a nearly level base. At least 20 cache pits, 16 other pits and 21 postmoulds were uncovered as well as fireplaces and concentrations of refuse and unworked stone fragments. Both the cache pits and the shallow basin pits were sometimes used for the disposal of refuse. Caches were bell-shaped or cylindrical; a bison skull was found at the top of one cache pit. The artifacts were irregularly distributed although there seemed to be an increase of artifact numbers as the overburden deepened. The Oneota pottery was scattered throughout the trenches; it, as well as other materials, was found in cache pits below the sand stratum. The field maps, the presence of postmoulds, and the notation "housepit" in the field catalogue indicate the presence of some sort of structure. Further work at the site would probably define the structure type. Reconnaissance has established areas 3 and 4 as part of the site; in area 4 the slight rises coincide with concentration of material. Lumps of hard clay were found in various parts of the site. They suggest that clay may have been daubed on small poles of a structure.

About 15 per cent of the artifacts are made of stone; nearly all these tools were made by chipping, but there is nothing which makes them particularly distinctive. There is a difference in the kind of stone chosen for making certain artifacts. Over 70 per cent of the larger pieces, such as ungrooved celts and knives are made of gray-green quartzite, corresponding to that described for the local outcrops of the Arikaree formation; smaller artifacts, such as projectile points, scrapers, and drills, were usually made from flint, jasper or chalcedony. Some 95 per cent of the whole projectile points are triangular or leaf-shaped, sometimes with side notches. Only 8 of the 32 types of the Strong classification are represented; 23 per cent of the points are tips. End scrapers, knives and worked flakes are common; Badlands knives are present. The few items of ground stone work include hematite paint pieces, abraders and sandstone slabs which might be grinding stones. Unworked stone fragments were recovered in concentrations rather than scattered throughout the site.

Only 2 per cent of the artifacts are made from bone. Distinctive bone artifacts are the 11 cleaver-shaped knives (Pl. 21, b) and the unique double-pointed object which has been termed a "bobbin" but which may have been a fish gorge (Pl. 21, h). The articular ends of the scapula hoes are unmodified. One-half of the awls are represented by butt end fragments and may be parts of some other sort of tool. It is possible that the scored rib tools were used to produce simple stamping on the pottery.

Shell and vegetal remains are rare. The identification of the unworked bone is unavailable. There are a few specimens of corn, fruit pits, and beans, and samples of charcoal. Horns, antler and other bones indicate the use of both large and small game. These remains furnish the evidence for the conclusion that the occupants of the Lynch Village were tillers of the soil as well as hunters and gatherers.

Only 2 pottery pipes, apparently of the elbow type, occur. From this it would seem that tobacco was known to the people of the Lynch Village.

The pottery inventory divides into two wares. The first is a small and characteristic sample of Oneota ware; this smooth, shell-tempered ware has been named Whiskey Creek ware. The second, much larger, grouping has been named Lynch ware. This ware has predominantly a paddled cord surface finish although simple stamping is also present. Rim form is direct or straight, slightly flared, or braced which includes the form sometimes termed channeled or S-shaped. The tempering material is sand or psilomelane, called Lynch temper. Hardness is usually 2-3 on the Mohr scale. Thickness averages about 5 mm. Color ranges from buff to gray. The vessel shape is a modified olla; the diameter is equal to or exceeds the total height. Most of the rims are decorated, usually with incising, sometimes combined with pinching and decoration on the upper part of the inside of the rim. A few sherds are painted. The shoulder area is sometimes incised. Only 11 per cent of the rims are undecorated except for their surface

finish; 20 per cent of the rims and decorated shoulder sherds had other decorations applied over their textured surface. The Oneota ware seems to have influenced the design of the Lynch ware, especially in shape, in the use of shoulder decoration, in the decoration of the upper inside rim with vertical impressions and the use of certain design motifs including the festoon (Pl. 16).

Predominant rim types of the Lynch ware include Jehorek Banded Braced Rim, Boyd Direct Rim, and Silver Creek Direct Rim. Probable relationships to other established types for the Central Plains are listed, but it should be noted that this was possible for only 8 of the 17 types. The similar pottery groupings occur in the Aksarben aspect, Lower Loup focus and as Cooper's Category B ware.¹ Since the braced rims include both forms A and form B, no rim types could be established based upon the channeled or form B rim.

The Lynch ware, the bone and stone artifacts, and the ground features represent a single cultural complex and probably the occupation of the site by one group of people. This inventory is designated the Lynch complex. The Oneota ware is the index artifact for the Whiskey Creek component of some focus of the Oneota aspect. There is no stratigraphic evidence indicating successive occupations of the site although these two complexes are present.

The dune-like stratum of culturally sterile sand can easily be explained as sand from the site itself, the ground

1. Cooper, 1949.

cover destroyed by the occupation of the village, blowing and drifting about a ruined structure. This would not necessarily involve a great length of time.

The Lynch ware includes ceramic items which are nearly the same except for paddled cord and simple stamped surface finish. This may be due to influences from the Oneota pottery.

A comparison of the artifacts of sites 25BD2 and 25BD4 show that these sites are essentially like 25BD1. These three sites belong to the Boyd focus, but the focus cannot be assigned to any aspect at the present time.

Although much of the material, especially the ceramic complex, resembles that of the Aksarben aspect, the pottery also resembles that of the Lower Loup focus as well as some of the wares from the Middle Missouri area including material from the Dodd, Talking Crow, and Arzberger sites and also Category B pottery.

At the time the site was dug Van Royen felt that the depth of the overburden suggested that millennia had elapsed since the site was occupied. Wedel, however, suggests that the accumulation of sand was due to local conditions and that the chronology of the site depended upon the artifacts and their identification. Dendrochronology worked out for western Nebraska helped to date the Aksarben aspect and the Middle Ceramic period at about 1300-1500. The Boyd focus falls chronologically on the border line separating the Middle from the Late Ceramic periods.

The report of the excavation of 1936 has been reconstructed to show that the various ground features and artifacts were scattered throughout the site and leads to these conclusions, one, that some kind of structure had been erected during the occupation of the site. Secondly, that the depth of overburden at some parts of the site is explained most simply as sand deposited about a ruined structure.

The laboratory analysis of the artifacts resulted in, one, the identification of the Whiskey Creek component of the Oneota aspect and of the Lynch complex, to which the great majority of the artifacts belong. Secondly, this analysis indicates that the inhabitants of the Lynch Village were horticultural as well as hunters and gatherers.

The discussion of the relationships of 25BD1 and other manifestations has led first to the identification of the Boyd focus, for which 25BD1 furnishes the Lynch component. Secondly, the Boyd focus is related to the Aksarben aspect and, in less well-defined ways, to the Lower Loup focus. A third group of sites which will probably show some relationship are those currently being studied along the Middle Missouri River, primarily in South Dakota. Wolfe found resemblances between the Lynch ware and the Lower Loup pottery.¹ Further comparisons of the Lynch ware and Lower Loup ceramics need to be made, especially in the use of zonal

1. Wolfe, 1950, pp. 35, 38, 40.

decoration, the use of decoration inside the rim, and as to the relative rarity of undecorated pottery or rims.

Lastly, the discussion of chronology and dating leads to the conclusion that the Lynch Village was occupied at the close of the Middle Ceramic period and the beginning of the Late Ceramic period of the Central Plains, about 1500 A. D.

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APPENDIX A

Publicity in 1936

Lynch Herald-Enterprise
Vol. XVI, No. 4, Thursday, July 2, 1936
P. 1, Col. 3-4

RUINS OF ANCIENT CITY HAS BEEN FOUND NEAR LYNCH

Excavations tell of early culture here

"Dr. Earl H. Bell, anthropologist, and a group of University of Nebraska students scientists, unearthed primitive Nebraska 'Capital' beneath shifting sand of ancient desert which once existed in Boyd County. On the Harold Stewart farm near Lynch is the site considered by Bell as one of the most sensational ever found in the country because it contains probably the largest prehistoric city ever existed. The site when completed will also extend into the Vince Jehorek land, and it pushed back antiquity of an agricultural civilization in middlewest from 500 years to several thousand, possibly four thousand years. Up until now, scientists thought that an agricultural people did not inhabit Nebraska and the middlewest more than five hundred years ago.

"Bell and a crew of eight men have been working on farms belonging to Vince Jehorek and Harold Stewart, armed with shovel and spade, have dug through tops of several hills. Estimate of this prehistoric capitol is about three miles

long and half mile wide. Large sections densely inhabited. Debris (by-products) of human civilization runs from 6 to 16 inches thick. Each shovelful of dirt brings out quantities of cultural remains. The crew of workmen are camping in the Clint Davy yard nearby the site of their labors.

"Ideal location for an early civilization, reason given by Bell for the tremendous size of the buried city, the site being located in midst of bluffs above Ponca Creek. Lowland naturally irrigated by springs flowing from the hills. Highlands to the north were a rich hunting grounds.

"To date have been dug five trenches, ranging from 2 foot to 9 foot in depth, and from 30 to 300 feet in length. On top and extending down 5 feet in sandy soil believed blown in here from west during centuries of desert climate. Below this top layer is the black colored soil on which these ancient people trod, black and hard packed due to treading of countless feet during wet seasons. Top 5 feet of sandy soil indicates great age of this early civilization.

"This is the first time that Northeast Nebraska and Niobrara Valley have been worked by Archaeologists, and this site was investigated by the University of Nebraska after reports from George Wilcox, former superintendent of Lynch schools, stated that countless arrowheads were on top of hills here. Wilcox is now a graduate student of the University of Nebraska and one of the crew here.

"Among valuable remains uncovered thus far: Abundant variety of vegetables, including carbonized ears of corn,

beans (large and small; and squash; pottery, pieces large enough to hold more than a half bushel of produce. Thousands of arrowheads and animal remains. The site also contains type of house hitherto unknown. Bell believes it may be beginning of subterranean ho(u)se common to later Nebraska civilizations.

"Friday's digging in the sensational site which produced hurried Nebraska 'capital' revealed source of new evidence, leading Dr. Bell to believe even more ancient culture once existed in Nebraska. Digging past few days now shows three strata of ancient cultures. First one shows up near to surface of soil, extending down to as much as a foot below the ground. Second civilization appears as much as five feet below ground. Third and most ancient culture just discovered ranges foot below second or 'capitol' horizon uncovered last Thursday.

"The last and latest culture, discovered by Bernard Refshauge, who was digging beneath ancient capital layer found abundance of chipped flints indicative of even more ancient races. The third strata of cultural remains now believed to date antiquity of man in this region more than four thousand years ago, because this layer was beneath all other sites. Also third stratus thus far pro(d)uced only flint articles and no pottery or other remains which might indicate a more advance people. Bell thinks this oldest culture represents race of Nomadic Indians who depended solely on hunting and did not farm as did the capital dwellers.

"The Friday morning diggings were the richest yet in amount of remains unearthed, furnishing scientists with large and small pots, early man made tools, more carbonized vegetables and possibly another forerunner of later type Nebraska subterranean house. Work will continue in hopes of being able to estimate the number of ancients who once lived in this ideal capitol.

"Dr. K. Van Royden, University of Nebraska geographer, and Dr. F. A. Carlson, Ohio State University geographer, Saturday confirmed Bell's opinion the prehistoric city was inhabited more than 4,000 years ago. The shifting sands of an ancient desert now cover the city, which Bell named the primitive Nebraska capital; and on top of the sand is a civilization, which Bell said occurred about the eighteenth century.

Find Three Civilizations

"The desert sands are from six inches to five feet deep, and the soil which the scientists describe as the black land of the culture level, the era of the first Nebraska capital is from three inches to two feet deep.

An Agricultural Race

"In the capital city stratum archeologists found evidence its occupants were an agricultural people. They also killed and ate buffalo, deer and elk. Bones, tools and pottery in the dirt and bits of corn and grain told the story to scientists.

Scientific World Interested

"J. M. Allison, Associated Press Writer stated to Dr. Bell that after the first release about the Prehistoric City found near Lynch, wires were received from many eastern papers for more details about this rare find. Many stories went out over the wires were published in the papers of the United States carrying United Press and Associated Press dispatches, in their Saturday and Sunday editions.

Mr. Allison also stated that the stories were published in London and other European papers. It has also attracted many archeologists in the various universities throughout the nation.

It is estimated that approximately 500 people visited the site of the prehistoric city near Lynch Sunday, coming from South Dakota and various counties adjacent to Boyd County."

Lynch Herald-Enterprise
Vol. XVI, No. 7, Thursday, July 23, 1936
P. 1, Col. 5

NBC to broadcast from Lynch Friday

"We are informed by the University men, who are excavating the 'Ancient Nebraska Capitol' near Lynch, that the National Broadcasting Company will broadcast from this location near Lynch Friday, July 24, at 3:00 p.m., with announcer Foster May of Omaha at the 'mike'. News of this 'new find' by the University of Nebraska men has flashed around the globe and many are interested to hear more about it."

Lynch Herald-Enterprise
Vol. XVI, No. 8
Thursday, July 30, 1936
P. 1, Col. 1

Ruins described by NBC network

"A crowd of more than 250 people from parts of South Dakota, Nebraska and Lynch were at the site of the 'Hidden City' near Lynch Friday afternoon at 3:00 p.m., to see and hear the thirty-minute broadcast on the red network of the National Broadcasting Company, which covered about sixty stations, including WOW at Omaha. Scores of other folk far and wide were listening in quietly at home as Foster May, 'The Man on the Street' over WOW started the program by describing the countryside, near Lynch where the site is located. He descended into the deepest trench where he carried on a program in the form of questions and answers with Dr. Earl H. Bell. George Wilcox, who pointed out to the university men this location, spoke a few words of interest. They came out of the trench and then viewed and talked about the cash pit, where the early men stored vegetables and pottery; later moving to the east trenches where the university men were busy shoveling dirt. Vince Jehorek, owner of part of the land on which the digging took place, spoke a few words also. Other men here from Omaha to help line up the broadcast were Howard Peterson, promotion manager; Harry Burke, program director, Foster May, news editor; Joseph Herold, chief control operator of the WOW station, all of Omaha. The Bell Telephone company had a man

here from Norfolk to assist in proper facilities for sending the program over the wires to WOW at Omaha by remote control, which proved very successful and came in clear and fine.

"Many people thru-out the land were locating Lynch, Nebr., on their maps Friday."

Lynch Herald-Enterprise
Vol. XVI, No. 8
Thursday, July 30, 1936
P. 1, Col. 2

Geographical Excursion Visit Ancient Ruins Here

(The summer field excursion of the Chadron State College geography students under Dr. McKim visited the site.)

"Of special interest is the ancient Indian site at Lynch, which Dr. McKim and party have been studying.

Dr. McKim is, besides his work at Chadron Normal, a consulting Geologist for a well known oil company, states that he is in complete agreement with Dr. Earl H. Bell and Dr. Van Royen of the University of Nebraska as to the sand deposits overlying the ancient Indian site. Dr. McKim has worked with the state geologists for a number of years in soil survey throughout the state."

Lynch Herald-Enterprise
Vol. XVI, No. 10
Thursday, August 13, 1936
P. 1, Col. 5

Students Return to University

"After one of the most profitable summer seasons in the history of the University of Nebraska Archaeological Survey, Dr. Earl H. Bell and his group of student archaeologists left here Wednesday to await the opening of school this fall.

With Bell to the last were: Geo. Wilcox, Steve Wimberly, Bernard Refshauge, Jim Grag, R. B. Oher, Perry Newell and Mark Owens.

"Dr. William Van Royen, physiographer of the University of Nebraska remained here for further mapping of the site and larger physiographic study of the entire Lynch Territory, which will likely take from ten days to two weeks.

"With the extension of hundreds of feet of new trenches evidence continues to pile up indicating the antiquity of agriculture early in Nebraska. Thousands of additional specimens were secured and soil samples have been taken from several levels. This will help to determine the age of the site. Before closing for the summer, Bell completed a detailed survey of lower Ponca Creek Valley and located approximately forty new sites, most of which appear to be different culture. Dr. Bell believes that the stratigraphic cultural sequence of these sites is near at hand. Work this summer began July 11th, and a total of 800 feet of trenches with a lowest level at ten feet, were dug.

"In summing up this season's work Bell said: 'This has been one of the most interesting and successful seasons I have had since I first began in 1927. It is clear that Nebraska has a human prehistory as important as that of Egypt or the near East. The people of this community have been more than helpful in furthering the work and have pointed out new sites. I am sure that Nebraskans are interested in the history of the early people, who once lived

here and they are definitely helping to recover all factual information about them. I am looking forward to another year here at Lynch."

APPENDIX B

Check List of Traits

Large site

Structure present

Cache pits, common

 Bell-shaped

 Cylindrical

Shallow pits, common

Refuse concentrations

Fireplaces

Worked stone

 Variation of material

 Chipped stone

 Angular knives

 Alternate bevel

 Badlands

 Class 1

 Class 2

 Ovoid knives

 Scrapers, common

 End scrapers, common

 Gravers

 Drills, usually T-shaped

 Projectile points

APPENDIX B (Cont'd.)

Stemmed, rare

Triangular, or leaf-shaped

small, some side notched

Some points re-worked

Celts, not grooved

Worked flakes

Ground stone

No ground celts or mauls

Paint materials

Flat sandstone pieces
(grinding stones?)

Ground quartzite piece
(mano?)

Abraders

Groups of unworked stone

No stone pipes

Worked Bone

Awls

Split metapodical

Split long bone

Split rib

Butt end fragments

Scapula hoes

Cleaver shaped knives

Shaft wrenches

Scored ribs

Used ribs

APPENDIX B (Cont'd.)

Bobbin (fish gorge?)

Antler, worn or used

Animal teeth

Corn, cob

Fruit pits and seeds

Beans

Shell, rare

Pottery abundant

Oneota ware present

Lynch ware predominant

Sand and/or Lynch temper

Hardness 2.5

Thickness 5 mm.

Color, buff to gray

Shape, olla, height equal
to or less than maximum

Diameter

Surface finish, simple
stamped, cord paddled, smoothed

Rim forms: direct, braced
Forms A and B, flared

Predominant rim types

Jehorek Banded Braced

Boyd Direct

Jehorek Direct

Silver Creek Direct

Boyd Stamped Direct

APPENDIX B (Cont'd.)

Silver Creek Flared

Boyd Corded Direct

Boyd Banded Direct

Pottery pipes rare

Hard clay lumps

No contact material

EXPLANATION OF PLATES

1. VIEWS OF SITE 25BD1

Fig. 1 A general view of the Ponca Creek Valley looking south from 25BD1.

Fig. 2 A general view to the north from the floor of the Ponca Creek Valley. The village is on the high bluffs in the center of the picture. The terrace drops to the east toward the towns of Lynch and Whiskey Creek.

2. EXCAVATIONS ON 25BD1

Fig. 1 Excavating in the trench J1.

Fig. 2 Work in progress in trench S1, a view from the north end of the trench toward the south.

3. TRENCHES S1 AND S2

Fig. 1 The profile on the south side of the wall between S1-22 and S1-23. The layers that are marked off are, from the top downward the topsoil which merges into the sterile zone below, the cultural stratum which is thicker at the left-hand side of the picture, and the sterile zone below the cultural stratum.

Fig. 2 A view of trench S3 from its southern end to the wall between S3-1 and S3-2. The sod layer, sterile sand, and the dark, relatively level, cultural stratum show plainly. The rod and wall show the deepest overburden for the site. The texture of the soil appears to change near the dark area on the trench floor. Post molds m-p were found just inside this area of soil change.

4. THE NORTHERN END OF TRENCH S3

Fig. 1 A view of the east wall of S3-13w2. The cultural stratum is partially divided, the lower part seems to form a saucer-shaped depression. At the left-hand side of the

upper layer there are streaks or markings in the soil which suggest postholes connected with the upper level. This is probably a picture of Basin pit L.

- Fig. 2 A view of the firepit at the north end of S3-16. The firepit is in the center of the picture; the dark area at the lower edge is the mouth of a cache pit. The round discolorations in the firepit and its vicinity have the appearance of filled rodent burrows, or of post molds. The cache pit is probably cache 14.

Note the depth of the strata in both pictures.

5. TRENCHES OF THE STEWART AREA

- Fig. 1 A view of the profile of the north wall of S3-3. From the top downward the strata marked off are the soil zone of unbroken sod, the layer of sterile sand, and the cultural level containing a concentration of bone and having a slight dip downward below the bone, and the sterile unmixed stratum below the cultural level.

- Fig. 2 A profile showing the cache pit in S1-25. The various soil zones show very plainly here. The cache pit was filled in and had settled before sand was deposited. The materials from S1-25, F1 and F2 were direct rims, and stone work in flint and jasper. The cultural level begins at 1.5 feet below the ground surface as shown by the stadia rod.

6. CONCENTRATIONS OF MATERIAL AT 25BD1

- Fig. 1 The concentration of refuse in trench J1 designated as J1-B and J1-F2. This collection of material contained direct and flared rims, and decorated shoulder sherds.

- Fig. 2 The pieces of a pot in S1-21. These were restored; the restoration is shown in plate 7.

Note the sandy soil as it appears in both figures.

7. UPPER REPUBLICAN POT FROM 25BD1

The Upper Republican pot reconstructed from the sherds shown in situ in plate 6, figure 2. It is Lynch tempered, and resembles Upper Republican ware from the Medicine Creek valley. The diameter at the shoulder is equal to the maximum height. The five horizontal bands on the braced rim form A have been applied over the cord paddled surface finish. Short sections of the lip opposite one another are decorated with left-hand diagonals: Jehorek Banded Braced Rim.

8. BRACED RIMS, FORMS A AND B FROM 25BD1

- a A braced rim form A from a pot whose mouth was about 25 cm. in diameter. The carelessly executed horizontal bands are applied over the surface finish. The lower edge of the brace part of the rim and a part of the lip have right-hand diagonals: Jehorek Banded Braced Rim.
- b The horizontal bands on the braced rim form B are partially drag and jab: Jehorek Banded Braced Rim.
- c A braced rim form A with paddled cord surface and Lynch temper: Jehorek Braced Rim.
- d Lynch tempered braced rim form A with a smoothed surface under the horizontal bands: Jehorek Banded Braced Rim.
- e A braced rim form A with a row of punctates on the lip and at the lower edge of the brace: Jehorek Banded Braced Rim.
- f A braced rim form A decorated with single cord impressions; the horizontal bands are not carefully done: Jehorek Banded Braced Rim.
- g A braced rim form A with a slightly longer distance from the neck to the lower edge of the brace than is usual: Jehorek Banded Braced Rim.

