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A Site of the Dismal River Aspect in Chase County, Nebraska

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Article Summary: This report of explorations at the Lovitt site provides an outline of Nebraska prehistoric society. The Historical Society survey of buried remains and records found evidence of the houses, tools, weapons, food, and customs of the distant past.

Cataloging Information:

Nebraska Place Names: Chase County (Ch1 site, also called the Lovitt site), Dundy County (Dn1 site)

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Photographs / Images: survey camp in Washington County; map showing distribution of known sites belonging to the Dismal River aspect; list of cultural determinants found; graphs of trait percentages and comparison of six sites on the Dismal River aspect; Ch 1 site from the south; west side of site (beaver pond); Pit L59; Pit L66; Pit 1; cross-section of pit in Nichols site; Pit 4; fireplace and post hole pattern of House 2; post-hole pattern of Feature 1; restored pot (2 views); rim sherds; body sherds; restored pot (2 views); shell, metal and stone artifacts; pipe fragments; flaked stone artifacts; pecked and polished stone artifacts; chipped stone artifacts; antler scraper-hafts; artifacts of bone and antler; floor plan of House 1; floor plan of House 2; floor plan of Feature 1; cross-section of Pit L 49; cross-section of Pit L 61

A Site of the Dismal River Aspect in Chase County, Nebraska

Ву

A. T. HILL and GEORGE METCALF



SITE OF THE SURVEY CAMP IN WASHINGTON COUNTY, NEBRASKA

Foreword

Addison E. Sheldon

Since 1925 Director A. T. Hill has been engaged in the Nebraska State Historical Society Archeological Survey of Nebraska and the organization of the State Historical Museum in the State Capitol. This is the eighth publication upon the results of this survey, — making a total of 594 printed pages and 143 maps, charts and illustrations therein.

Emerging from these printed pages gradually appear the outlines of Nebraska Prehistoric Society in the centuries past. The houses; the tools, the weapons, the food, the customs, the occupations, the religious ideas, of these buried Nebraskans rise from the soil as the scientific spade, trowel and camera of the Historical Society Survey bring into daylight their buried remains and records.

The chief aboriginal site discussed in this issue of NEBRASKA HISTORY, and the revelations disclosed there, are of the highest interest. Evidences found there make a connecting chain between the early Woodland and Republican village sites, the Dismal River sandhill sites, the early Spanish, French, and American historical writings, and the Cattle Trail and Pioneer Homestead era. Fragments of all these phases of human life on the Great Plains found on a single tract of tableland in Chase County make attraction for the entire American reading public, from the trained archeologist to the inquiring farmer and the student of Western History.

Even the echoes of early Nebraska politics awaken at the name of the stream where these discoveries were made. The "Stinking Water Land Scandal" of the 1880's was one of the great events in the history of land-grabbing on the public domain.

Files of the *Omaha Bee* of that era carry flaming headlines such as "Stinking Water Jim" — name invented by Editor Edward Rosewater to fit the noted congressman Jim Laird, leading political spellbinder of that period.

Another of the high points of this report is the fitting of the annual rings of the posts found on this Indian site into the ring records of other trees, as was done by the genius of H. E. Weakley of the North Platte Experiment Station. These tree rings go to establish rainfall records on the Nebraska Plains for nearly three hundred years. Nothing is of greater importance to Nebraska than the establishment of long-period records of rainfall west of the Missouri River. In Chapter 3 of Sheldon's threevolume history, "Nebraska — The Land and The People," is an extended summary of all the early rainfall records for this region, from the Indian winter-count pictures thru the Spanish and French explorations, the Fort

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Atkinson records of 1820-27, the Fort Kearny and Fort Laramie military reports beginning in 1849, and Dr. Child's systematic observations at Plattsmouth beginning in 1866. If the high-sounding Greek phrase "dendrochronological record" (which means just plain Yankee "tree-time") can give us the rainfall rings for a few centuries, it will be of outstanding service to our future.

Introduction

Previous to 1939 no archeological work had ever been done in the extreme southwestern part of Nebraska. Reports and sample collections of surface material submitted to the Nebraska State Historical Society by local collectors indicated that the area might repay investigation. Accordingly the field season of 1939 began with the excavation of a small portion of Site One in Chase County (Ch 1), known as the Lovitt site.