9. BRACED RIMS, FORMS A AND B FROM 25BD1

- a A braced rim form B with deep impressions at the lower edge of the braced part: Lynch Braced Rim.
- b A braced rim form A with a pinched band and inside rim vertical. It is sand tempered. Another section of the rim from the same vessel has a simple stamped body: Lynch Braced Rim.
- c Another braced rim form A with a pinched band at the lower edge of the braced part: Jehorek Banded Braced Rim.
- d A braced rim form A with an incised design applied over a paddled cord surface. The diagonal across the rim is rare: Jehorek Braced Rim.
- e A braced rim form A with a pinched border and neat, single cord impressed, horizontal bands: Jehorek Banded Braced Rim.
- f A braced rim form A with a paddled cord surface overlaid by single cord impressed horizontal bands and a line of punctates at the lower border: Jehorek Banded Braced Rim.
- g A braced rim form B with horizontal bands: Jehorek Banded Braced Rim.
- h The other example of a braced rim form A with inside rim verticals. In this case the tempering is mixed sand and shell: Lynch Braced Rim.
- i A braced rim form A with a pie-crust edge and with Lynch temper. This edging at the lower edge of the braced part of the rim is rare: Jehorek Braced Rim.
- j A braced rim form A with a diamond-shaped incised design applied over a paddled cord surface, and with a pinched lower edge of the braced part: Jehorek Braced Rim.
- k This braced rim form A with a pinched border may have been painted: Jehorek Banded Braced Rim.

10. DIRECT RIMS FROM 25BD1

- a A direct rim with neat inside rim verticals and a carefully done paddled cord surface finish: Boyd Corded Direct Rim.
- b A buff colored, Lynch tempered direct rim with inside verticals produced by a square object, and with a simple-stamped body: Boyd Stamped Direct Rim.
- c A buff colored, Lynch tempered direct rim with a paddled cord body. The right-hand diagonals on the lip were made with a round implement with a hollow end: Jehorek Direct Rim.

11. DIRECT RIMS FROM 25BD1

- a A good example of a direct rim. It has a paddled cord surface finish below a decorated shoulder area, and left hand diagonals on the lip. It is Lynch tempered: Jehorek Direct Rim.
- b A direct rim with a simple stamped body and with right-hand diagonals on the lip. It is Lynch tempered: Lynch Direct Rim.
- c A Lynch tempered direct rim with a paddled cord surface finish and a strap handle: Jehorek Direct Rim.
- d Another good example of the direct rim associated with a paddled cord surface finish; it is a Lynch tempered sherd: Jehorek Direct Rim.

12. FLARED AND OTHER RIMS FROM 25BD1

- a A flared rim with a paddled cord surface finish and a flattened lip with an incised zig zag design: Jehorek Flared Rim.
- b A flared rim with a simple stamped surface finish on the body and right-hand diagonals on the lip: Silver Creek Flared Rim.
- c A flared rim with a paddled cord surface finish on the rim and the flattened lip: Jehorek Flared Rim.

- d A flared rim with inside rim verticals, a strap handle, and incised shoulder decoration applied over a partially smoothed paddled cord surface finish: Boyd Corded Flared Rim.
- e An example of a direct rim with a collar: Jehorek Beveled Direct Rim.
- f An example of inside rim verticals: Boyd Direct Rim.
- g A direct rim with vertically placed paddled cord surface finish and right-hand diagonals on the upper outside of the rim. This rim is precisely worked: Silver Creek Notched Direct Rim.

13. CERAMIC SPECIMENS FROM 25BD1

- a A part of a tab handle which is Lynch tempered. The rows of punctates match the inside rim verticals.
- b A flared rim with inside rim verticals, a wide, decorated strap handle with decorated shoulder area indicated: Boyd Flared Rim.
- c A round decorated handle on a flared rim. The decoration is reminiscent of the handles upon the silver mugs presented to babies during the Victorian era: Silver Creek Flared Rim.
- d A direct rim with inside rim verticals and a narrow strap handle perched on the shoulder just below the neck: Boyd Direct Rim.
- e An example of a barrel handle. This one is sand tempered: Silver Creek Direct Rim.
- f A part of a Lynch tempered rim with a small tab.
- g A part of a simple stamped direct rim with right-hand diagonals on the lip and a perforation in a widened part of the rim.
- h A Lynch tempered tab with a vertical perforation.
- i A fragment of a pottery pipe. This bowl was broken off the stem before the pipe had been used.

- j A small round handle with one rivet which shows one method of attaching handles to vessels that was used at 25BD1.
- k An unusual pottery fragment that is shaped so that it could have been part of a small ladle.

14. INCISED SHOULDER AREA SHERDS FROM 25BD1

- a A flared rim with inside rim verticals and sand temper. The incised and punctate design on the shoulder is much like the designs on Oneota vessels: Boyd Flared Rim.
- b A short flared rim which is sand tempered and has a shoulder decoration of incised opposed diagonals: Silver Creek Direct Rim.
- c A fine sand tempered direct rim with punctates on the lip and a shoulder decoration of opposed diagonals: Silver Creek Direct Rim.
- d A shoulder sherd with curvilinear design incised over a paddled cord surface finish. The design is edged with a row of punctates.
- e A Lynch tempered sherd with a peculiar design of punctates bordered with an incised line. This decoration is unlike any other found at 25BD1.
- f A shoulder sherd with a design made up of incised lines and based upon a triangular motif.
- g A sand-tempered shoulder sherd with an Oneota-like design applied over the paddled cord surface finish.
- h A sand tempered shoulder sherd with a very neatly incised design.
- i A Lynch tempered shoulder sherd with a design of radiating incised lines.
- j A sherd with a row of punctates made with a small round hollow object.
- k A small sherd with a pattern of hemiconical punctates.
- l Another sherd with a curvilinear design.

15. INCISED AND PAINTED SHERDS FROM 25BD1

- a A sherd representing a small vessel with a direct rim and an incised shoulder area covered with opposed diagonals. Parts of this sherd were found in trenches S1 and S3: Silver Creek Direct Rim.
- b A flared rim with an angular strap handle and a flat decorated shoulder: Silver Creek Flared Rim.
- c A shoulder sherd with a curvilinear design incised over a random paddled cord surface finish. The shoulder itself is very distinct.
- d A shoulder sherd with a neatly incised design based upon a triangular motif. The body is simple stamped below a sharply defined shoulder.
- e A direct rim with a painted band upon a smoothed surface below a line of right-hand diagonal impressions.
- f A flared rim decorated with small areas of black paint which appear to have been part of a design resembling a fern leaf. The sherd has a paddled cord surface finish: Jehorek Flared Rim.
- g A simple stamped shoulder sherd with a design in red, and with red stained interior surface. The shoulder is sharply defined.
- h A sherd with a painted design resembling a fern. This sherd could well be a part of the same vessel as the rim f.
- i A simple stamped sherd decorated with yellow dots.
- j A thin sherd with a red design and a red interior.

16. POT FROM 25BD1 DECORATED IN THE ONEOTA TRADITION

A sand tempered pot from 25BD1. It has a direct rim with inside rim verticals and strap handle that is incised. The shoulder design of incised lines bordered with punctates is in the Oneota tradition. The shape is also characteristic of Oneota vessels with the high, sharp shoulder and the diameter greater than the maximum height: Boyd Direct Rim.

17. ONEOTA POTTERY FROM 25BD1

- a An Oneota direct rim with a decorated shoulder. The rim has inside rim verticals.
- b A direct rim with the shoulder area. The shoulder is well defined. The shoulder area has a part of a festoon design. The rim has inside rim verticals.
- c An Oneota direct rim with a very flat shoulder.
- d Another Oneota direct rim with a very flat shoulder area.
- e An example of the diagonal inside rim decoration found on a few Oneota rims from 25BD1.
- f An Oneota direct rim with inside rim verticals and with a suggestion of some kind of surface treatment which has been smoothed over.
- g A decorated Oneota sherd.

18. POTTERY AND CHIPPED STONE FROM 25BD1

- a A direct rim of a small or narrow mouthed vessel. It has one vertically pierced handle and two opposed perforations. This is one of the 65 (14%) direct rim vessels decorated with horizontal bands: Silver Creek Banded Direct Rim.
- b A direct rim with an incised, mid-rim handle. A decorated shoulder area is indicated: Silver Creek Direct Rim.
- c A large celt chipped from green quartzite.

- d A large flat chopper chipped from light flint.

19. CHIPPED STONE ARTIFACTS FROM 25BD1

- a An example of a four-sided alternate beveled knife chipped from a gray quartzite.
- b An example of a three-sided alternate beveled knife chipped from a gray quartzite.
- c An end-scraper with parallel sides chipped from gray flint.
- d A broad, thin scraper chipped from brown flint.
- e A tip of a knife of the badlands type chipped on both faces.
- f The pointed tip of a badlands knife chipped on both faces.
- g A complete badlands knife, alternate beveled at the pointed end and chipped from both faces upon the other three of the five edges.
- h A second complete knife of badlands chalcedony which is finished upon both faces of all three edges.
- i A heavy graver or point with secondary chipping upon one side, with a shoulder.
- j A triangular knife or graver chipped from gray quartzite. It has secondary chipping upon both faces.
- k A snub-nosed triangular scraper chipped from brown flint.
- l A small triangular knife or point which is concavo-convex and chipped upon both faces of the edges forming the tip. It is pinkish-gray flint.
- m A ovoid knife of banded flint which is chipped upon only the one side.

- n A long, four-sided knife of gray quartzite which has secondary chipping upon only the one side.
- o A flat knife with secondary chipping upon only the one side. It is made of dark quartzite.

20. DRILLS, GRAVERS, AND POINTS FROM 25BD1

- a Projectile point, Strong classification NBa1.
- b Projectile point, Strong classification NBb1.
- c Projectile point, Strong classification NBb1.
- d Projectile point, Strong classification NBa1.
- e Projectile point or graver which looks as though it had been fashioned from the base of a broken projectile point.
- f Projectile point, Strong classification NBb.
- g Projectile point, Strong classification NBb.
- h Projectile point, Strong classification NBa, of quartzite.
- i Projectile point, Strong classification NAb2.
- j Projectile point, Strong classification NBa.
- k A heavy graver or a drill.
- l A heavy graver or a drill. The lower end has been chipped on all four sides, but is broken off just below the point where the four edges have been finished.
- m A flat chalcedony flake retouched on both sides, of shape NAb2, with a sharp point at the tip, like a graver.
- n A long projectile point, Strong classification NBb1.
- o A projectile point, Strong classification SCa1.
- p A large drill, unfinished at the butt end, which appears to have been made from a flint knife.

- q A drill which has been nicely retouched at the butt end, and which has a graver-like projection on the butt.
- r An expanding base drill fragment with a finished butt end.
- s A sharply pointed drill with an unfinished butt end.
- t A T-shaped drill, neatly retouched at the butt end.

The specimens in this plate are all of flint except h, of quartzite; m and o, of chalcedony.

21. BONE ARTIFACTS FROM 25BD1

- a An example of the kind of scored rib found at the Lynch Village.
- b An example of the cleaver-shaped bone knife found at 25BD1.
- c A well-made and highly polished bone knife. The semi-lunate shape seems to be the result of breaking the knife rather than of intentional shaping.
- d A bluntly pointed tool made from a split rib. The worked end is covered with numerous striations; it is not polished.
- e An awl made from a scored rib. The point has been broken off after it was found, but the tip is well-polished from use.
- f An awl made from a split rib. The point is very sharp.
- g A finely worked, well polished, sharply pointed awl made from a bone splinter.
- h A double-pointed bone tool, well-polished and sharp with a well-defined groove around the middle. Suggested uses are: a bobbin in weaving, or as a kind of fish hook.
- i A short awl made from a split metapodial. It is well-polished from use.

j A blunt bone punch with striations on the blunt end, and unworked on the other.

k A long awl made from a splinter of a long bone; it is not polished from use.

22. POTTERY FROM 25BD2

a A direct rim with a tab.

b A flared rim with a cross-hatched design on the lip and the lug.

c A braced rim with horizontal bands bordered by a pinched band.

d A braced rim with horizontal bands incised over a paddled cord surface.

e A shell tempered shoulder sherd, decorated with incised lines and punctates, Oneota.

f A direct rim with impressed diagonals on the inside rim as a variation of inside rim verticals.

g A cord impressed design on a braced or collared rim.

23. CHIPPED STONE ARTIFACTS FROM 25BD2

a A chipped celt of gray-green quartzite.

b A large chipped knife of gray-green quartzite.

c A leaf-shaped knife or gray flint.

d A four-sided knife of light pink quartzite.

e A four-sided, alternate beveled knife of dark brown chalcedony.

f A drill of gray quartzite with an unfinished butt end.

g A graver or drill of white chalcedony.

h A typical Plains snub-nosed end scraper. This is of mottled flint.

24. SPECIMENS FROM 25BD4

- a A flared rim with a handle. The rim has a paddled cord surface finish and impressed diagonals on the lip.
- b A braced rim with horizontal bands incised over a paddled cord surface finish.
- c A direct rim showing the inside rim verticals.
- d A plain direct rim.
- e A gray quartzite knife fragment, chipped upon both faces.
- f A fragment of a badlands knife, chipped on both faces.
- g The tip of an alternate beveled knife made from a dark quartzite.
- h A jasper flake with fine retouching on the edges.

25. SITE 25BD1 IN 1950

- Fig. 1 A view looking in a westerly direction showing the 1950 condition of the Stewart area trenches dug in 1936. The weedy ground cover along the trenches contrasts with the coarse grasses of the rest of the pasture.
- Fig. 2 A view across the field north of the trenches dug in 1936 looking northwest toward the farmstead of the Jehorek area. The trees to the right grow along the bluff of the tributary to Whiskey Creek.

26. WHISKEY CREEK VALLEY

- Fig. 1 This view was taken from the east side of the town of Lynch on the east side of Whiskey Creek. The trees in the background are on the west side of the tributary to Whiskey Creek. Site 25BD1 is on the top of the point of land.
- Fig. 2 This view shows the profile of the point of land between Ponca and Whiskey Creeks. The site is on the rise in the background.



Fig. 1

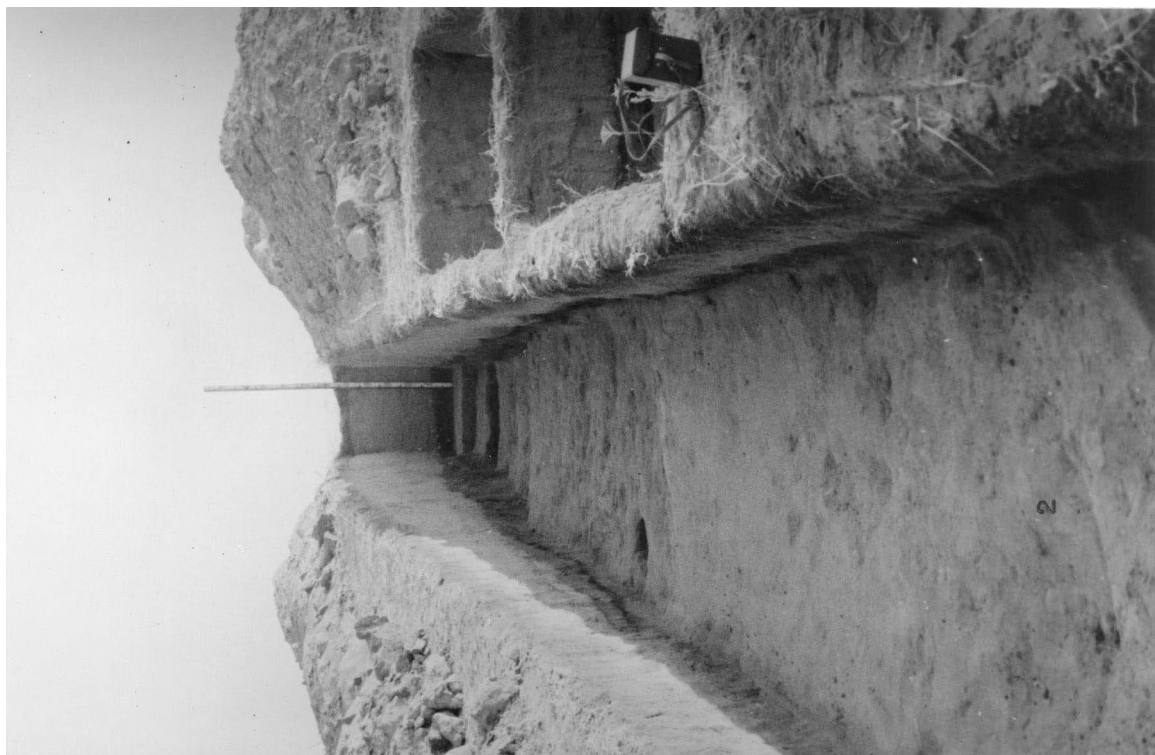


Fig. 2

VIEWS OF SITE 25BD1



EXCAVATIONS ON 25BD1 IN 1936



TRENCHES S1 AND S3



Fig. 1



Fig. 2

THE NORTHERN END OF TRENCH S3



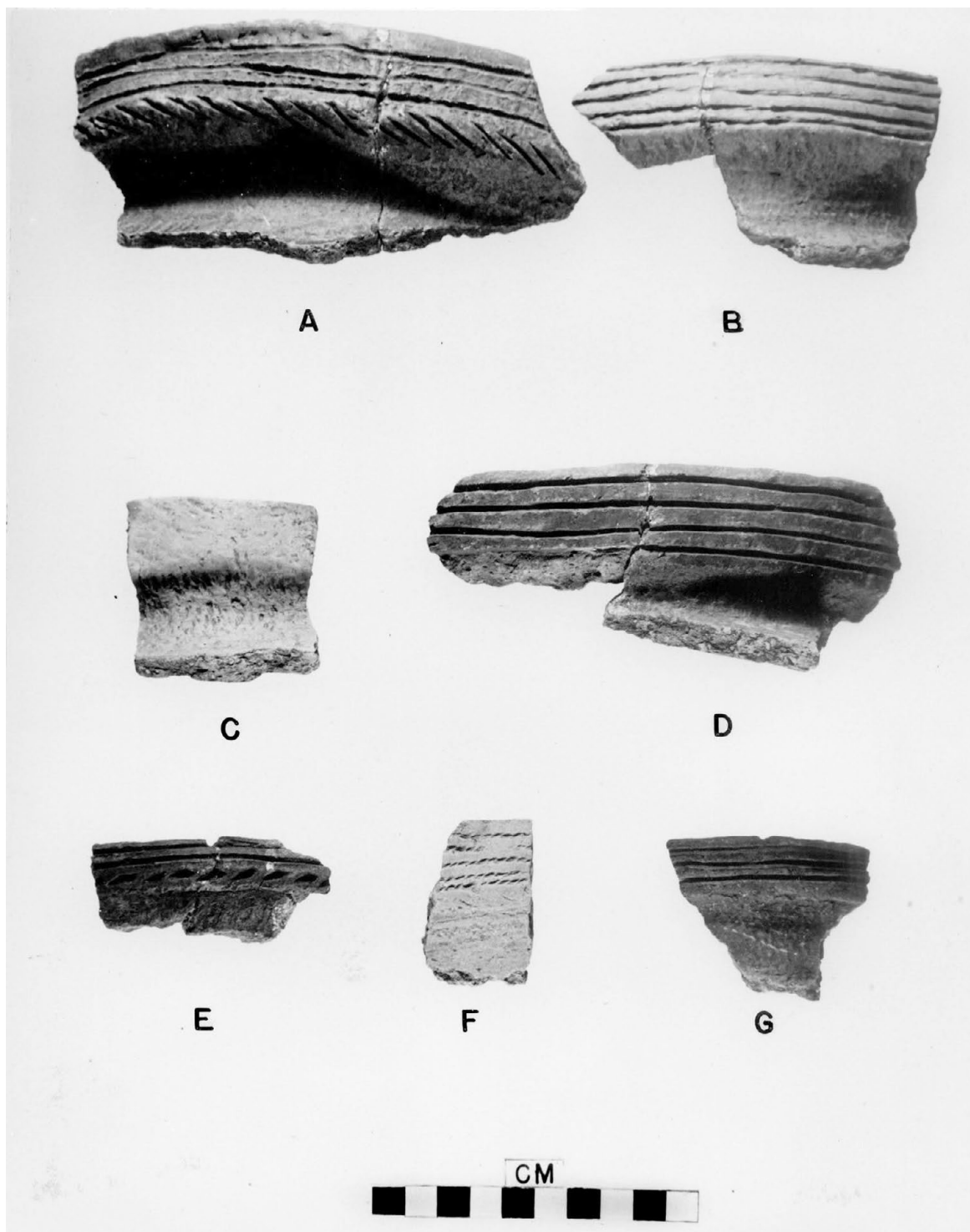
TRENCHES OF THE STEWART AREA



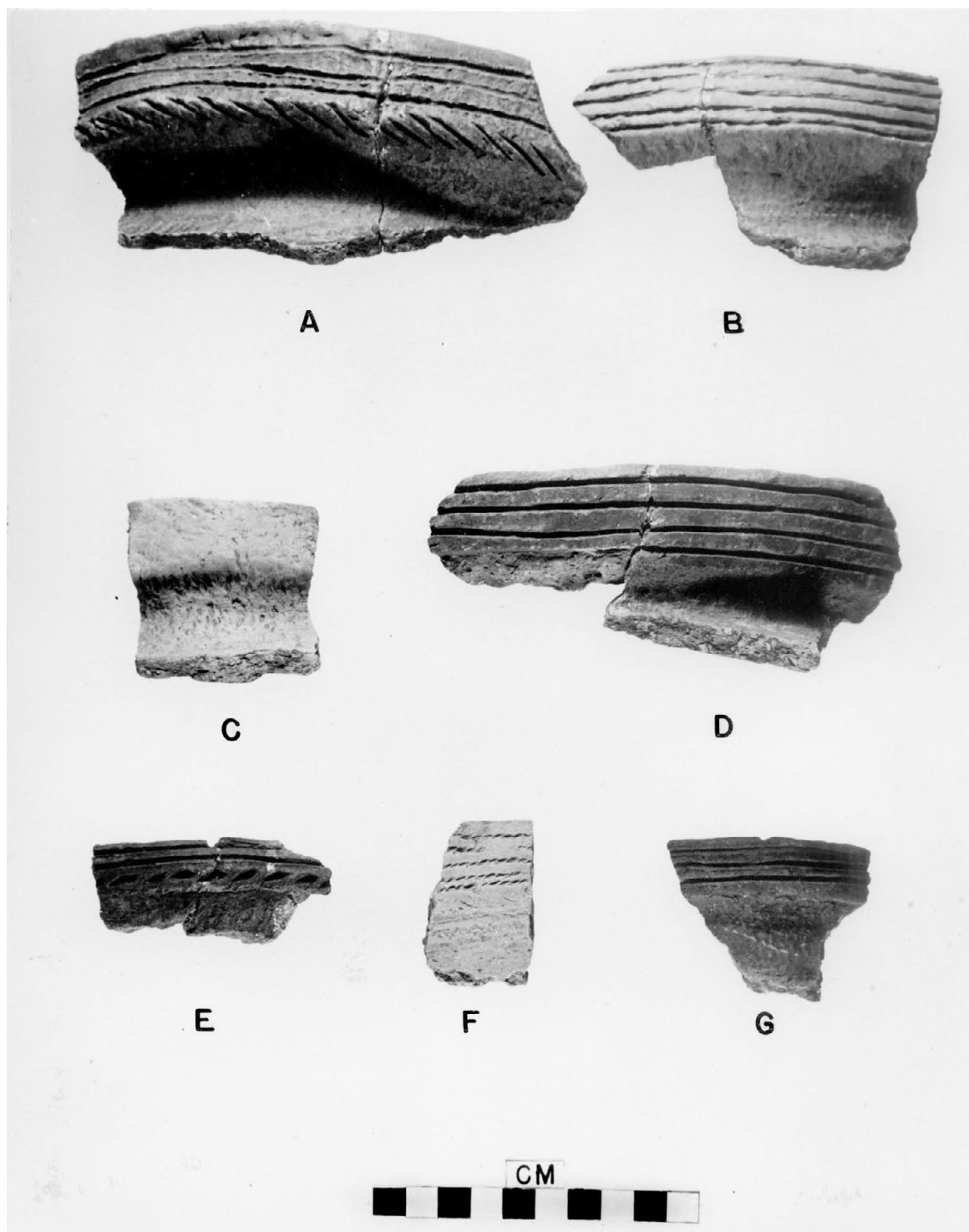
CONCENTRATIONS OF MATERIAL AT 25BD1



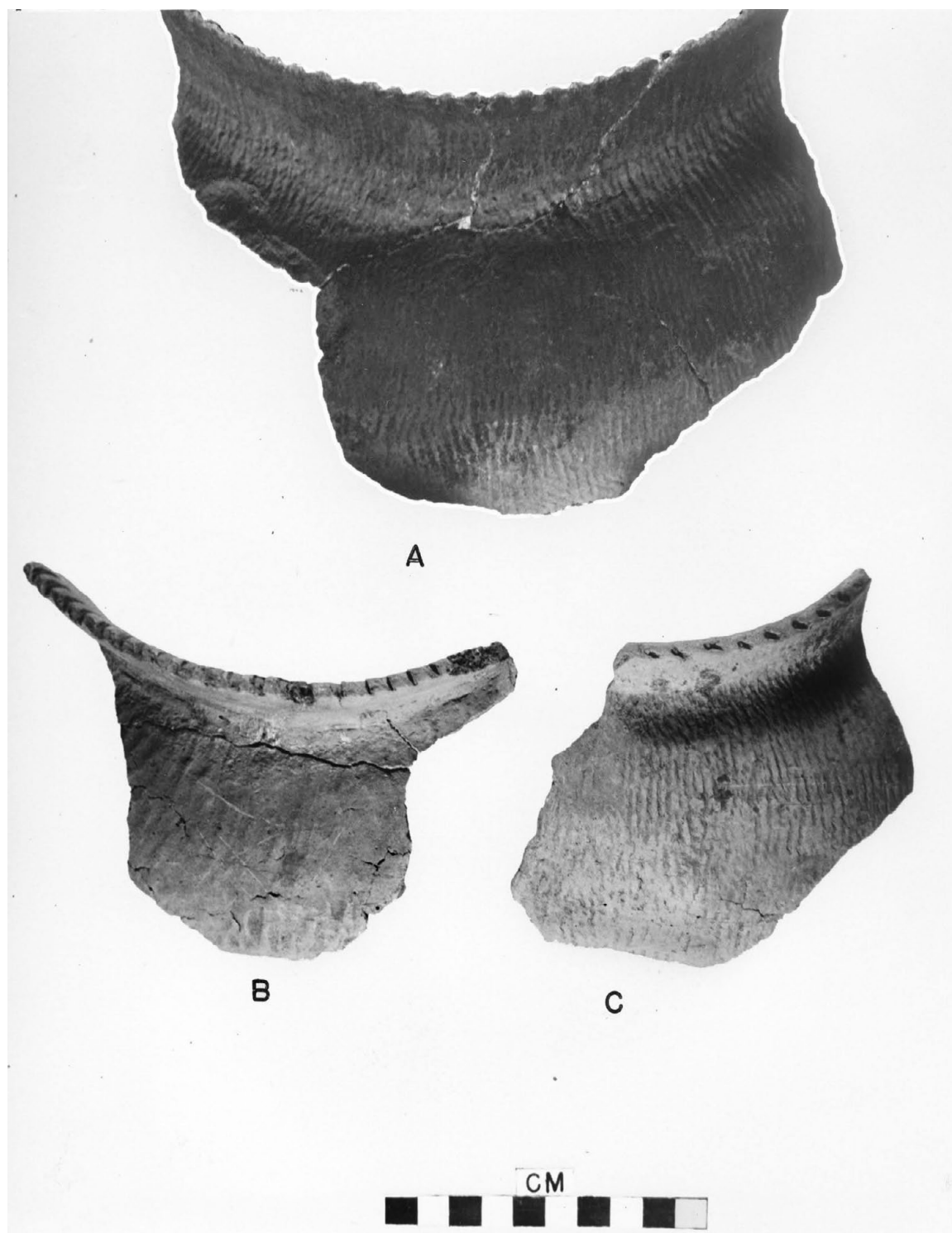
UPPER REPUBLICAN POT FROM 25BD1



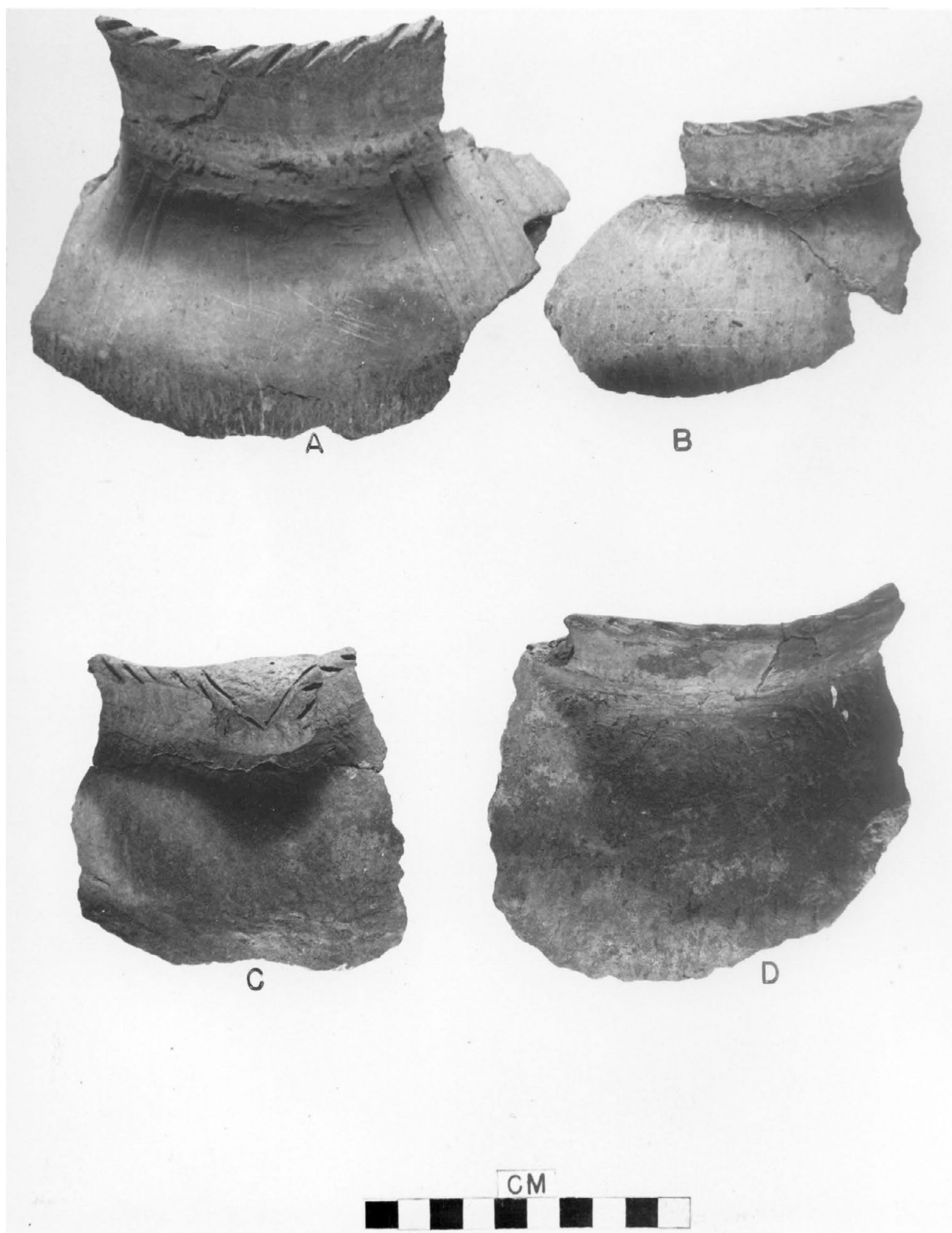
BRACED RIMS FORM A AND B FROM 25BD1



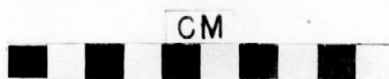
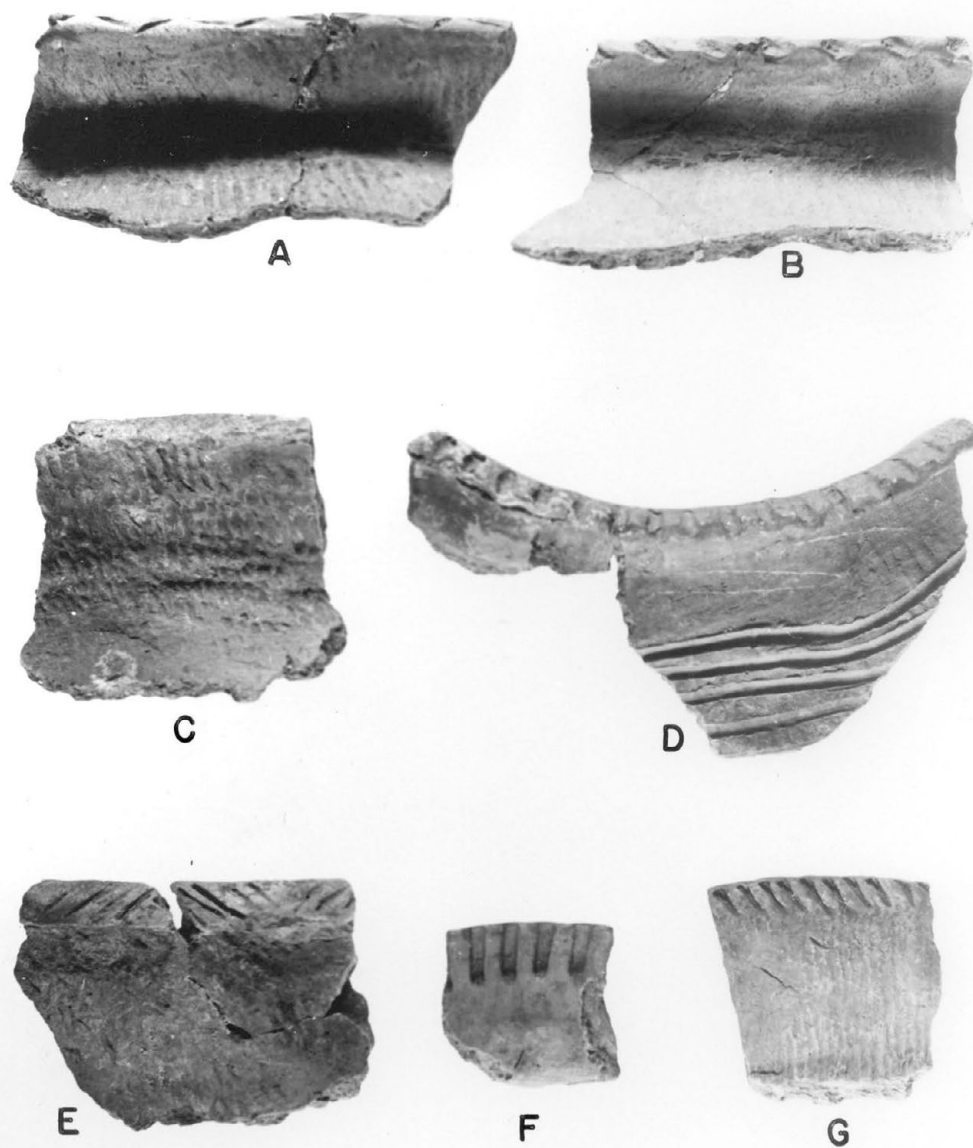
BRACED RIMS FORMS A AND B FROM 25BD1