The primary purpose of this excavation was to establish an inventory for the Dismal River Culture (or Aspect) and to place it chronologically in relation to the other known cultures of the area. This culture has received little attention in the past, partly due to the fact that most of the known sites occur in out-of-the-way places where the troubles involved in obtaining labor and maintaining a camp made them impractical to work. In addition, sites are generally present in the sandhill region of the state and have been largely ruined by wind erosion.

The field party began work at Ch 1 on April 19, 1939, under the personal direction of Mr. A. T. Hill. Labor was furnished by WPA, the crew being supervised by Perry Newell of Lincoln, with George Metcalf as foreman. Later Mr. Newell went to Garden County to take charge of the excavation of another site and his place was taken by Carlyle S. Smith of Columbia University.

Due to labor conditions, and for other reasons, the bulk of the work in this area was confined to Ch 1. One other site, belonging to the same culture and located on Muddy Creek in Dundy County, was worked for a short time. This site (Dn 1, also known as the Nichols site), revealed a complex apparently the same as that at Ch 1. Sub-surface remains were less common and no remains of structures were found. This may be due to the fact that excavations here were much less extensive than at Ch 1. Two features belonging to a class not found at the latter site were found and will be described in the body of the following pages. Otherwise the site appears to belong, both chronologically and culturally, in the same focus as Ch 1.

Extensive tests were also made in an Upper Republican site on the Frenchman River. Surface surveys were made and material gathered not only in these counties but in the adjoining counties of Hayes and Hitchcock as well.

Thanks are due to the Works Progress Administration of Nebraska for the labor which made it possible to excavate these sites. Thanks are also due to County Commissioner H. L. Hanson of Wauneta, and to the Wauneta Commercial Club. Mr. Hanson allowed the use of a county truck for transporting labor, while the Commercial Club furnished the gasoline and oil needed for that purpose.

For permission to excavate, and for other courtesies received, we especially desire to thank L. J. Lovitt, Floyd Lovitt, Fern Nichols, Walter Fox, Myron Williams and many others who helped in innumerable ways. We also wish to express our thanks to Roy Olmstead for his gift to the Nebraska State Historical Society of a collection numbering nearly 10,000 specimens. This collection was surface material, of which a large part came from the Ch 1 site.

To Carlyle S. Smith thanks are due for the use of the report on field operations at the site, portions of which have been incorporated in the present paper. The authors also acknowledge their indebtedness to Dr. C. Bertrand Schultz and Edson Fichter of the University of Nebraska for identification of animal remains from the site, and to Dr. E. F. Schramm, also of the University of Nebraska, for identification of certain other material; and to H. E. Weakley, Junior Agronomist, North Platte experimental substation of the University of Nebraska College of Agriculture, for his dendrochronological studies of charred wood from this and the Dundy County sites. To Robert B. Cumming, Jr., of Lincoln, Nebraska; to Dr. Waldo R. Wedel of the National Museum; and to John L. Champe of the University of Nebraska, all of whom read the manuscript, we are especially indebted for much helpful advice and criticism.

Ch 1

The Environmental Setting

Chase County is situated in the High Plains area in the southwestern part of Nebraska bordering on Colorado. It has a general easterly slope and an average elevation of about 3,000 feet. About one-fourth of the area is composed of sandhills, generally low roundtopped sandy hillocks with occasional "blowouts," and the remainder of the area is largely loess. The general surface configuration of the entire county is that of a plateau whose original surface has been modified by wind and stream erosion into high divides or table lands separated by valleys of moderate depth and varying width. The county is drained by Frenchman Creek (which eventually empties into the Republican River) and its tributaries, the chief of which is Stinking Water Creek. This creek comprises two forks which come together near the eastern line of the county. The streams are springfed, have a continuous flow, and have carved out valleys for themselves, generally bordered by strips of low bottom land and frequently by high terraces. The valley floors vary in width from one-sixteenth of a mile to as much as a mile in some places, the valley of the Frenchman having the greatest width. In the upper part of the valleys the adjacent slopes are cut by many deep ravines, giving a bold and rugged aspect to the general topography. Where the divides are of loess, the ravines are steep-sided, deeply gullied, and quite often bounded by nearly bare cliffs and slopes. This broken country extends from the streams for a distance of from one to three miles or more. A prominent feature of the topography in the eastern part of the country is the table-lands between the streams. These are remnants of the old loess plain and today form the bulk of the cultivated land. The surface of the tables is slightly undulating, in strong contrast to the rough, eroded country bordering them.

The climate is characterized by short hot summers and dry cold winters. The recorded temperature ranges from a low of -32° to a high of 108°, with the mean of about 50°. The average annual rainfall is between 20 and 21 inches, with a low of less than 12 inches of precipitation on record. The wettest month is June. The summer rains usually come as local showers, often in the form of thunderstorms, and are frequently torrential. Snowfall is comparatively light and snow seldom covers the ground during the entire winter. The normal frost-free growing season is 136 days in length; the average

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date of the last killing frost in the spring being May 11, that of the earliest in the fall being September 24. High winds are common throughout the year but tornadoes are rare. The prevailing winds are from the northwest.

Before the coming of the settler the entire area was covered with grass of many species, the short buffalo grass being the most common. Today practically all the land has been put under cultivation except the broken country bordering the river valleys and the sandhill region. The soapweed (Yucca glauca) is abundant throughout the area, as is artemisia, a species of sagebrush, particularly common in the sandhill section.

Trees are scarce, though more common at present than formerly, according to the testimony of early settlers. Trees are almost entirely confined to the stream edges although a few cottonwoods are found in the ravines. More timber is found along the Frenchman Creek than on the Stinking Water, and more along the lower courses of these streams than at the heads. Cottonwood and willow are most abundant with smaller amounts of ash and hackberry. Wild plums, grapes, currants and choke-cherries are fairly abundant and formerly were more so. Along the Stinking Water drainage the buffalo berry is found, but it is rare in the Frenchman Valley. These varieties of wild fruits, while found in greatest abundance along the streams, also occur far back in the ravines.¹

The Ch 1 Site

Ch 1 is located some twelve miles north of Wauneta, Nebraska, on the north fork of the Stinking Water Creek. (See Frontispiece and P1. 1, 1). At this place the creek, coming from the north, makes a sharp turn and runs in an easterly direction for about half a mile, where it again turns to the south. The site is located within the curve, to the north and east of the stream, upon a smoothly sloping terrace some twenty feet above the stream. The lowest bottom land along the streams here is wet and swampy, covered in places with a jungle of willows, plum brush and wild grape vines. The lowest terrace of the stream at this point and for miles below is low, flat, and quite often marshy. In the drier places, the willows and small trees do not grow or have been cleared away, making small meadows of wild hay.

The beaver has undoubtedly been a factor in the formation of these level meadows by its habit of building dams which, forming quiet ponds, made for the deposition of silt carried by the stream, especially during spring floods. That the beaver was formerly abundant here is

¹ For further information on details of climate and topography see "Soil Survey for Chase County, Nebraska," by Wolfanger, Lewis A., and Rogers, R. F., Washington, 1917.

proved by the amount of beaver remains found in midden deposits filling pits within the site. One pit alone yielded ten beaver skulls. The beaver is still found along the stream, and at the present time an enterprising colony, by damming the stream, has formed a shallow pond some three hundred yards long along the southwest part of the site. (P1. 1, 2.) It has been suggested that these low "bottoms" (which were formerly more boggy than at present) may account for the great amount of bison remains found at the site. The bison must have been often mired in the swamps, either naturally while feeding or crossing, or by being driven into them by organized parties of hunters.

The name of the stream, Stinking Water, is said to have been given it by early surveying parties because of the number of bison which had died in its bogs during winter storms. Food thus obtained would have been as acceptable to the aboriginal inhabitants of the section as if freshly killed. Some tribes on the upper Missouri, notably the Arikara,² salvaged great numbers of bison from the river after the break-up of the ice and are said to have preferred the putrid or semi-putrid food thus secured. With animals easily obtained in the immediate vicinity of a village, entire portions might be carried home to be cut up at convenience; while in the case of large game, killed far from home, the skin and meat would be taken and the heavy bones left to bleach where the animal fell.