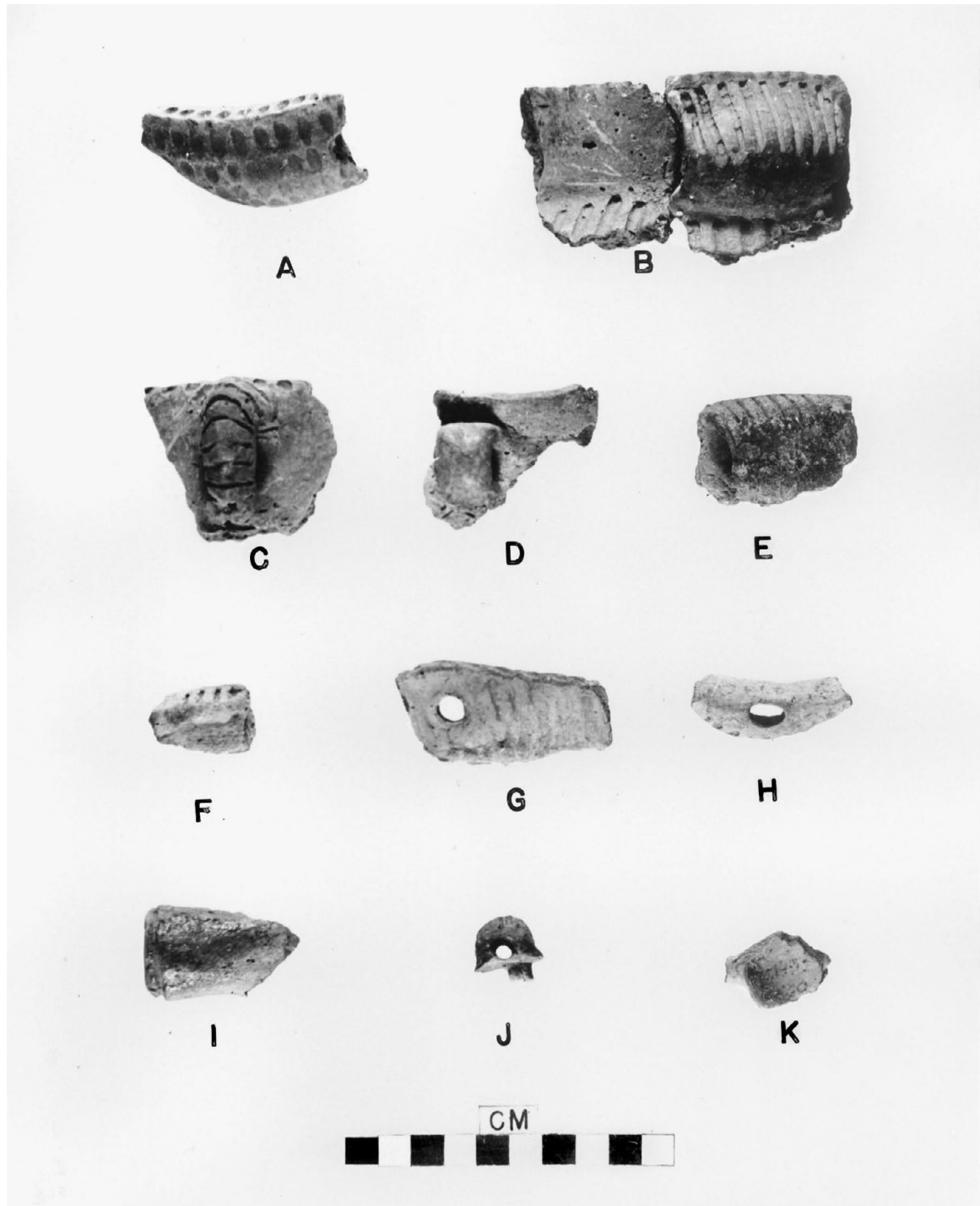
DIRECT RIMS FROM 25BD1



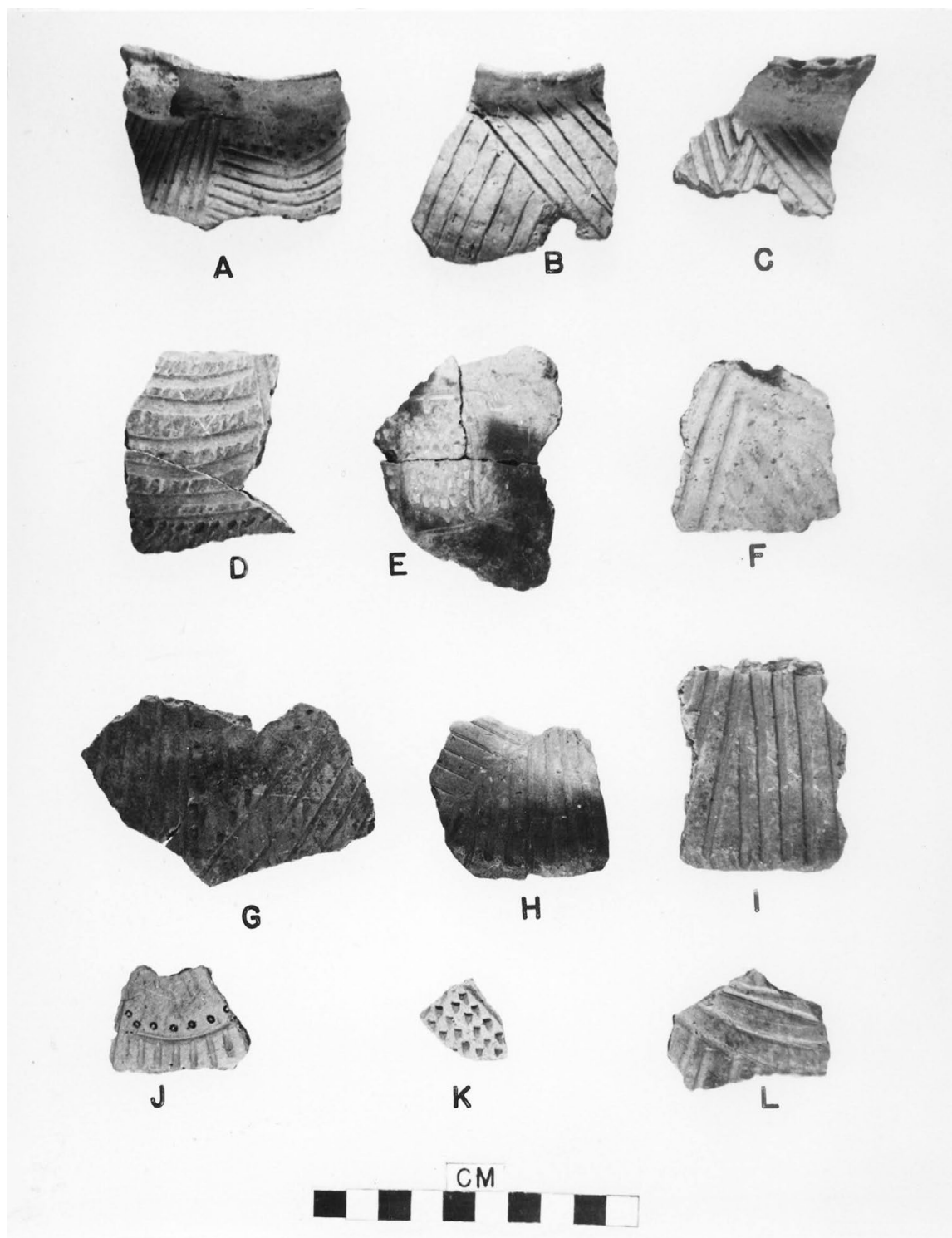
DIRECT RIMS FROM 25BD1



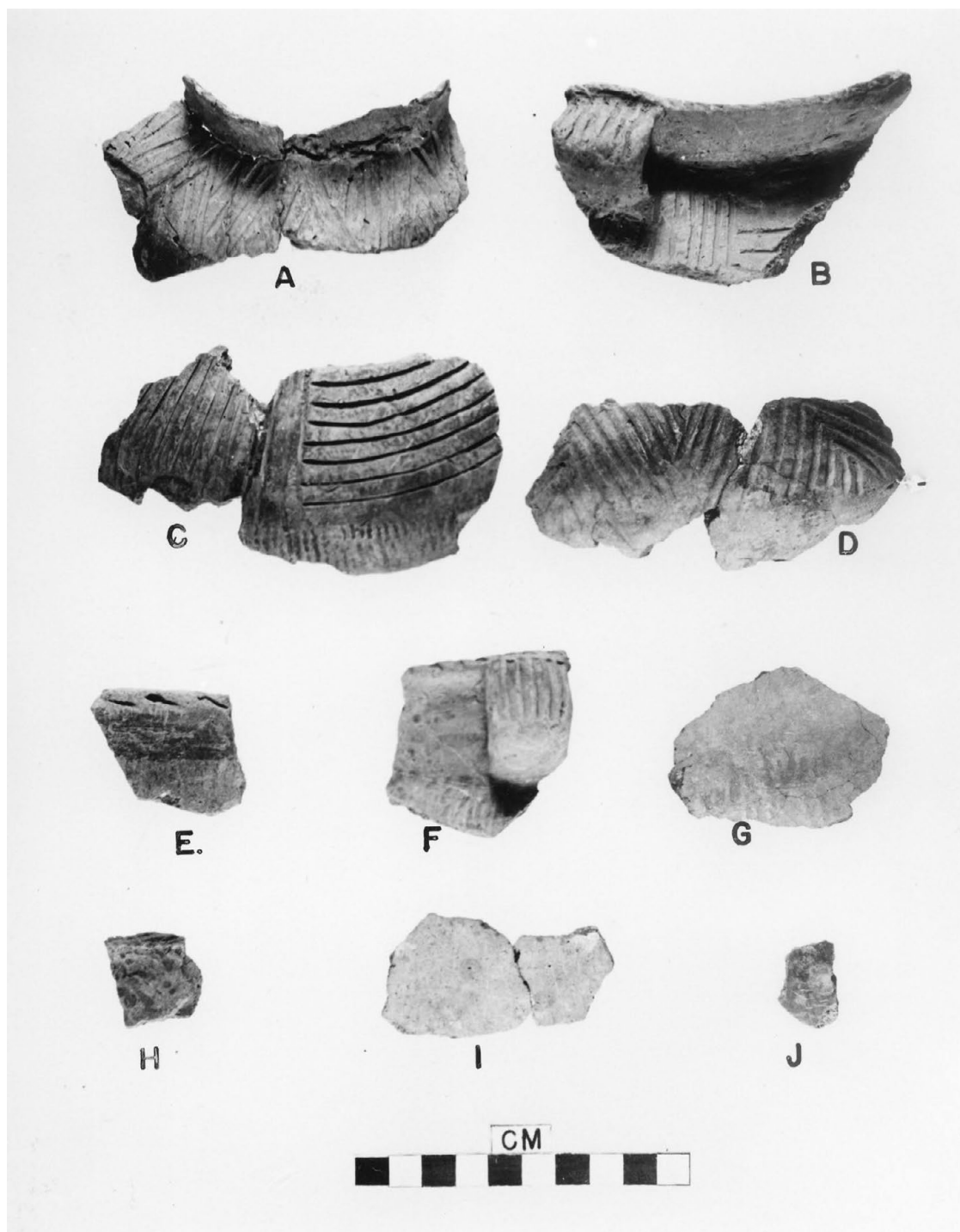
FLARED AND OTHER RIMS FROM 25BD1



CERAMIC SPECIMENS FROM 25BD1



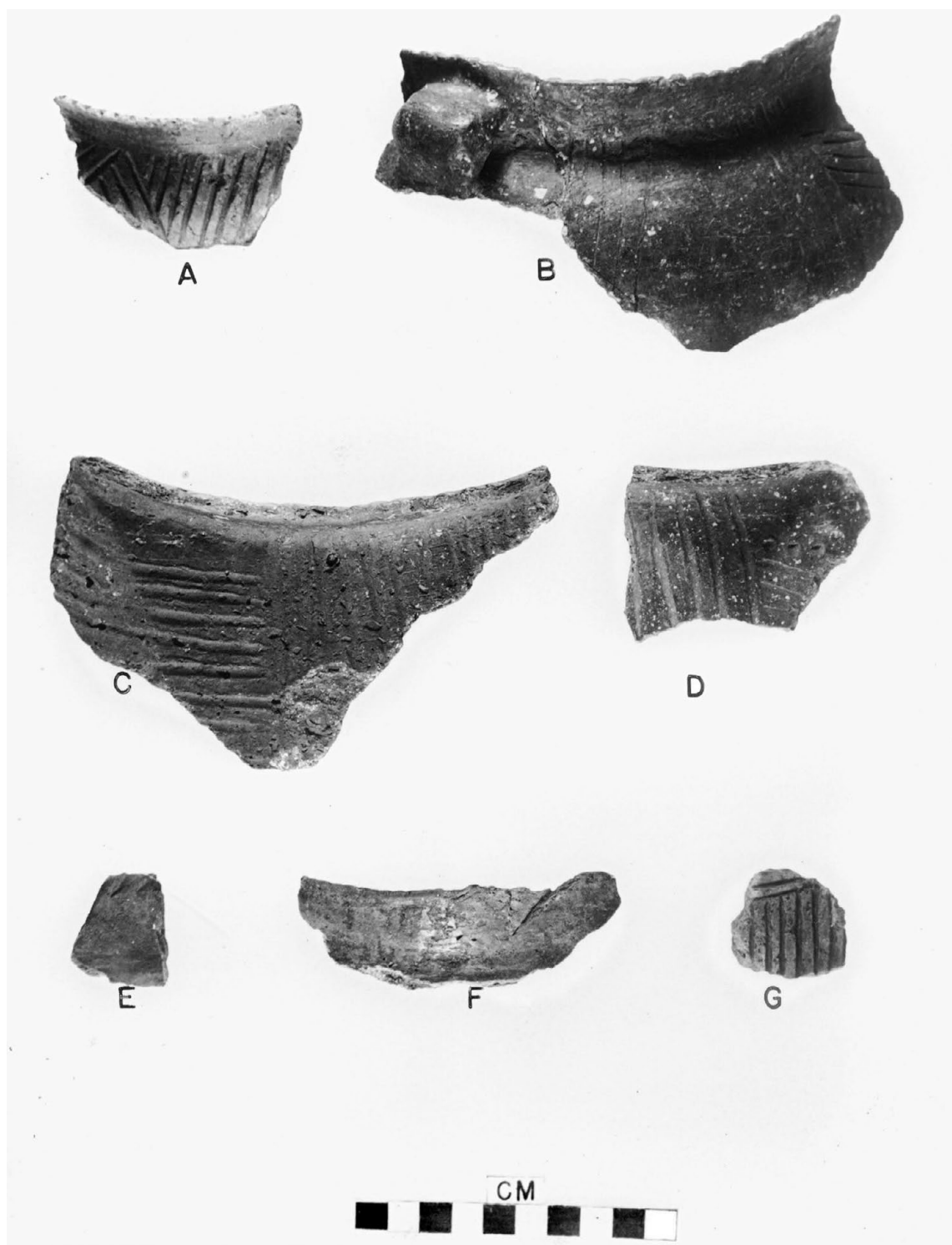
INCISED SHOULDER AREA SHERDS FROM 25BD1



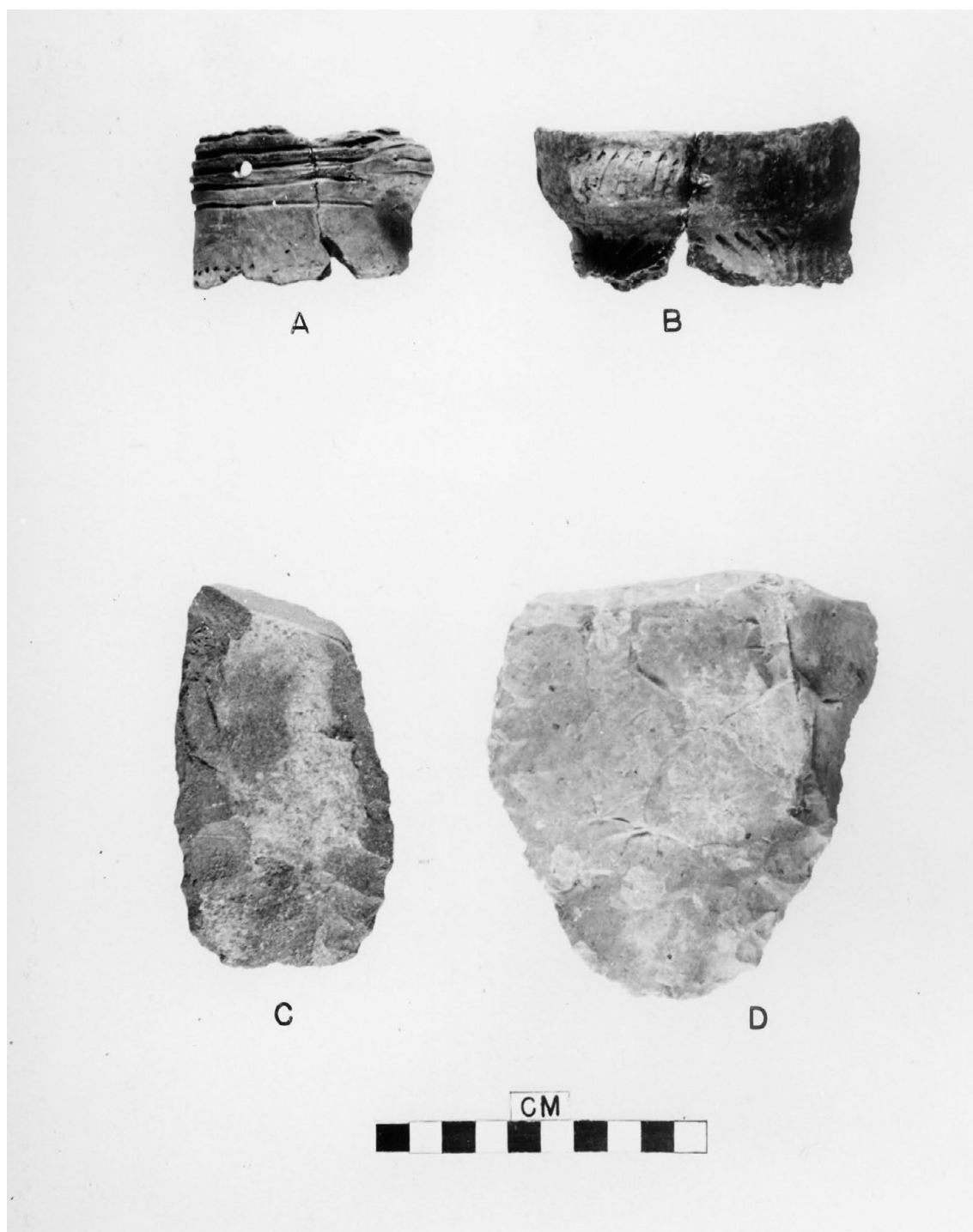
INCISED AND PAINTED SHERDS FROM 25BD1



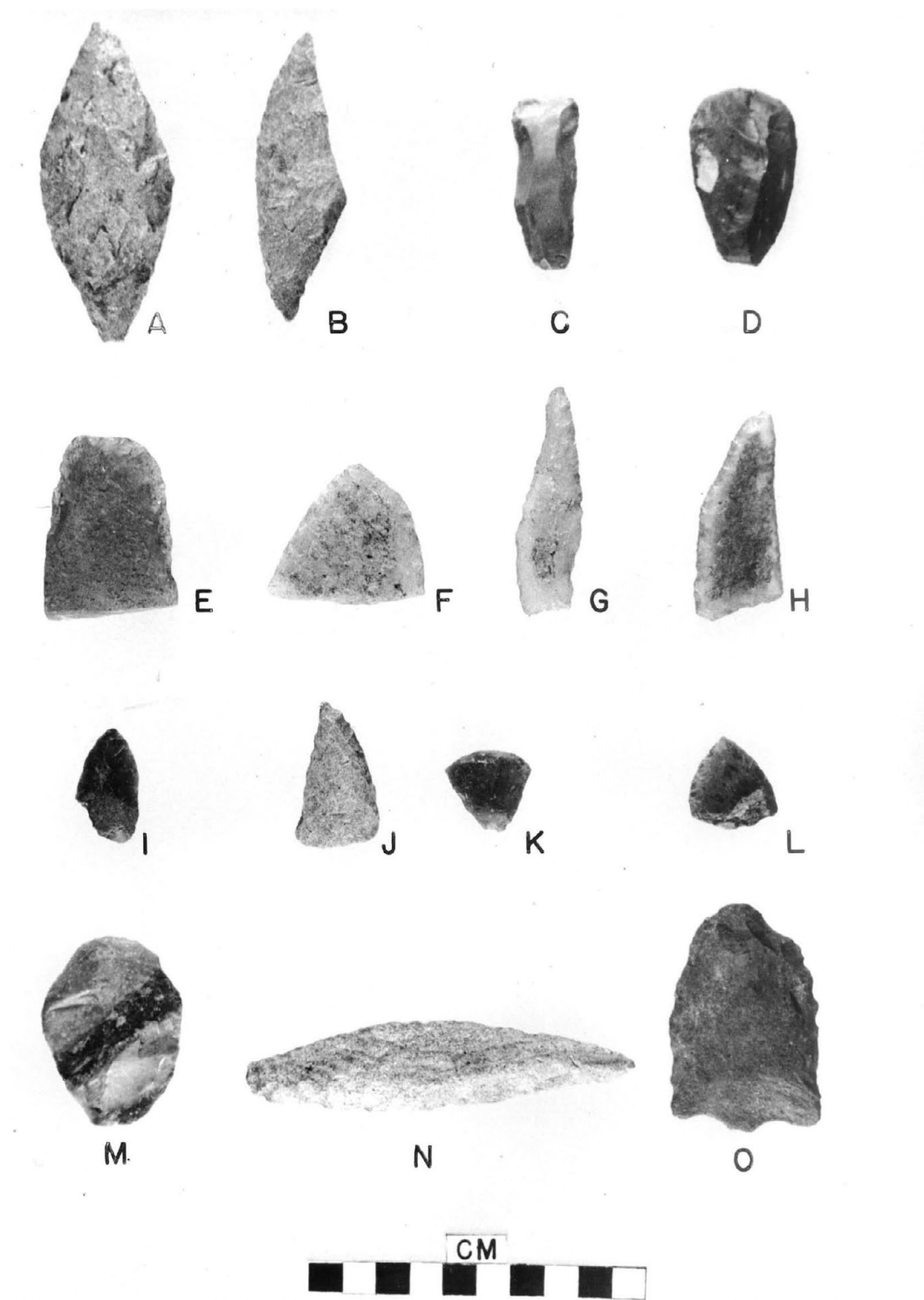
POT FROM 25BD1 DECORATED IN THE ONEOTA TRADITION



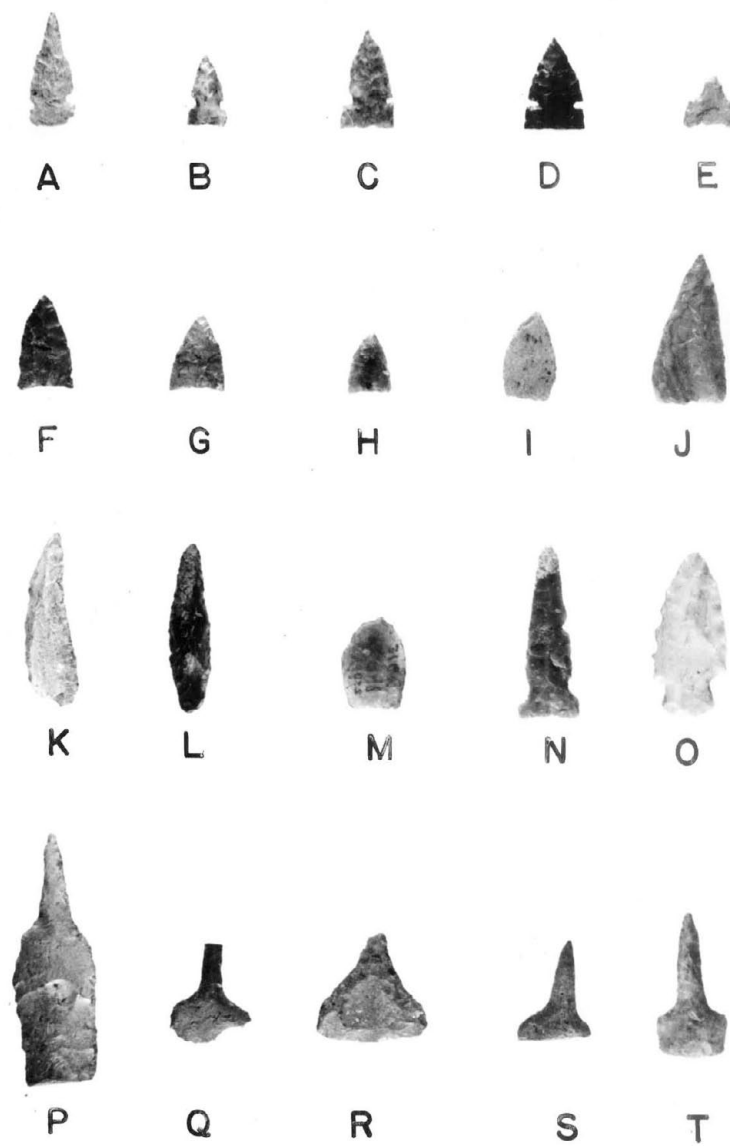
ONEOTA POTTERY FROM 25BD1



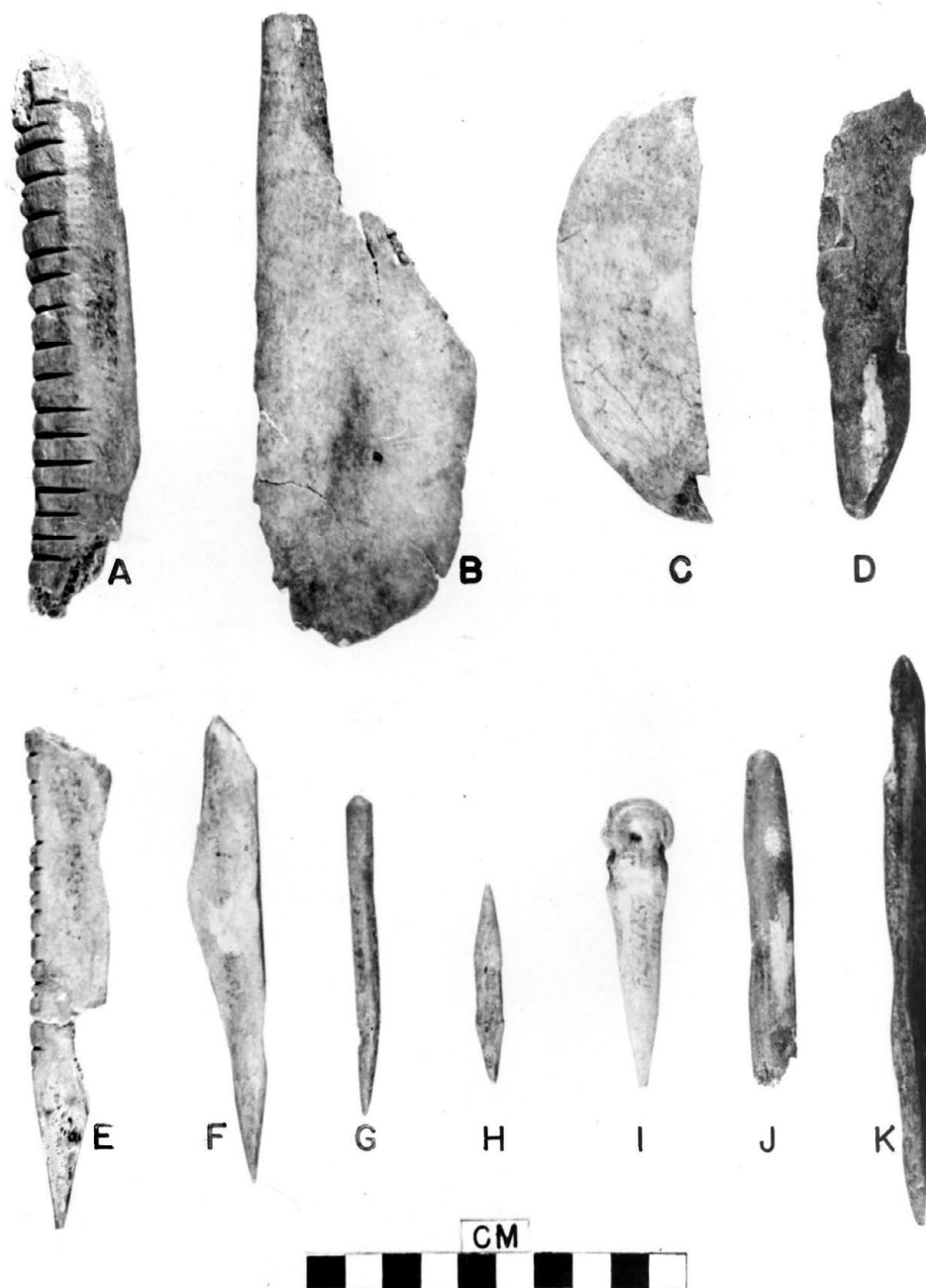
POTTERY AND CHIPPED STONE FROM 25BD1



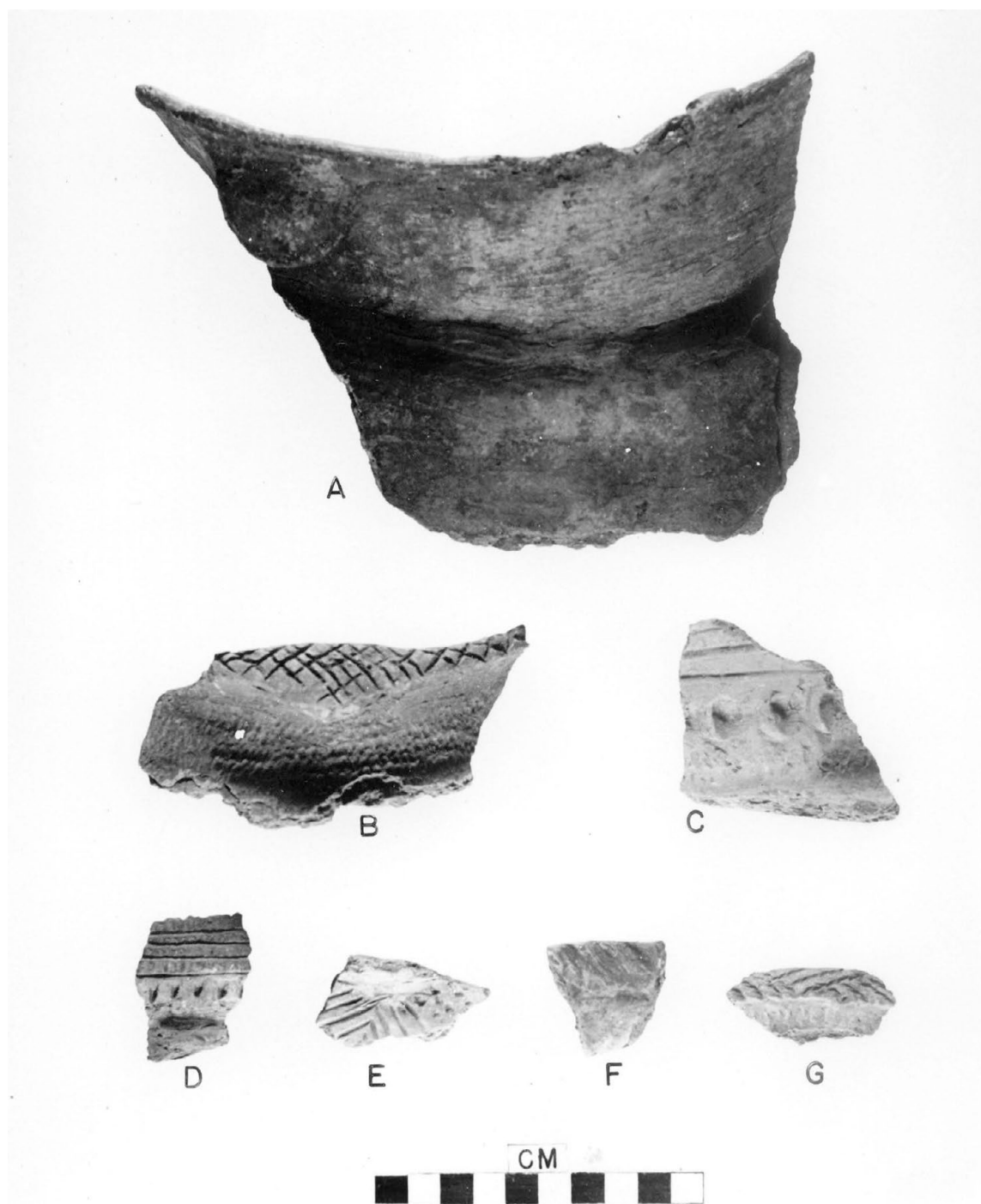
CHIPPED STONE ARTIFACTS FROM 25BD1



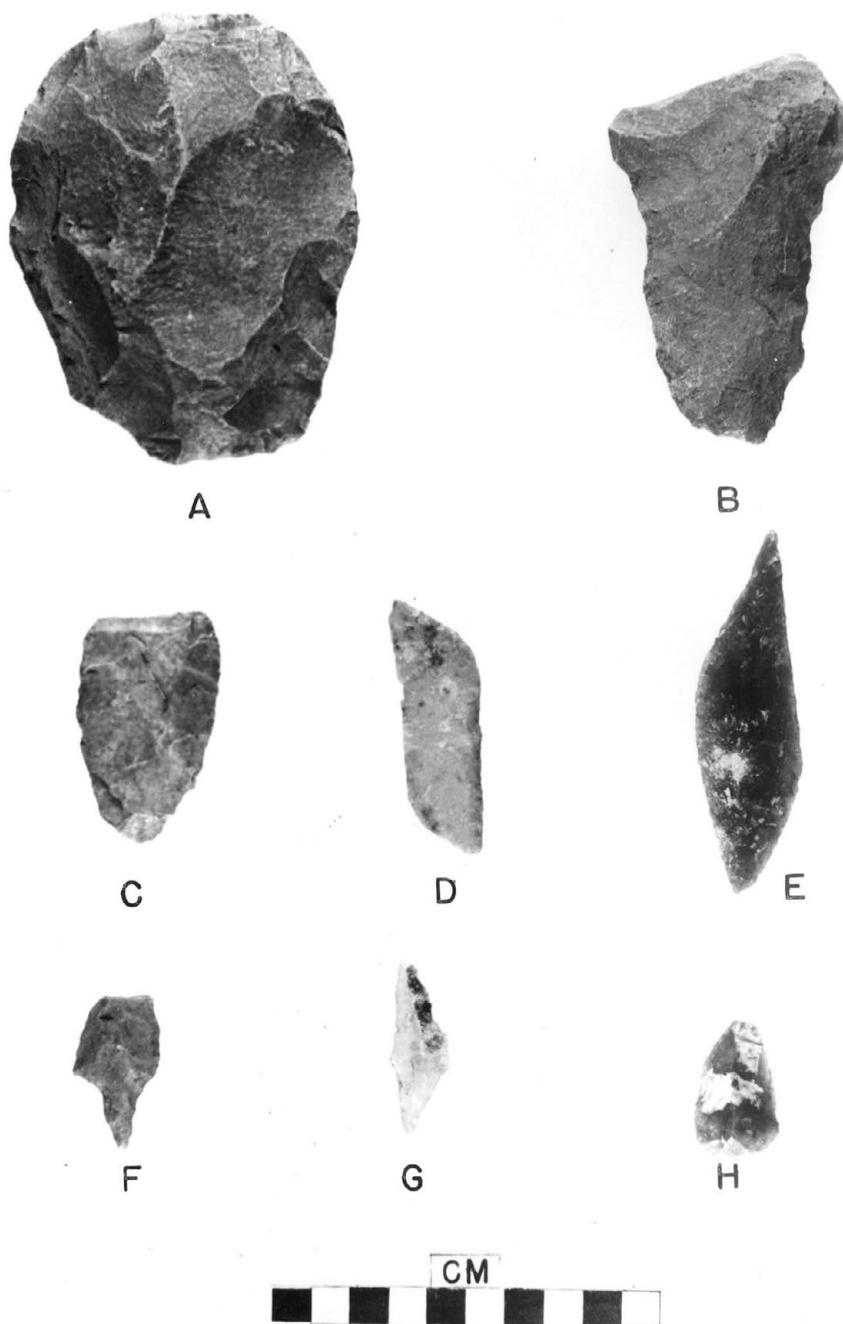
DRILLS, GRAVERS, AND POINTS FROM 25BD1



BONE ARTIFACTS FROM 25BD1



POTTERY FROM 25BD2



CHIPPED STONE ARTIFACTS FROM 25BD2



A



B



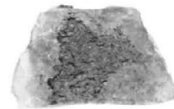
C



D



E



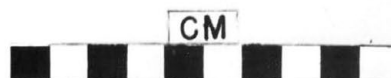
F



G



H



SPECIMENS FROM 25BD4



Fig. 1



Fig. 2

SITE 25BD1 IN 1950



Fig. 1



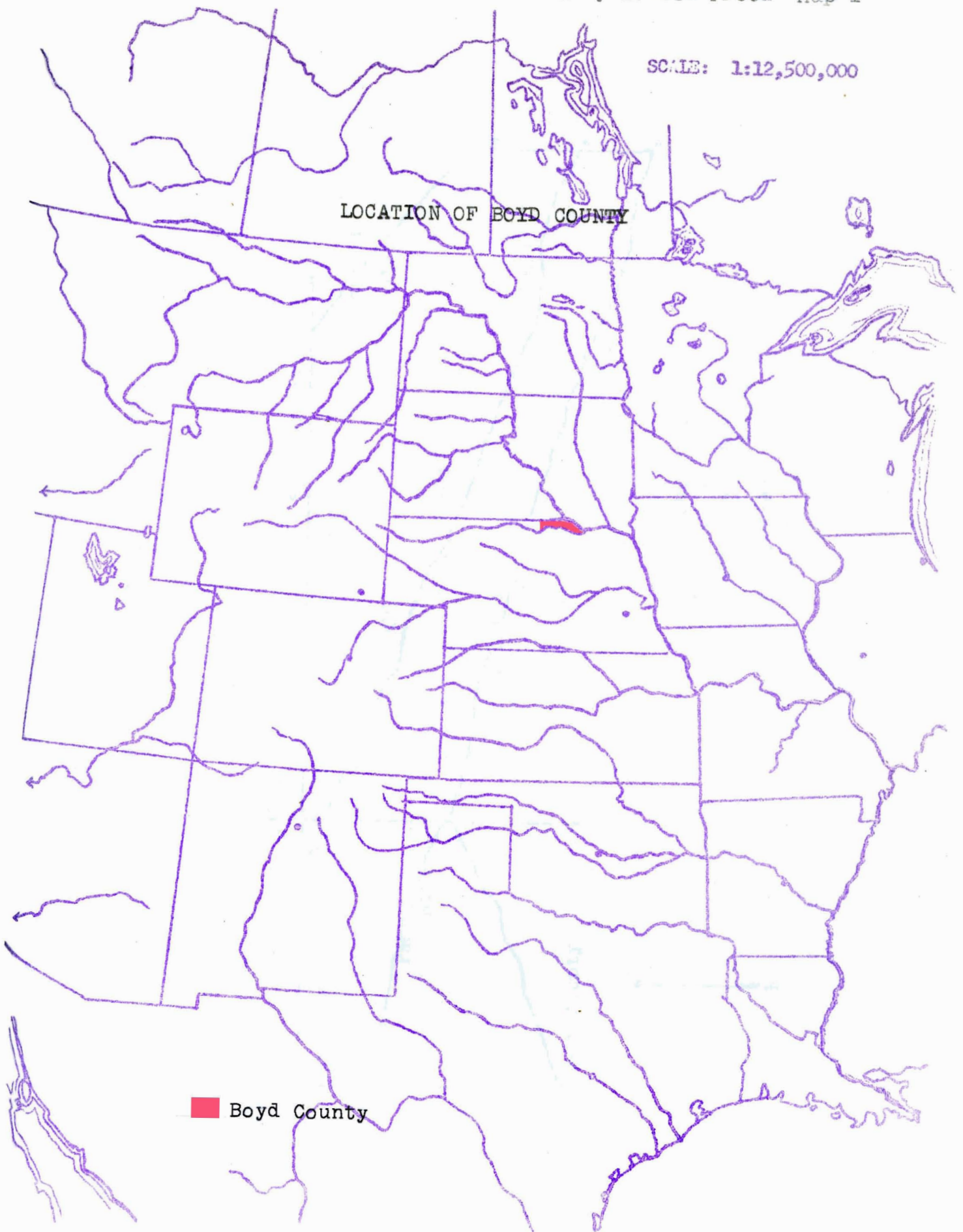
Fig. 2

WHISKEY CREEK VALLEY

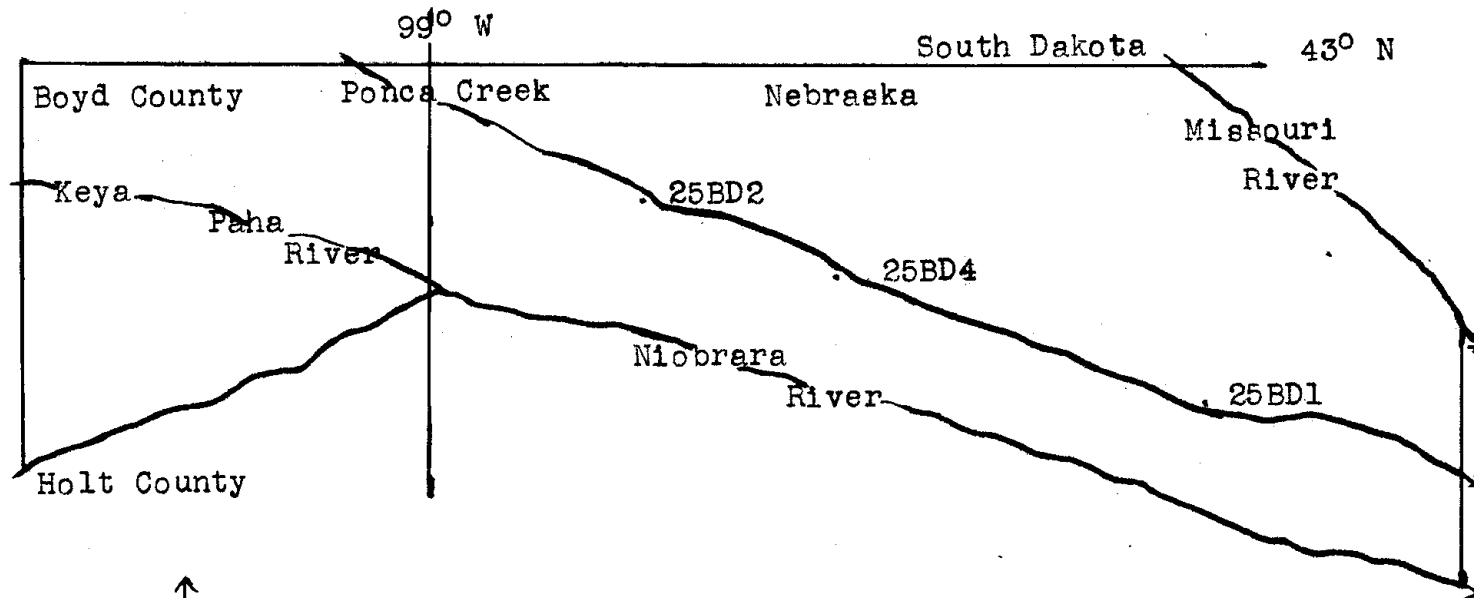
SCALE: 1:12,500,000

LOCATION OF BOYD COUNTY

■ Boyd County



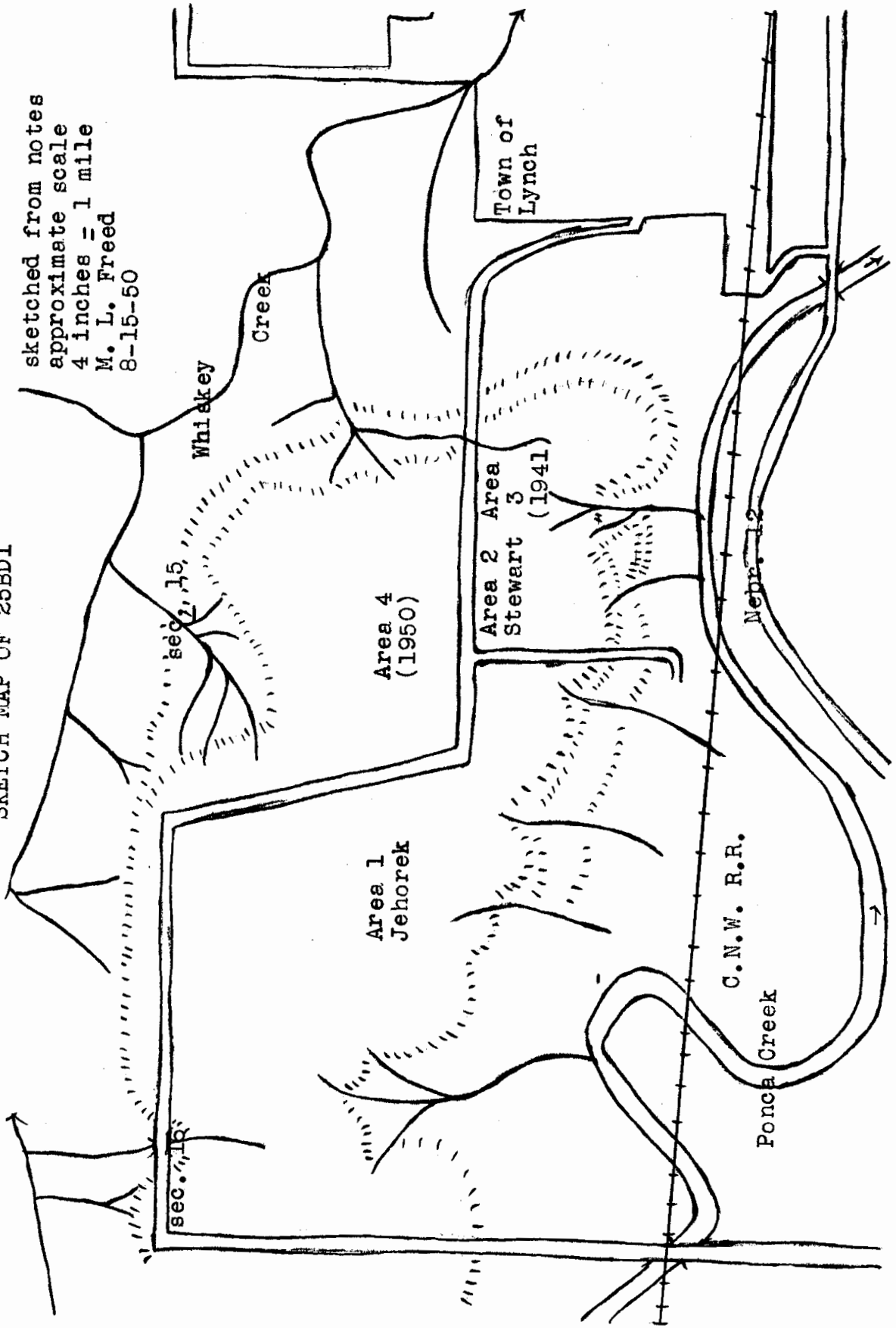
SKETCH MAP SHOWING SITES IN BOYD COUNTY



Boyd focus sites in
Boyd County
Approximate scale
1 inch = 6.5 miles
M. L. Freed
9-29-54

SKETCH MAP OF 25BD1

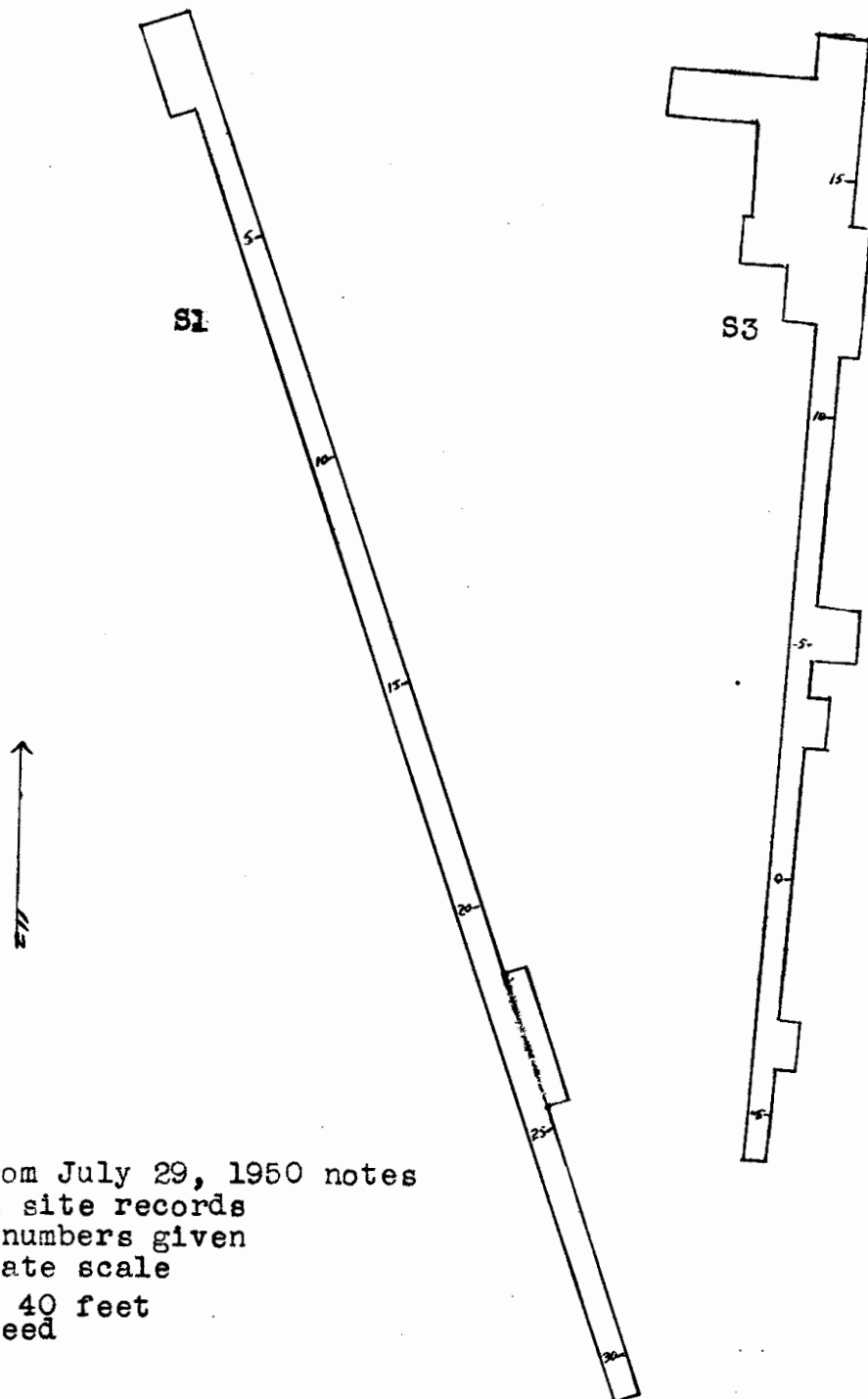
sketched from notes
approximate scale
4 inches = 1 mile
M. L. Freed
8-15-50





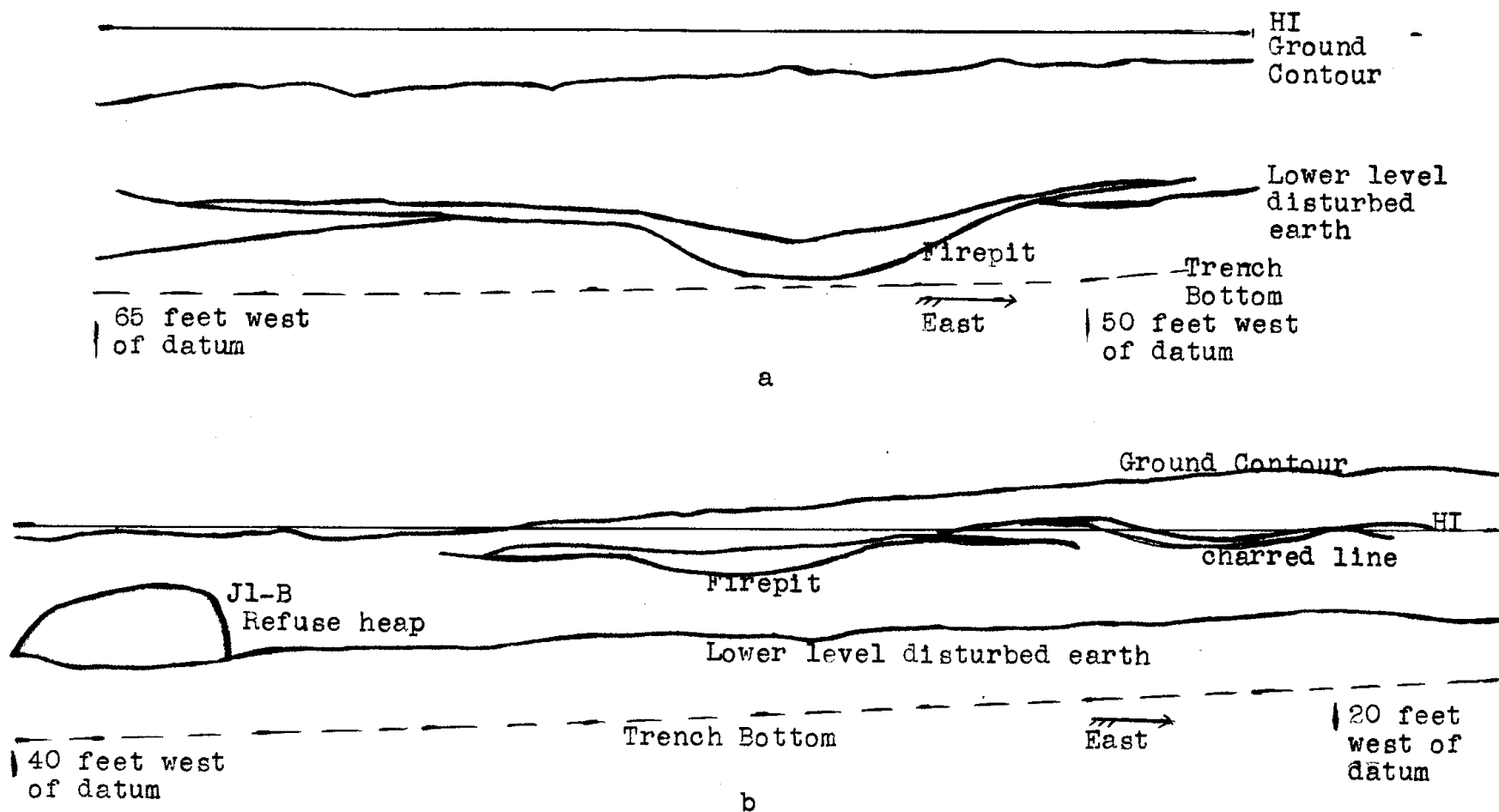
TOPOGRAPHY OF 25BD1
Scale - approximately 3 in. to 1 mi.