The stream serves as a dividing line between the sandhills which lie to the west and the loess region to the east. To the north and east the valley is bordered by rugged hills cut by deep ravines, one of which comes into the valley along the east side of the site.

"From the viewpoint of primitive people, the terrace offered an almost ideal location for either hunting camp or permanent village, well hidden; for from the flat tables the presence of the valley is hardly suspected until the rim is reached. The tables furnished pasturage for game, which, to reach water, must pass through the ravinecut, broken country where the hunter could take advantage of the broken terrain to use his short-ranged weapons. The nearby ravine mouth, which widens as it cuts through the valley to the stream, would furnish rich, easily tilled ground to a horticultural people. Water was close at hand; the valley wall protected them from the full blast of the winter winds, the high points on the rim would serve as lookout stations for locating herds of bison. The spot would also be suited for a predatory people desirous of a secluded retreat from which to make forays into other regions. Here, horticulture could be combined with hunting and gathering. At present, however, wood is not abundant nor is it likely that it was abundant in the past."3

² Fletcher, 1910, p. 85.

⁸ From the Field Report to the Nebraska State Historical Society, by Carlyle S. Smith.

The terrace upon which the site is located is composed of fine yellow soil overlain by dark, fine, sandy loam averaging ten inches in thickness. The site is now in cultivation, the west part being alfalfa and the remaining portion being, in 1939, in corn and rye. The cultivation of the site began fifty years ago, although the entire site has not been under tillage for that long. When the Texas Cattle trail ran north to Ogallala, it is said that the portion of the valley where the site is situated was a well-known bedding ground for the cattle before the dry drive to the South Platte.

The site covers an area of about 75 acres. Surface material is abundant throughout the site,⁴ but the majority of the objects come from a rather narrow strip beginning some hundred yards back from the terrace edge and gradually grow scarcer as one goes away from the stream. Local collectors have worked the site intensively during the last decade, but each year cultivation brings to light more specimens. Literally thousands of artifacts have been picked up and carried away.

Historical Occupancy of the Region

Within late historic times, southwestern Nebraska has been claimed or sporadically occupied by a number of tribes. It seems to have formed part of the western hunting ground of the Pawnee, whose permanent villages were situated on the lower Loup and Platte rivers and part of the Republican River in Nebraska.⁵ The Pawnee occupancy was disputed by various bands of the Arapaho and Cheyenne during the first half of the nineteenth century.⁶ The latest aboriginal contestants for the area were bands of the Brule and Oglala Dakota, who inflicted a crushing defeat upon the Pawnee near the present town of Trenton in 1873.

Still earlier, the western Nebraska area was occupied by the Padouca, a people whom at present we are unable to identify with certainty. The Omaha and Ponca equate the Padouca with the Comanche and locate the most easterly Padouca village in the forks of the Dismal River.⁷ The first sites of this culture were found along (and for this reason named after) the Dismal River; and the fact that the Omaha identify the Padouca as Comanche led Strong to tentatively identify the Comanche as the carriers of the culture.

The De L'Isle map of 1718 places five villages of "Apache and Comanche" in the region of the present western Kansas and Nebraska.

⁴ A collection numbering nearly 10,000 specimens, mostly from this site, has recently been presented to the Nebraska State Historical Society by Roy Olmsted of Wauneta.

⁵ Wedel, 1936, p. 4.

⁶ Strong, 1935, p. 27.

⁷ Fletcher and La Flesche, 1911, p. 88, 91.

De Bourgmont found the Padouca in western Kansas in 1724, probably somewhere west of the junction of the Saline and Smoky Hill rivers.⁸ He describes them as a people living in much the same fashion as the Pawnee, hunting in summer and winter, but not entirely a wandering people for they did some planting and had villages with large houses. The village visited had about one hundred and fifty houses, and a population estimated at 4,300. These people traded with the Spaniards of New Mexico, from whom they obtained horses and goods.