POSITIONS OF TRENCHES S1 AND S3

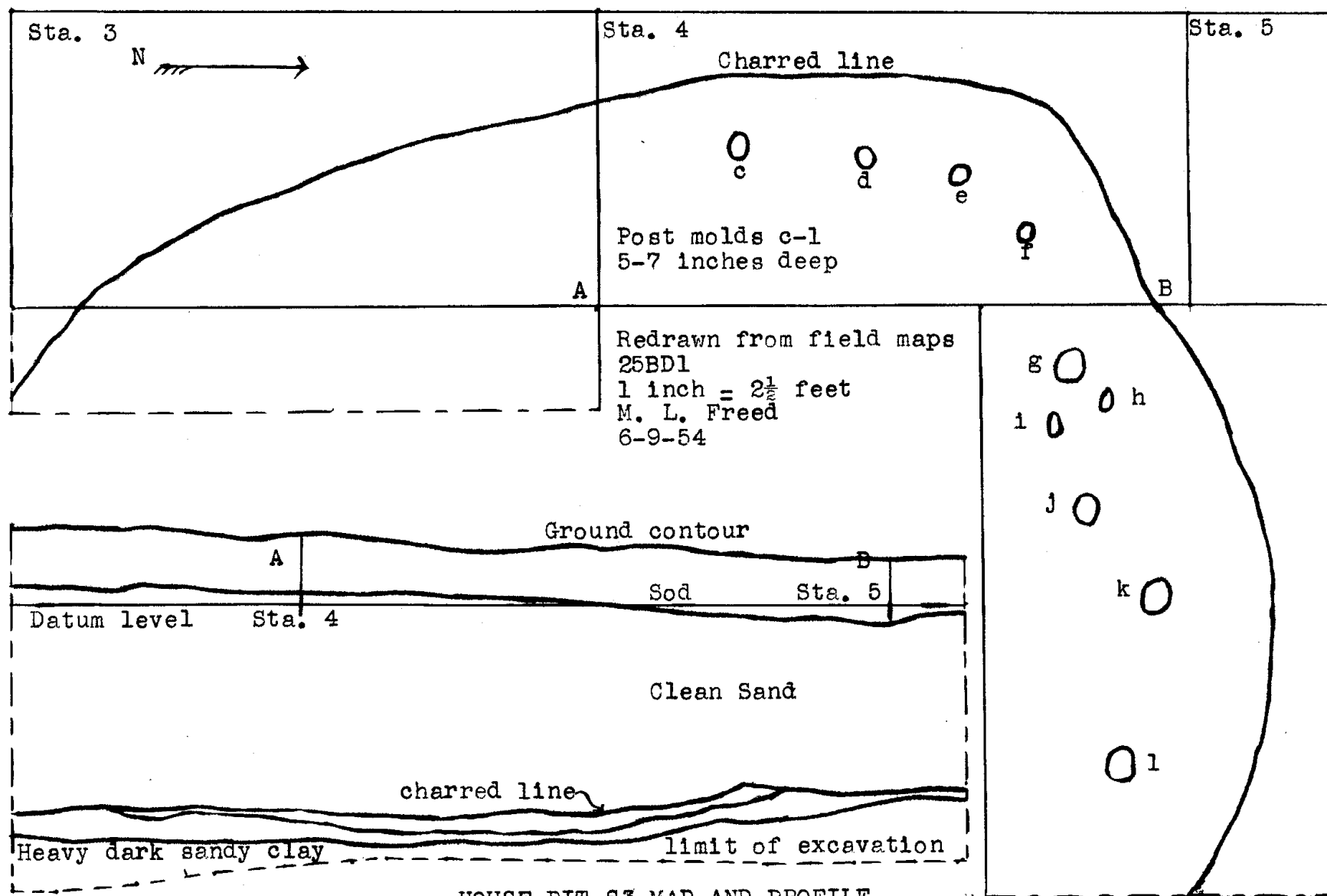


Drawn from July 29, 1950 notes
and from site records
Station numbers given
Approximate scale
1 inch = 40 feet
M. L. Freed
5-29-54

SECTIONS FROM THE PROFILE, NORTH WALL, J1

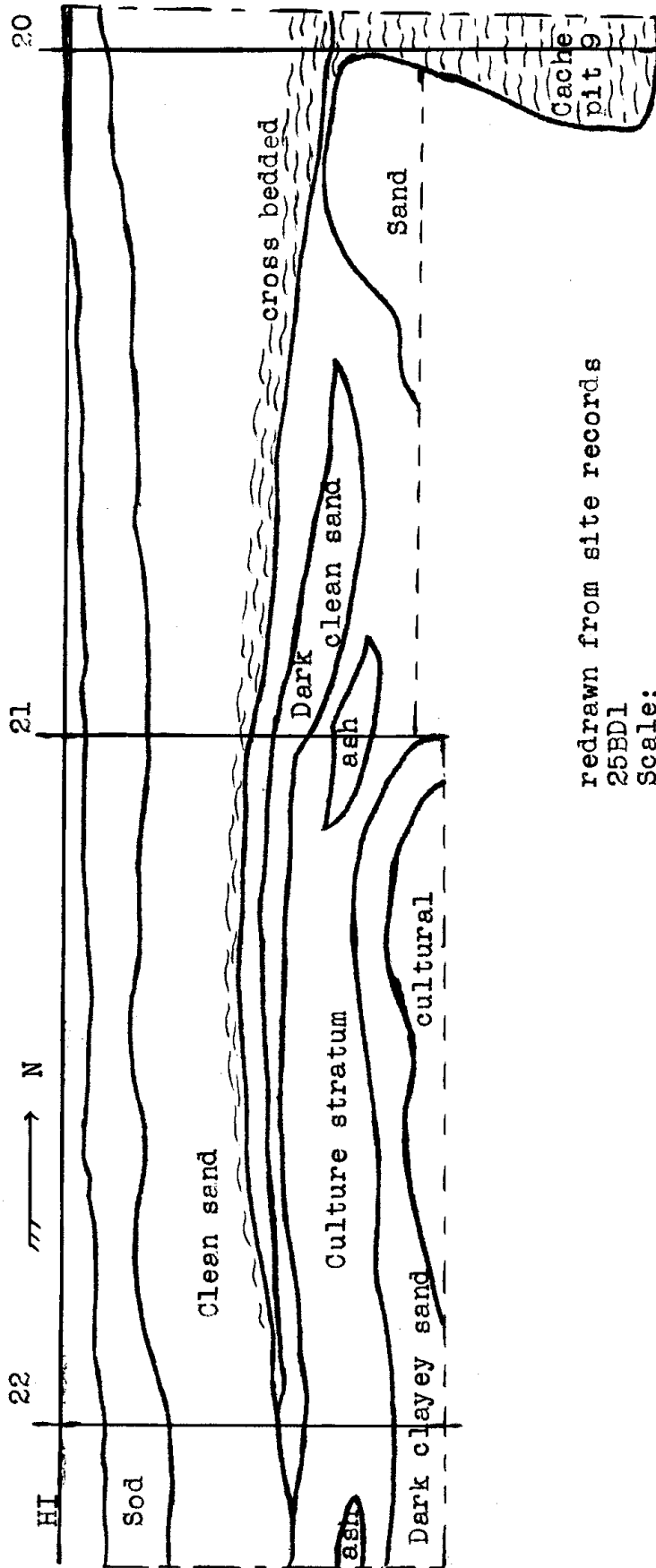


25BD1, Profile Sections J1
 Scale: 1 inch = 2½ feet
 Redrawn from site records
 M. L. Freed 5-4-54



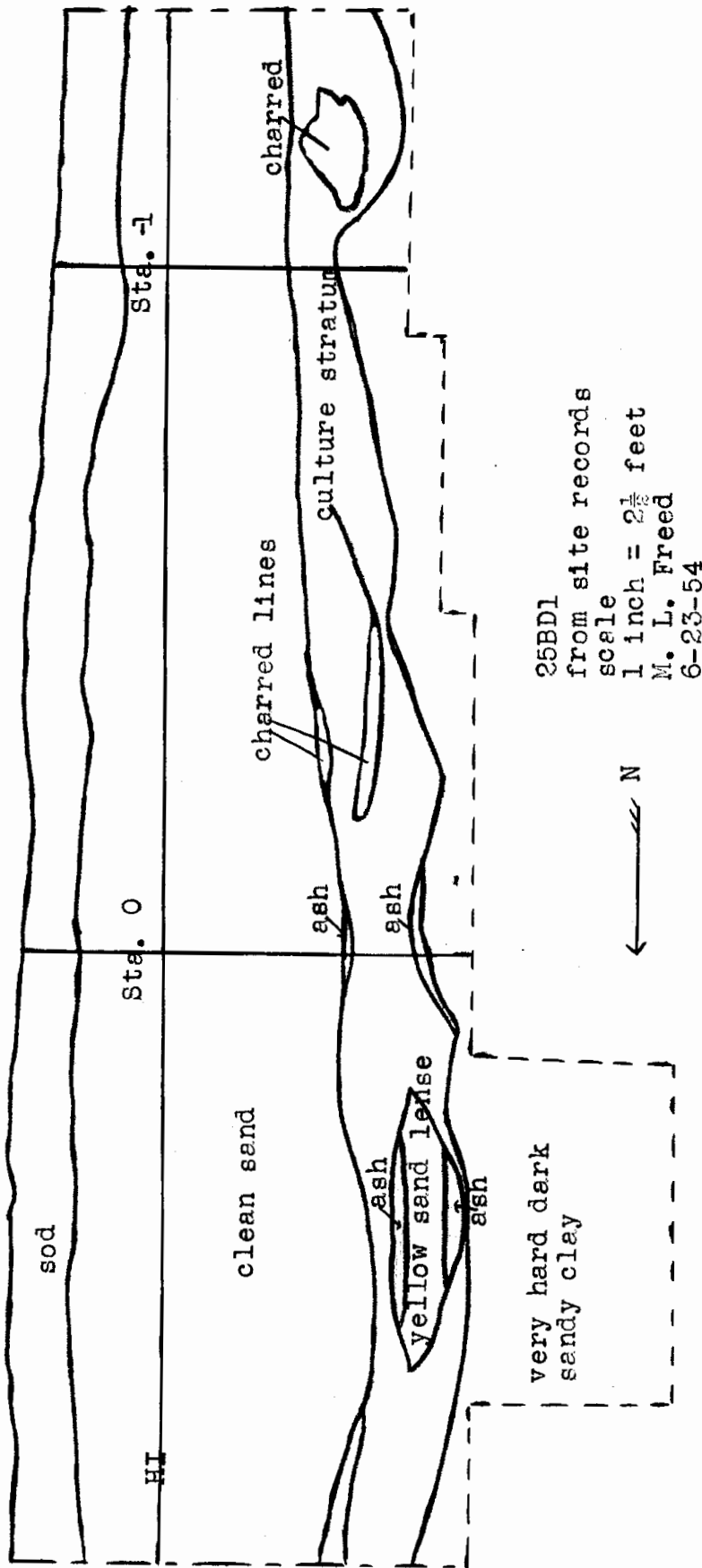
HOUSE PIT S3 MAP AND PROFILE

PROFILE OF THE WEST WALL, SL-20-22



redrawn from site records
 25BD1
 Scale: 1 inch = 2½ feet
 M. L. Freed
 6-22-54

PROFILE OF WEST WALL S3-O-1



KEY FIGURES 5-14


STONE

-  knives
-  scrapers
-  large chipped objects
-  small chipped objects
-  points
-  drills
-  gravers
-  ground stone
-  miscellaneous
-  stone, unworked















BONE

-  scapulae
-  scored ribs
-  knives
-  awls
-  miscellaneous

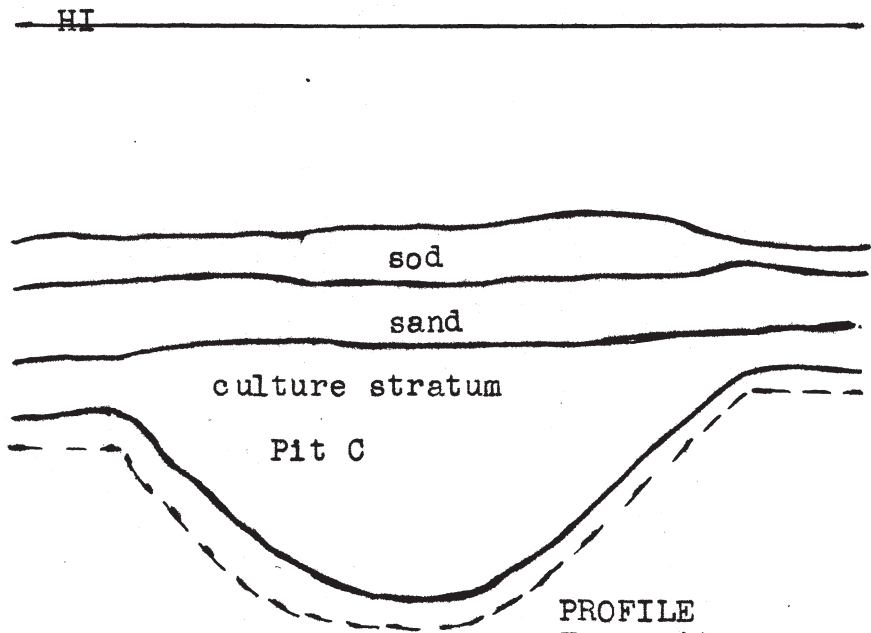
POTTERY

- | | |
|--|---|
|  direct rim |  Oneota rim |
|  direct rim, Boyd series |  Oneota shoulder |
|  direct rim, collared |  Oneota decorated shoulder |
|  braced rim, form A |  Oneota (?) decorated |
|  braced rim, form B |  Oneota (?) |
|  flaring rim |  handle fragment |
|  flaring rim, Boyd series |  mixed temper sherds |
|  decorated shoulder |  miniature fragment |

CONTENTS OF HOUSE PIT SECTIONS, S3

	SECTION			
	S3-4	S3-4e	S3-5e	house pit
CONTENTS				
Stone				
flint				
jasper			  	
quartzite				
badlands chalcedony				
Pottery				
				
				
				
				
				
				

BASIN PIT C AND CONTENTS

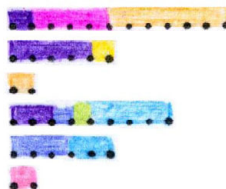


PROFILE
From site maps
Scale
1 inch = 2½ feet
M. L. Freed
6-17-54

CONTENTS

Stone

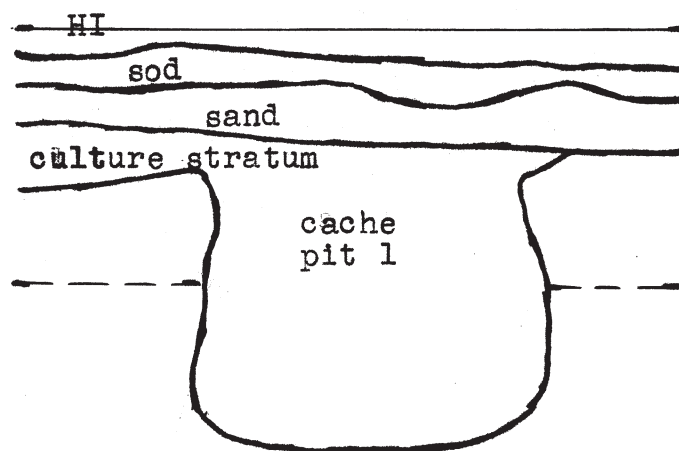
flint
jasper
chalcedony
quartzite
sandstone
miscellaneous



Pottery



CACHE PIT 1, S1, PROFILE AND CONTENTS



PROFILE
from site maps
scale
1 inch = $2\frac{1}{2}$ feet
M. L. Freed
6-17-54

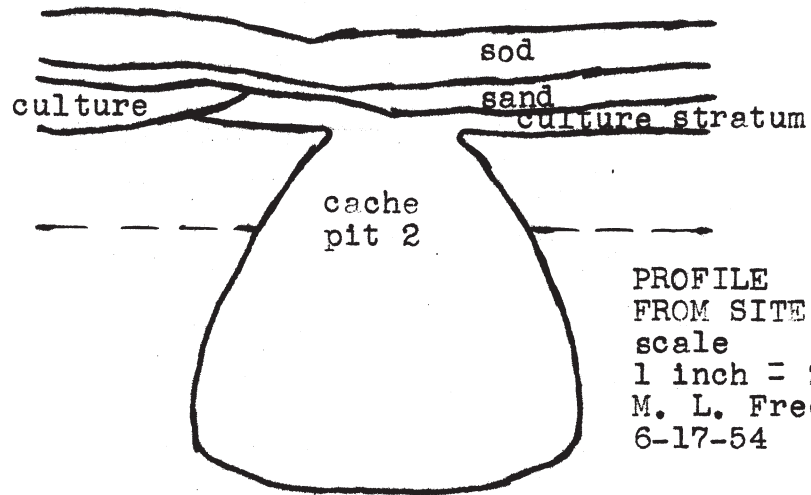
CONTENTS

Pottery
only



CACHE PITS AND CONTENTS, S1

HI



CONTENTS

Stone

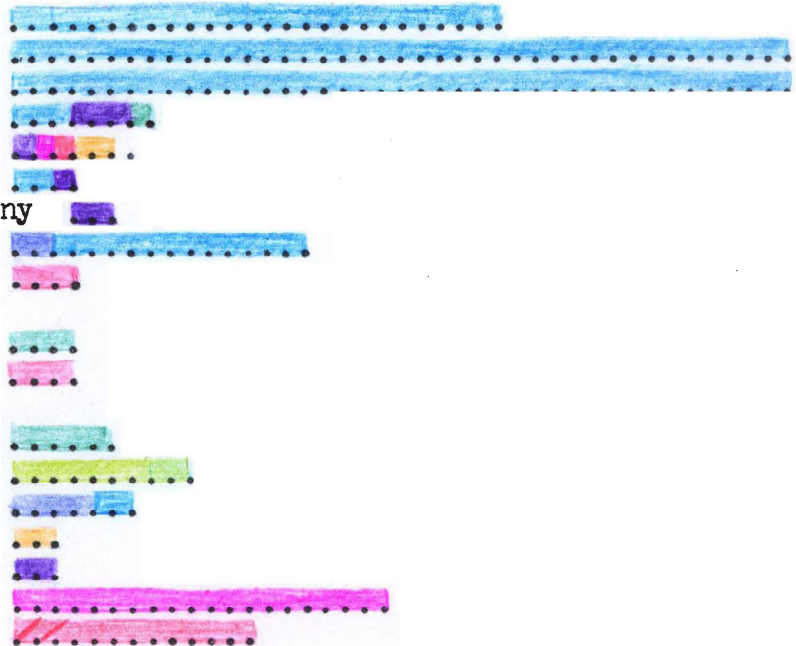
mixed flakes
quartzite

jasper
flint

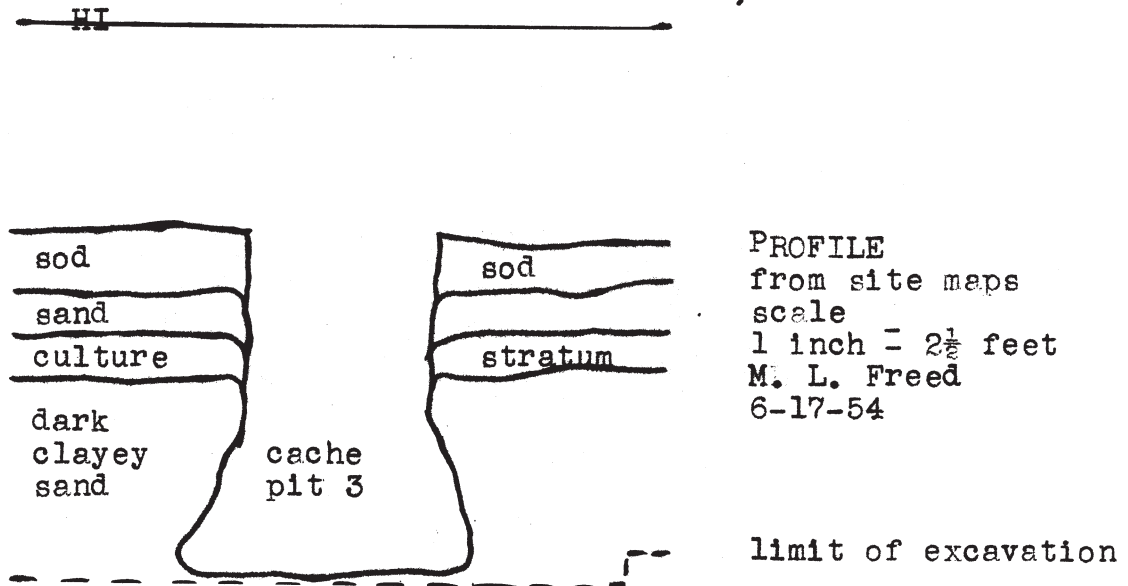
badlands chalcedony
sandstone
miscellaneous

Bone

Pottery



CACHE PIT 3 AND CONTENTS, S1



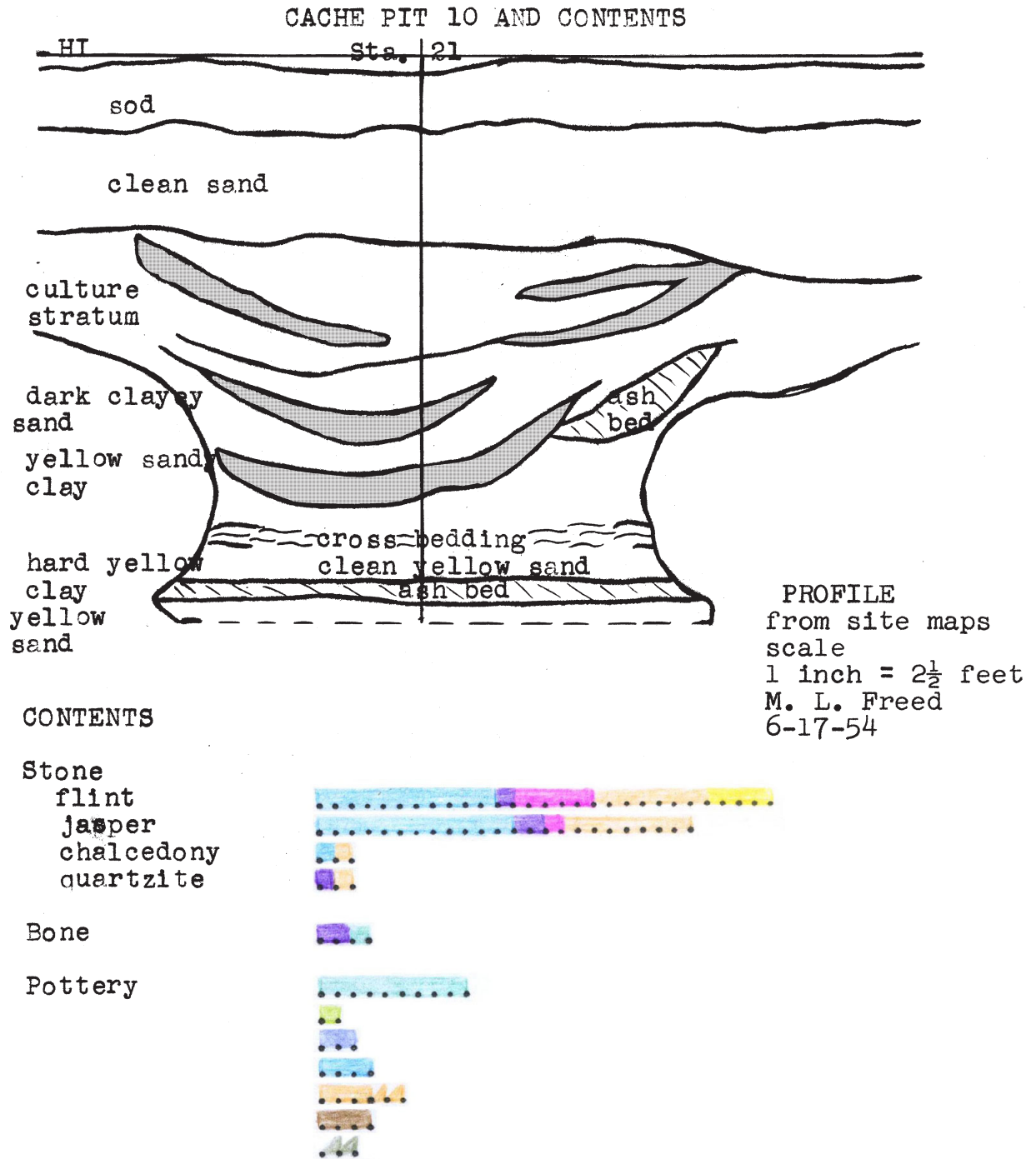
CONTENTS

Stone

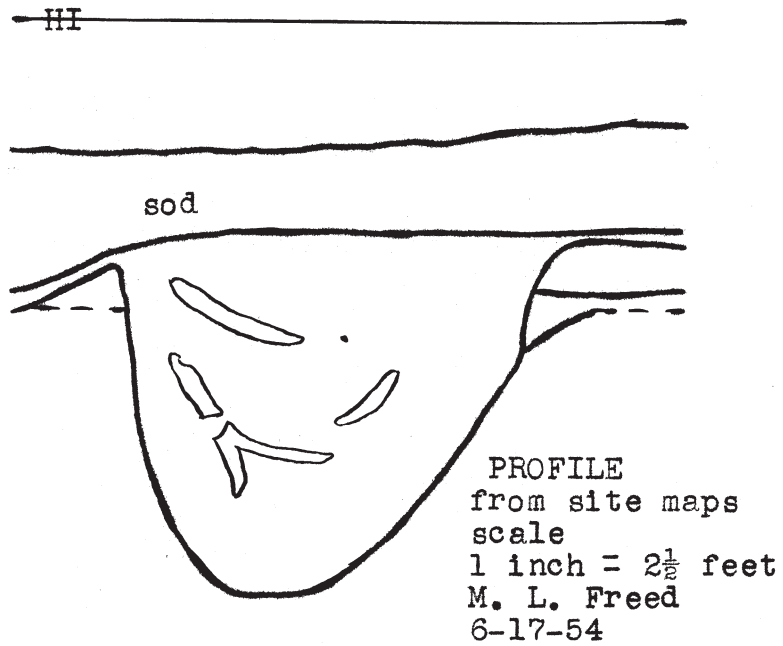
flint
jasper
quartzite
sandstone
badlands chalcedony

Pottery





CACHE PIT 13 AND CONTENTS, S1



CONTENTS

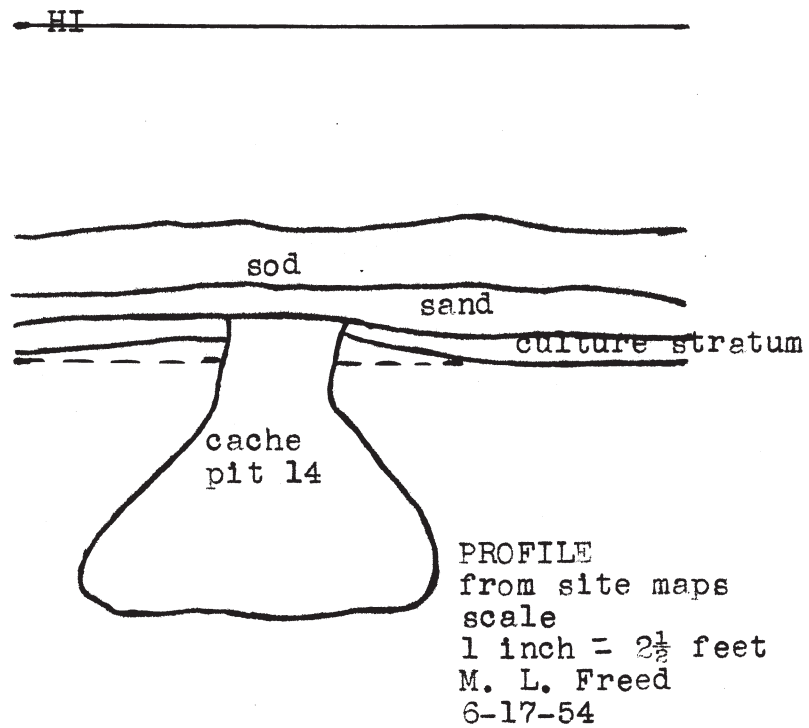
Stone

flint	
jasper	
quartzite	
badlands chalcedony	
miscellaneous	

Bone

Pottery

CACHE PIT 14 AND CONTENTS S3

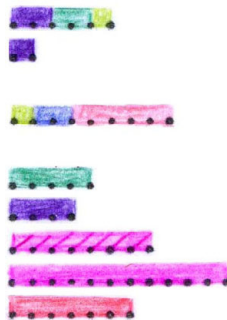


CONTENTS

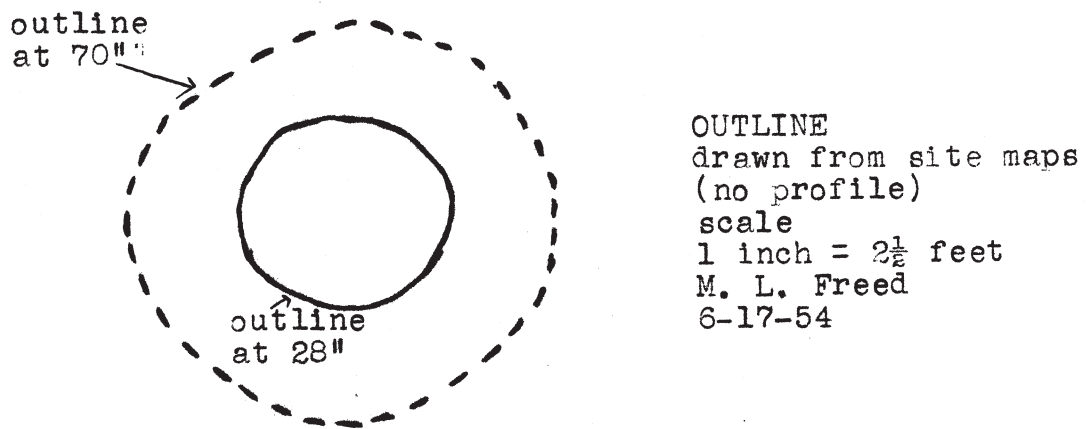
Stone
quartzite
sandstone

Bone

Pottery



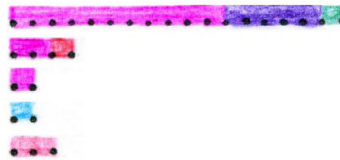
CACHE PIT 17 AND CONTENTS, S3



CONTENTS

Stone

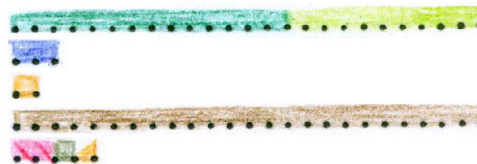
flint
jasper
chalcedony
quartzite
sandstone



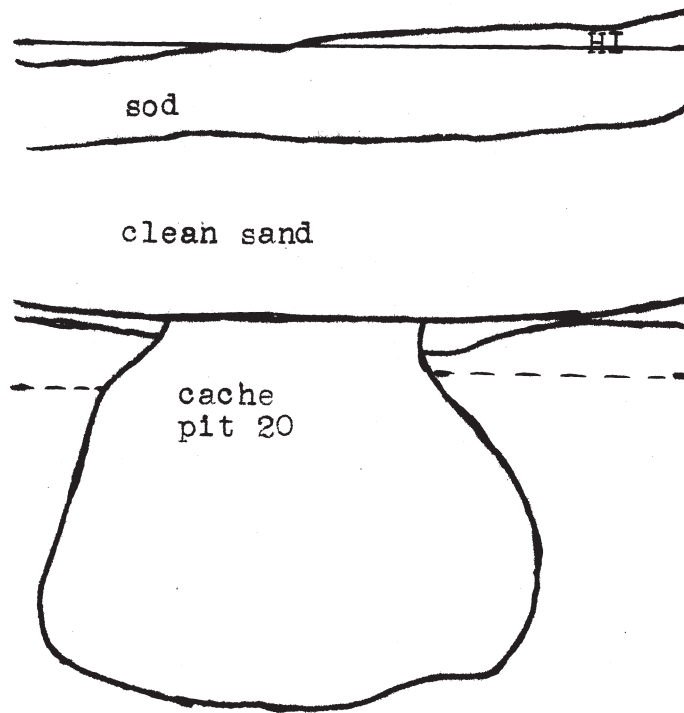
Bone



Pottery



CACHE PIT 20 AND CONTENTS, S3



PROFILE
drawn from site maps
scale
1 inch = $2\frac{1}{2}$ feet
M. L. Freed
6-17-54

CONTENTS

Stone
flint



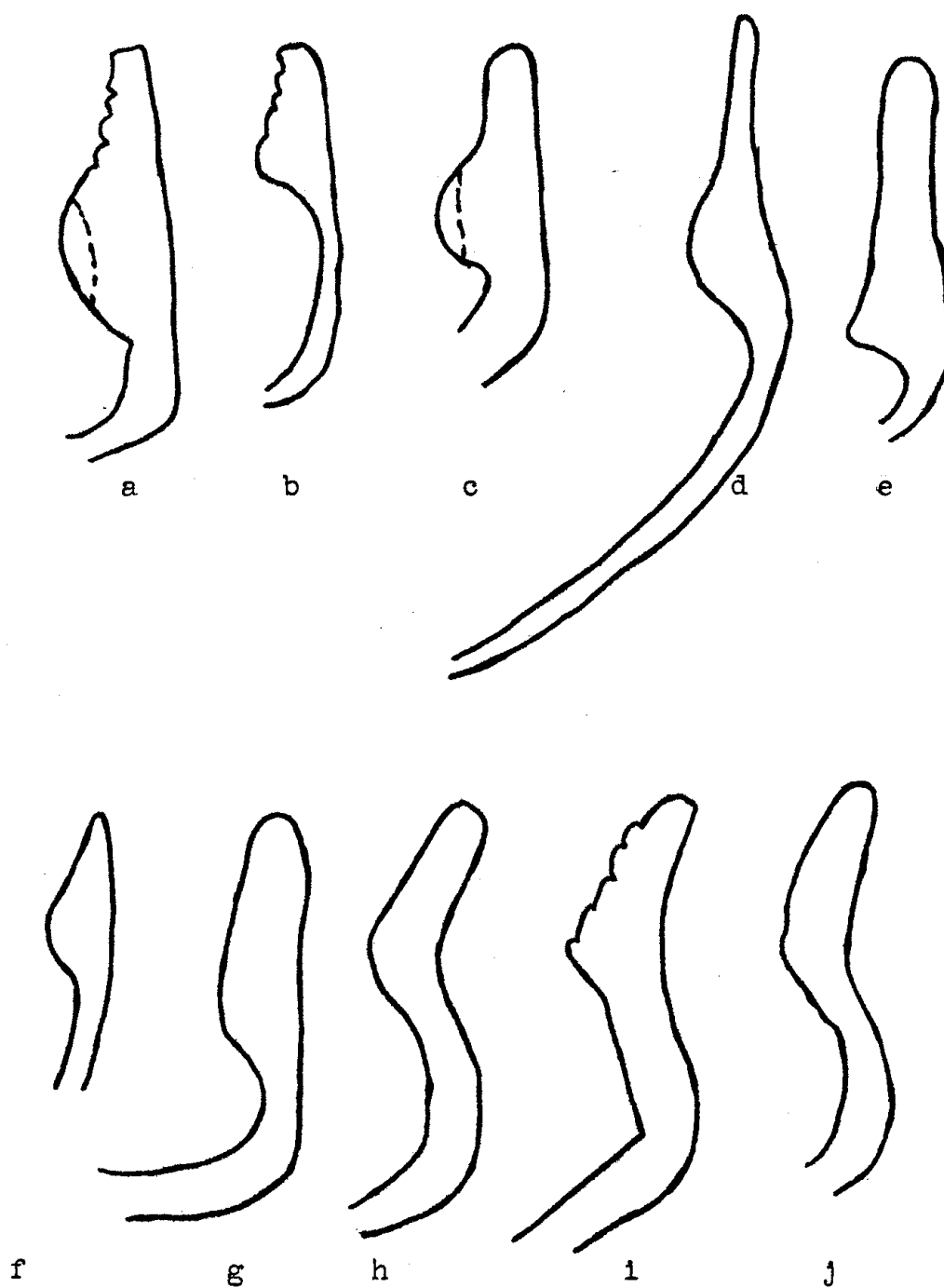
Bone



Pottery

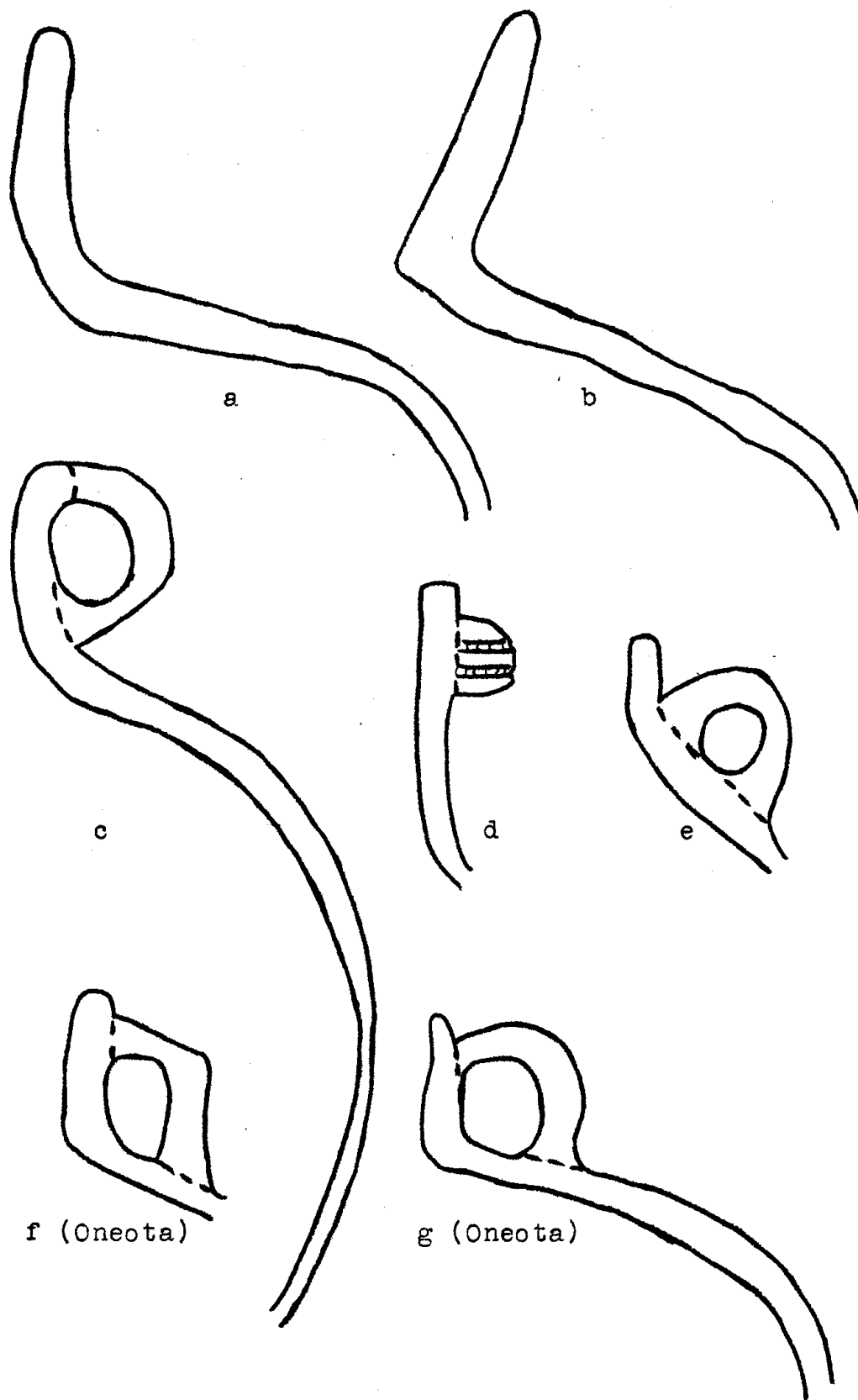


BRACED RIM PROFILES



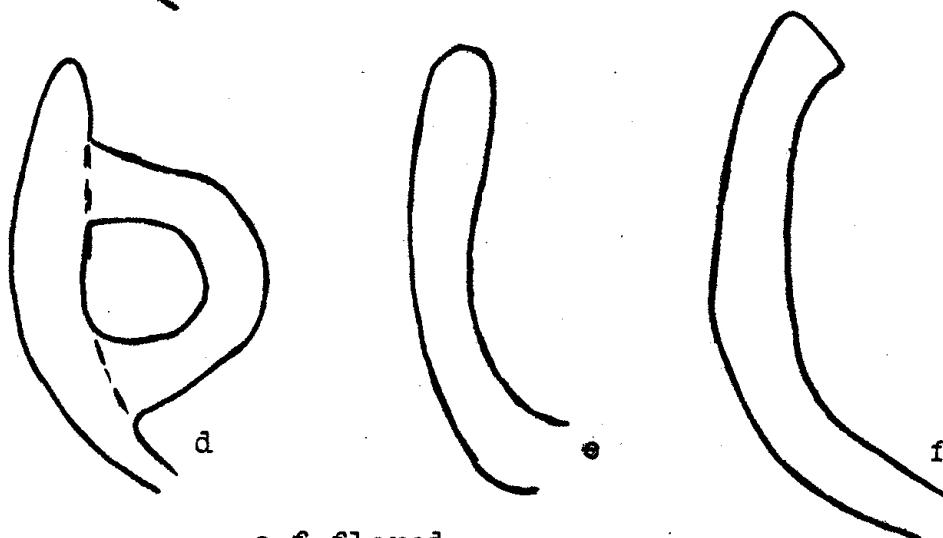
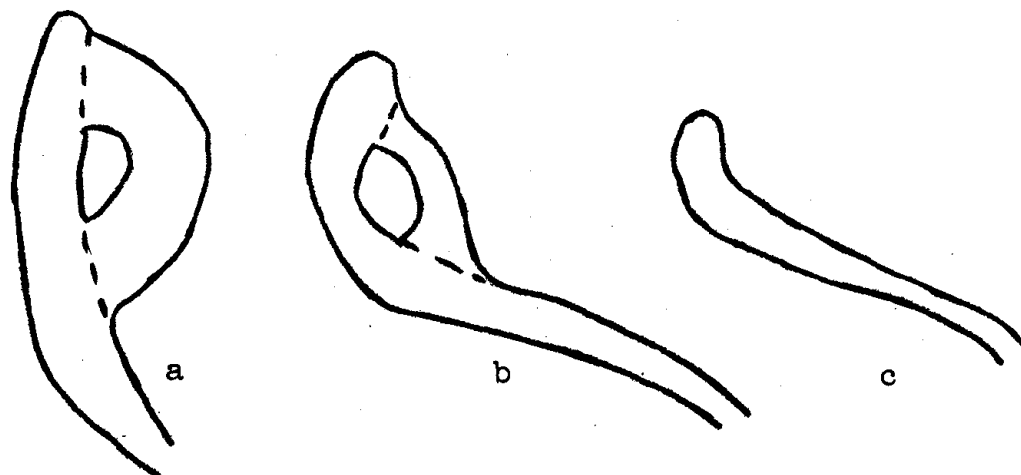
a-g Form A; h-j Form B
outside to the left, actual size