During the eighteenth century, the name of Padouca fork was applied to one branch of the Platte, the name shifting from one branch to the other.

By the time of Lewis and Clark, only the memory of the Padouca remained in the region they formerly occupied. These explorers gave a list of tribes who lived to the westward of the Arikara; the Staitan, Wetapahato and Kiowa, Cartahana, Catka and Dotome. "These wandering tribes are conjectured to be the remanants of the Great Padouca Nation, who occupied the country between the upper parts of the river Platte and the river Kansas. Of the Padoucas, there does not now exist even the name."⁹

The Omaha and cognate tribes, as has been mentioned, identify the Padouca as Comanche, and following this lead many students have referred to them as such. This has been disputed, however, notably by Grinnell¹⁰ and Hyde¹¹, who believe the Padouca to have been Apache. The strongest argument of the former refers to the fact that Villasur took with him, on his expedition to the Pawnee in 1720, a number of Indians from Quartelejo. These were Jicarilla Apache,¹² who had built a village in the buffalo country, and among whom at various times a number of Pueblo refugces lived. French accounts of the expedition consistently refer to these Indian allies as Padouca.

While Quartelejo is generally believed to have been in Western Kansas, Thomas places it in Eastern Colorado¹³ and believes from his study of original Spanish documents that the Paloma Apache, who seem to have been the most northerly of the subdivisions of that people, were, in 1719, "apparently in northeastern Colorado, presumably along the South Platte River."¹⁴

- ¹² Hodge, 1910, p. 337.
- ¹³ Thomas, 1935, p. 16.

⁸ Connelley, 1918, from Margry, p. 453, Vol. XIV.

⁹ Lewis and Clark. Edited by Hosmer, 1905, Vol. 1.

¹⁰ Grinnell, 1920.

¹¹ Hyde, 1934. Grinnell and Hyde have collected practically all of the published references to the Padouca up to this time.

¹⁴ Thomas, 1935, p. 132, Diary of the Campaign of Governor Antonio de Valverde against the Ute and Comanche Indians, 1719; and p. 271, editorial note 82.

We thus have the somewhat vague and shadowy Padouca occupying western Nebraska and Kansas and the adjacent region in Eastern Colorado about the beginning of the eighteenth century. We also find them identified with two or more existing tribes. As yet, archeology has been of little help in identifying them, due to lack of work in the west and north.

Distribution

Surface collections showing pottery identical with that from Ch 1, or so closely related as to form but other foci of the same aspect, have been made at sites widely spread over western Nebraska. In addition to the original sites on the Dismal River, sites are known in Cherry County on the North Loup River in the vicinity of Brownlee, from Dad's Lake and other lakes in that area, and from the neighborhood of Valentine. Eastward the material is known from the area about Bassett, in Rock County. In the excavations at Signal Butte, in Scotts Bluff County, Strong found Dismal River ware in association with sherds of Upper Republican type¹⁵ and mentions sherds from Kaighn's Point in the same county.¹⁶ Going



Distribution of known sites belonging to the Dismal River Aspect: Ho-1. Discovery sites on Dismal River.

- Ch-1. Lovitt site.
- Dn-1. Nichols site.
- Gd-2. Ash Hollow Rock Shelter.
- Ft-9. Dick site.
- Sf-1. Signal Butte.
- C-1. Dad's Lake.

Sites belonging to the Dismal River aspect, but from which collections of material at hand are too small to allow comparison, are thus located (\bullet) and not numbered.

¹⁵ Strong, 1935. ¹⁶ *Ibid.*, p. 216. southeast down the North Platte River we find this culture represented at a site in Ash Hollow, near the town of Lewellen, in Garden County.

West of this site the culture is represented by surface collections from Kimball County. Near Curtis, in Frontier County, Wedel and the senior writer in 1934¹⁷ excavated the small Dick site belonging to this aspect. Several other sites are present in Chase County in addition to the Ch 1 site. These sites, all smaller than the Ch 1 site, were surveyed and surface collections made. They are located on both forks of the Stinking Water Creek and on the Frenchman River south of Imperial. Other sites are known in Hayes County and on Muddy Creek in Dundy County. It is significant that sites occur mainly in the sandhill region of the state.

Excavations at the Dn 1 site on Muddy Creek in Dundy County, which were conducted during the same period that investigations were carried on at Ch 1, yielded material identical with that from the latter. The site, however, was much smaller and apparently had not been occupied as long or as densely, since pits were fewer in number proportionate to the area excavated. From one pit came a nondescript scrap of iron, and surface finds in the past include turquoise beads, one of which had been broken during the process of drilling. This may be the site from which Strong reports a Pueblo sherd.¹⁸ This is rendered even more probable by the fact that local collectors have found painted sherds on the surface here.

Little is known of the distribution of the culture outside Nebraska. No information is at hand regarding its presence or absence in South Dakota or Wyoming. Its presence is strongly suspected in northeastern Colorado,¹⁹ but as yet reports have not been confirmed by examination of sites and specimens.

Kansas has one known related site of great importance. At this site, which is located in Scott County in the western part of that state, excavations were carried on during the summer of 1939 by a National Museum party under Dr. W. R. Wedel.²⁰

More work must be done in the areas to the north, west and south, especially outside of Nebraska, before the geographical extent of this culture can be given.

Extent and Method of Excavation

When the members of the survey party arrived at the Ch 1 site in April, 1939, area 1 was the only part open to excavation, and it

18 Strong, 1935, p. 241.

¹⁷ Wedel, 1935, pp. 180, 181, 182.

 ¹⁹ Griffin, J. B., Personal communication to A. T. Hill, Jan. 23, 1941.
 ²⁰ Wedel, 1940, b., p. 323, and 1940 a.

was decided to run a long trench through the most promising section. The trench was twenty feet wide and was carried northward four hundred fifty feet. This was later crossed with an east-west trench ten feet wide, at a point two hundred fifty feet north of the south end of the main trench. The cross-trench was carried two hundred feet eastward and eighty feet west of the zero line. Later, when the owner wished to plant corn, excavating was continued along the south end of the alfalfa field. (Area two).

Area two occupies, roughly, the southwest part of the site. Along the south side was a narrow strip where the crop had died and a trench was opened here. The area followed a fence which ran slightly south of west and it was decided that the trench should be oriented on this rather than on Magnetic North. A trench ten feet wide and five hundred twenty feet long was carried along the north side of the fence. In some places the area devoid of alfalfa was wider, allowing the excavation to be extended to a width of approximately fifty feet in one place. In all, one hundred eleven sections, each ten feet square, were excavated here. Wind erosion had moved some of the top soil from the fields to the north and had redeposited the soil along the fence line, covering the cultural horizon with one to twelve inches of additional earth. Lack of moisture made the subsurface features here harder to outline.

The last excavations were carried on in area three after the crop had been harvested. This field was south of area 1 and south and east of area 2. Here, a trench oriented north-south was started at a point thirty feet south and ten feet east of the original zero point in area 1, and carried south for seventy feet. A trench was carried eastward from the south end of this excavation, the trench varying in width from ten to twenty feet and reaching to a distance of one hundred ten feet. Ninety feet west of the east end of this trench another, ten feet in width, was carried south one hundred ten feet. These trenches indicated that the village limit had been reached in this portion of the site.

In addition to the three main excavations, several ten-foot-square tests were dug in various parts of the site. Many smaller tests were dug also in an effort to determine the extent of the site. Tests in the form of trenches and pits were made on both the east and west sides of the valley in an unsuccessful effort to determine the location of the burial ground.

The site was excavated in ten-foot squares numbered in relation to a base line oriented on Magnetic North. The upper soil was first spaded off to a depth of eight inches and all the material found was sacked according to the number of the square. The floor of the square or section was smoothed by horizontal slicing until subsurface features could be outlined. It was found necessary, in most cases, to excavate to the yellow subsoil in order to ascertain the outline of

pits and postmolds. The specimens encountered between the eightinch level and subsoil were then sacked.