DIRECT RIM PROFILES

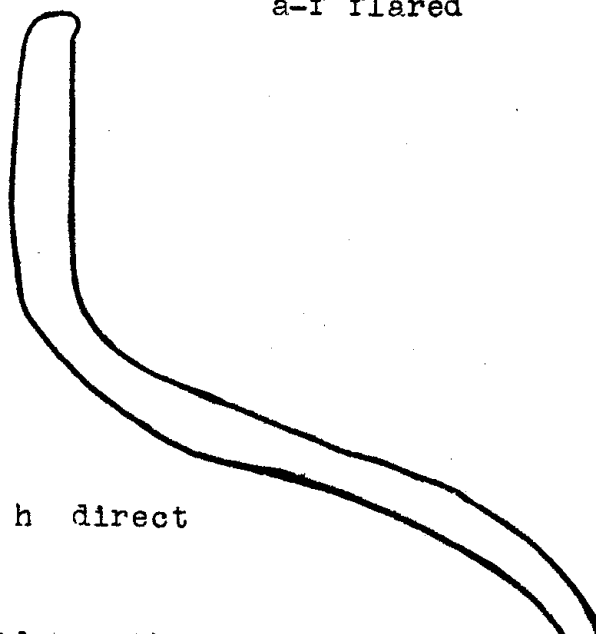


outside to the right, actual size

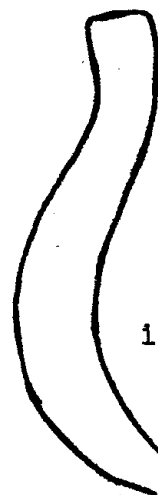
RIM PROFILES 25BD1



a-f flared



h direct



i recurved

outside to the right actual size

C A C H E P I T S 2 5 B D 1

CACHE LOCATION	D I A M E T E R		NECK		DISTANCE		DEPTH
	Neck	Maximum Bottom	LENGTH	N-S	E-W	Maximum	
Trench S1							
1	3	4.0	4.5	3.2	0.5	4.0	3.5
2	6	1.7	5.0	2.5	0.3	5.0	4.7
3	7	1.7	3.7	3.5	1.2		3.2
4	13	3.7	5.2	5.0	0.7		2.7
5	13-14		5.7	6.2			
6	14-15		3.2	3.2	0.7		
8	17	3.5	3.5	2.5		8.0	4.0
9	20-21	4.0	5.2	5.0	1.0	5.0	4.5
10	21-22	6.7	8.7	8.2	2.5		4.2
11	24-25	2.7	3.5	1.7			3.2
12	25	3.2	4.0	2.7			3.0
13	27	5.7	5.7	0.7			4.6
13A	27					7.0	
Trench S3							
14	16	1.5	4.5	3.7	1.5	5.7	3.3
15	15-16	5.7	7.5	5.5	0.5	5.0 5.7	3.7
16	10	1.5	3.7	3.2			5.0
17	13w3-w4	2.7	5.5	5.5		5.5 5.2	3.5
18	10	3.2	3.2	3.2		3.2	0.7
19	7-8	3.0	4.7	3.0	1.0		3.5
20	6	3.5	6.2	5.0	0.5		4.7

measurements in feet
data from field maps

PITS, "BASINS" 25BD1

PIT	LOCATION	DEPTH	BOTTOM DIAMETER	LENGTH N-S	LENGTH E-W
Trench S1					
A	1-2	0.7	3.2x2.7	15.0	
B	4	1.0	3.7	5.0	
C	8-9	1.5		7.5	5.0
D	11	1.2	5.0	8.5	13.2
E	14-15	2.7	5.0	13.7	
F complex	17-20	2.7		25.5	
Fa		1.5	6.2	11.2	
Fb		1.0	3.0	5.0	
G	23-24	1.7	1.7	8.7	
Trench S3					
H	17	1.5	5.7x3.5	8.0	3.7
I	13w2-13w3	1.5		5.5	2.5
J	16w3-16w6	3.2	6.2	8.2	18.7
K	14-14w3 15-15w3 16w-16w2	2.0	1.2	15.7	18.2
Alpha complex	11-13	1.7		23.0	
L	13-13w2	0.7	1.2	7.0	
M	11-12-13	1.2	2.5	6.7	
N	12	1.7	5.7	10.5	
O	12-13	1.2	0.5	2.7	
P	10	1.7	1.0	5.0	

measurements in feet
data from field maps

POSTMOLDS 25BD1

LOCATION	POSTMOLD	DIMENSIONS	DEPTH	FIELD EVALUATION	ASSESSED VALIDITY
Trench S3					
16w	a	0.7x1.0	1.2	?	good
14w2-15w2	b	1.0x1.0			poor
4	c	0.5x0.5	0.5	probable	very good
	d	0.2x0.2	0.5	probable	very good
	e	0.2x0.2	0.5	probable	very good
	f	0.2x0.2	0.5	probable	very good
4-5e	g	0.5x0.7	0.5	probable	very good
	h	0.2x0.2	0.5	probable	very good
	i	0.2x0.2	0.5	probable	very good
	j	0.5x0.5	0.5	probable	very good
	k	0.5x0.7	0.5	probable	very good
	l	0.5x0.7	0.5	probable	very good
-3	m	1.0x1.7		probable	good
	n	0.5x1.0		probable	good
	o	0.7x1.0		probable	good
	p	0.5x0.7		probable	good
-4	q	0.5x0.5		?	fair
Trench S1					
1	r	0.2x0.5		?	fair
lw	s	0.2x0.2		?	fair
11e1	t	0.7x1.0		?	fair
11e	u	1.0x1.2		?	fair

measurements in feet
data from field maps

PROJECTILE POINTS

TYPE	LOCATION		MATERIAL				TOTAL
	Trench	"F"	Quartzite	Jasper	Flint	Chalcedony	
	J1						2
NAb2		1	1				1
Tip		1			1		1
	S1						86
short	2	1			2	1	3
SCa1		1			1		1
SCb2		2			2		2
NAb2	9	4	3	9	1		13
NAb3	5		1	3			5
NBa	12	4	1	7	8		16
NBa1	4	4	1	2	5		8
NBb	4	3		5	1	1	7
NBb1	6	2	1	2	5		8
tips	12	11	3	8	11	1	23
	S3						28
NAb2	6	2	2	4	2		8
NAb3		1		1			1
NBa	5	2	2	1	4		7
NBa1	5	1			6		6
NBb	2			2			2
NBb1	1				1		1
tips	3			2	1		3
	S4						7
NAb2	1			1			1
NBa	1		1	1			2
NBb	2			2			2
NBb1	1			1			1
tips	1				1		1
TOTALS	84	39	16	51	52	3	123

	SIZE					
	cm.					
SCa1	4.3x1.9			1		1
SCb2	4.1x1.8			2		2
short	1.2x1.2			2	1	3
NAb2	3x2 2x4	6	14	3		23
NAb3	2.5x1.5	1	4			6
NBa	4x2	4	9	12		25
NBa1	2.5x1.5	1	2	11		14
NBb	2.5x1.5		9	1	1	11
NBb1	2.5x1.5	1	3	6		10
tips		3	10	14	1	28

Strong Classification

One NAb3 point from trench S1 was of quartz and is included in the totals

PROJECTILE POINTS

LOCATION	T Y P E								TOTAL	
	SCal	SCb2	short	NAb2	NAb3	NBa	NBa1	NBb	NBb1	tips
J1-F2				1						1 2
S1-1w						1				1 2
3				1						1 2
4				2		1			2	2 7
6						1			1	2 2
Cache 2				2						2 2
7							1			1 1
Pit C			1			3	2	1		6 6
10						2				1 3
11-12-13					1					1 2
13F		1								1 1
15					1			1		1 3
19			1							1 1
Cache 10		2		1			2			10 15
22				1			1			2 2
23						2				2 2
23-24E				1	1	1	1	1	3	3 11
24			1	4	1		1	2	1	10 10
24-25E				1	1	2				1 5
25F2				1		1		1	2	1 6
Cache 13								1		1 1
28						1				1 1
S3-Cache20				1		1				2 2
5									1	1 1
6F							1			1 1
7				2						2 2
9F				1		1				2 2
10									1	1 1
12						2	1			3 3
12E-F				1		1				2 2
14							1			1 1
14w2							2		1	3 3
15w				1			1			2 2
15w3				2		2		2		1 7
15w3F				1						1 1
S4				1		2		2	1	1 7

P R O J E C T I L E P O I N T S

LOCATION	M A T E R I A L					TOTALS
	Quartz	Quartzite	Jasper	Flint	Chalcedoney	
S1-1W		1	1			2
3			1	1		2
4			2	5		7
6			1	1		2
Cache 2			2			2
7				1		1
Pit C				6	1	7
10				3		3
11-12-13	1			1		2
13F				1		1
15			2	1		3
19				1		1
Cache 10		1	7	6	1	15
22		1	1			2
23		1		1		2
23-24E		3	4	4		11
24		1	5	3	1	10
24-25E		2	2	1		5
25F2			6			6
Cache 13			1			1
28			1			1
S1 TOTALS	1	10	37	35	3	86
J1 - F2		1		1		2
J1 TOTALS		1		1		2
S4		1	5	1		7
S4 TOTALS		1	5	1		7
S3-Cache 20				2		2
5			1			1
6F				1		1
7		1		1		2
9F			1	1		2
10			1			1
12				3		3
12E-F		1	1			2
14				1		1
14w2				3		3
15w		1		1		2
15w3		1	5	1		7
15w3F			1			1
S3 TOTALS		4	10	14		28
TOTAL	1	16	51	52	3	123

BONE SPECIMENS

	Number	Size Range
AWLS	18	
Split metapodial	1	to 15.5 cm. long
Split long bones	4	two well worn
Split rib	3	
Split scored rib	1	
Fragments-awls or punches	9	
SCAPULA HOES	14	
KNIVES	28	
Cleaver shape	11	21x5 to 23x9 cm.
Semi-lunate	1	12x4 cm.
Spatulate	3	12x4 to 3x7 cm.
Fragments	13	8x4 to 11x12 cm.
RIB TOOLS	14	
Scored	6	
"Shaft wrenches"	2	holes 10-13 mm.
Used or partly worked	6	
BOBBIN	1	6x9 mm. x 5.5 cm.
ANTLER	3	
Worn tines	2	
Cylinder	1	
HORN-BISON	2	
ANIMAL TEETH	6	
ULNAS-USED-(BISON?)	2	
JAW WITH TEETH (ELK?)	1	
SMALL BONES (FISH OR TURTLE?)	3	
WORKED FRAGMENTS	6	
TOTAL	98 Specimens for study	

BODY SHERD HARDNESS MOHR SCALE

SAMPLE NUMBER	TEMPER	SURFACE	RANGE	MEAN	MEDIAN	MODE	SIGMA
II	127	Lynch	roughed ¹	1-5	2.43	2.45	2-3 0.51
IX	100	Lynch-sand	corded	1-5	2.49	2.42	2-3 0.61
VI	100	Lynch-sand	simple stamped	1-5	2.49	2.49	2-3 0.43
V	200	Lynch-sand	cord paddled	1-5	2.50	2.51	2-3 0.60
I	300	random	sample ²	1-5	2.52	2.50	2-3 0.55
VII	216	all	all	1-5	2.57	2.54	2-3 0.59
III	173	sand	roughed ¹	1-5	2.58	2.55	2-3 0.57
VIII	100	Lynch-sand	corded	1-5	2.66	2.61	2-3 0.57
IV	16 ³	shell	smooth	2-5	3.37	3.40	3-4 0.63

1. roughed surface - both cord paddled and simple stamped
2. random sample - contained Lynch and sand temper, simple stamped and cord paddled surface treatment in proportions roughly equivalent to those of total body sherds
3. all the shell temper sherds available for this testing
sigma is standard deviation

BODY SHERD THICKNESS

SAMPLE	NUMBER	TEMPER	SURFACE	RANGE	MEAN	MEDIAN	MODE	SIGMA
				mm	mm	mm	mm	mm
XV	20	shell	smooth	1-7	3.50	3.67	2-3	1.20
XI	116	sand	stamped	1-8	4.77	4.83	4-5	1.06
VII	100	L&s	stamped	2-9	4.79	4.79	4-5	1.05
IX	200	L&s	stamped	1-9	4.87	4.88	4-5	1.09
VIII	100	L&s	stamped	1-8	4.95	5.00	4-5	1.12
X	82	Lynch	stamped	2-9	5.04	4.93	4-5	1.11
XIII	278	sand	roughed	1-9	5.29	5.23	5-6	1.15
XVI	522	all	all	1-11	6.36	5.29	5-6	1.29
XIV	502	L&s	roughed	1-11	5.42	5.34	5-6	1.24
XII	214	Lynch	roughed	2-11	5.59	5.35	5-6	1.39
VI	162	sand	corded	2-9	5.59	5.53	5-6	0.98
III	100	L&s	corded	2-9	5.59	5.56	4-6	1.11
IV	302	L&s	corded	2-11	5.73	5.60	5-6	1.20
II	100	L&s	corded	2-11	5.75	5.58	5-6	1.40
I	102	L&s	corded	3-9	5.88	5.70	5-6	1.19
V	132	Lynch	corded	2-11	5.93	5.60	5-6	1.47

roughed indicates groupings containing both simple stamped and paddled cord surface treatment

stamped indicates simple stamped sherds

corded indicates paddled cord surface treatment

L&s indicates groupings containing both sand and Lynch temper sherds

sigma is standard deviation

R I M F O R M S

RIM FORM	ITEMS		VESSELS	
	Number	%	Number	%
braced form A	112	14	101	15
braced form B	36	5	24	4
braced both forms	148	19	125	18
flared	126	16	113	16
direct	508	64	445	65
Total (no duplicates)	782	99	683	99

T E M P E R A N D R I M F O R M S

RIM FORM	T E M P E R											
	Lynch				Sand				Shell			
	item	% ¹	vessel	%	item	%	vessel	%	item	%	vessel	%
braced both	113	76	92	74	35	23	30	25				
forms												
flared	85	67	74	66	42	32	39	33				
direct	331	65	293	65	158	32	145	32	12	2	8	1.7
Total	532	67 ²	459	67	235	30	214	31	12	1.5	8	1

1. per cent of the rim form having the temper indicated

2. per cent of all rims with the temper indicated

HANDLES OR LUGS		T E M P E R			
		Lynch	Sand	Shell	Total
		items vessels	items vessels	items vessels	items vessels
lugs from the lip		7	6	3	10
vertically pierced handles and/or lugs		5	5	4	9
strap, angular		4	4	2	6
strap, mid rim to shoulder		1	1	1	3
strap, upper to lower rim		17	17	7	25
strap, broad flat, lip to shoulder		3	3	2	8
round handle, lip to shoulder		1	1	1	2
round handle, neck to shoulder		1	1	1	2
round handle upper to mid-rim		1	1		1
tab with hole		1	1	1	2
mid rim handles, horizontally pierced		3	3	1	4
barrel handles		3	3	1	4
Total		47	46	24	74
plus 21 fragments, Lynch tempered					3
					72

APPENDAGES ASSOCIATED WITH RIM FORMS

RIM FORM	APPENDAGES	
	Items	Vessels
Braced form A	1	1
Braced form B	0	0
Flared	17	17
Direct	25	24
Direct with collar	0	0
TOTAL	43	42

DESIGN ELEMENTS, RIMS

ELEMENT	OCCURENCE			
	Items	%	Vessels	%
plain (smooth)	53	6	51	7
surface finish	407	51	381	57
short parallel diagonals	213	27	174	26
zigzag	10	1	9	1
punctates	85	11	76	11
large shallow punctates	4	0.5	4	0.5
horizontal bands	211	26	174	26
pinches	45	5	37	5
finger nail impression	4	0.5	2	0.4
cross-hatching	3	0.4	3	0.5
straight parallel lines	7	1	7	1
triangular units	3	0.4	3	0.5
short vertical lines	242	31	209	30
scalloped	1	0.07	1	0.06
painted	69	8		
handles	43	5	42	6
right hand	166	21	147	21
left hand	59	7	53	8

LYNCH WARE RIM TYPES

RIM FORM

Distinguishing Characteristic	Direct	Flared	Braced
Jehorek (paddled cord)	x;l	x	x;b
Lynch (simple stamped)	x	o	x
Boyd (interior decorated)	b;s;x;c	x;c	o
Silver Creek (smoothed or decorated over surface finish)	x;n;b	x	

x type established

b decorated with bands - type established

l beveled or collared - type established

n notched - type established

c paddled cord

s simple stamped

o occurs, but type not warranted

DESCRIPTION OF RESTORED VESSELS

VESSEL	25BD1-7074	25BD1-7075
Plate	16	6, fig. 2; 7
Provenience	S3-15w3	S1-21-F1
Maximum Diameter	33 cm.	33 cm.
Inside Diameter, Orifice	18	19
Inside Diameter at Top of Rim	21	22
Outside Diameter at Neck	20.5	23
Total Height	26	33
Rim Height	5 cm.	5.5
Brace Height		4.2
Rim Thickness	8 mm.	
Brace Thickness		1.6 cm.
Temper	Fine Sand	Lynch
Surface Finish	Smoothed (Stamped?)	Cord Paddled
Handles	Broad Strap 6 x 4.6 x 1.5 cm.	No
Decoration	Incised and Punctate	Incised
Rim Inside	Inside Verticals 15 x 2.3 x 3.5 mm.	Smoothed
Rim Outside	Smoothed	Horizontal Bands over Cord Paddling
Lip	Plain	Groups of Diagonals
Body	Chevron and Parallel Lines Punctate Festoon	Cord Paddled Surface
Handle	Vertical Incised Lines	

McCook Daily Gazette
Wednesday, December 7, 2005

Mary Louise Freed

April 2, 1926--Dec. 4, 2005

HOLDREGE -- Mary Louise Freed, 79, died Sunday (Dec. 4, 2005) at the Holdrege Memorial Homes in Holdrege.

She was born April 2, 1926, in McCook to Robert B. and Viola (Johnson) Callen. She graduated from McCook High School in 1944. She attended McCook Junior College and graduated from Nebraska Wesleyan University in Lincoln in 1948 with degrees in chemistry and math. She completed her coursework for a master's in anthropology at the University of Nebraska at Lincoln. She completed her thesis and graduated with her master's in 1955.

She married Donald Freed at the Memorial United Methodist Church in McCook on Sept. 22, 1950. The couple lived in Bertrand before moving to a farm north of Loomis. They later moved to Holdrege.

She was a member of the Loomis United Methodist Church and United Methodist Women, for which she served as president for several terms. She was also a member of the Bertrand VFW Auxiliary, the American Association of University Women and the Phelps County Historical Society and Genealogy Society.

She was preceded in death by her parents; her husband, Donald in June 2005; grandparents; and aunt, Ruth Callen.

Survivors include three sons, Donald Callen Freed of Alpine, Texas, Carl Edward Freed and wife, Nancy of Hastings and Martin Henry Freed and wife, Sue of Loomis; sister-in-law, Colene Seeman and husband, Kenneth of Omaha; four grandchildren; and nieces and nephews.

Services will be Saturday, 10:30 a.m., at the First United Methodist Church in Holdrege with the Revs. Buck Linton-Hendrick and Jean Clayton officiating. Interment will be in the Moses Hill Cemetery in rural Phelps County.

She will lie in state at the Nelson-Bauer Funeral Home in Holdrege Friday, 1-9 p.m.

Memorials are being accepted in her name.

The Nelson-Bauer Funeral Home of Holdrege is in charge of arrangements.