The depth of the excavation varied according to area and sometimes varied within the area. At the south end of the trench, in area 1, the yellow subsoil was met at a depth of six inches, but the top soil covering gradually deepened until, at the north end of the trench, subsoil was not met until a depth of ten inches was reached. In area two, a great deal of variation due to erosion and redeposition of soil by wind was met with. Subsoil here was consequently encountered at depths ranging from four inches to twenty inches. Conditions were more uniform in area three, the top soil consistently measuring eight to ten inches in depth. Excavation was not carried below the top line of the subsoil, except for occasional tests, save where mixture indicated the presence of features — pits, postholes, etc.

Pits and postholes were then excavated and objects found within them were placed in sacks marked with the number of the feature and the square in which they occured. The exact provenience of artifacts of special significance and all features were noted in relation to their position within the square and their depth. In addition to photographic and written records, maps were made of the features in each square and elevations were taken with the alidade and stadia rod.

Features

Structures

Individual postholes were observed throughout the site but could not be associated into patterns except in three cases.

House 1

House 1 was found while excavating the trench in the south side of area two. It was located on the south side of the site, near the terrace edge. It was round in outline and approximately twenty feet in diameter. (Pl. 10, 1) The outer circle contains fourteen posts, irregularly spaced from thirty to fifty-two inches apart. A few posts needed to form a complete circle are missing on the east side. A large pit, L24, intersected the circle of post holes, and its presence may explain the missing post molds. The circle was not quite regular, the distance of the posts from the center of the fireplace varying from nine feet to ten feet three inches. The majority of posts, however, measured from nine feet six inches to nine feet nine inches from the center of the fireplace. Seven post molds were arranged about the fireplace in a roughly horseshoe-shaped pattern, with the open end to the southeast. These posts varied from two feet six inches to three feet nine inches from the center of the fireplace. Between the outer and inner rows of posts, but closer to the outside row than to the inner one, were eight posts, irregularly spaced and forming a three-quarter circle with the open part to the northwest. One post mold containing rotten wood was found in the bottom of pit L24. The presence of the post was not noted while the pit was being excavated, which would suggest that the pit was intrusive to the house and had destroyed the post holes forming the outer circle at this point. Another post hole was found south of the pit at a distance of four feet nine inches from the first. If this was the entrance, the doorway would have opened slightly south of east. None of the posts appear to have been larger than five inches in diameter.

At about the centre of the circle formed by the outer post holes was a fireplace twenty-six inches in diameter filled with white ashes and underlain with burned earth. In the ashes and about the fireplace, the sherds of a pottery vessel of the Dismal River type were found, and scattered over the floor were artifacts of stone and bone typical of the rest of the site. Three conical copper "jingles," an iron awl, and a prong-like object of iron were also present, the copper artifacts and the awl being on or very near the floor.

The floor of the structure was nowhere more than ten inches below the surface, and of this depth a few inches may have been deposited by the wind since the site was first placed under cultivation. Signs of wind erosion and redeposition of soil were very marked at this spot. The cultivated field immediately to the north had lain fallow for a short number of years in the immediate past. This was during the drouth period, and heavy wind-storms had swept the loose surface, picking up much soil which was caught and held by the vegetation on the margin of the field where the structure was found. No sign of an excavation for the structure could be found, and it is likely that if such existed it was so shallow that it did not reach to the subsoil.

House 2

House 2 (Pl. 4, 1 and Pl. 10, 2) was found during the course of the excavations in the south edge of area two, and is about forty feet west and thirty feet north of House 1. The burned earth of the fireplace was found at a depth of three inches, but only a very few ashes remained. A narrow furrow ran across the area, and it seems likely that the ashes had been plowed out. In this part of the site a great amount of wind erosion has taken place lately, much of the eroded soil being redeposited immediately to the south. Wind erosion has been greater over parts of area two than on other parts of the site, due to two years of summer tillage which left the top soil in a loose powdery condition. The burned earth was twenty inches in diameter, three inches thick at the center and basin-shaped in profile. Since the floor was so close to the present ground surface, it was necessary to excavate a few inches below the level of the fireplace in order to be free from the disturbance caused by plowing and the penetration of alfalfa roots. Five post molds were found arranged in a circle about the fireplace. The posts were spaced at fairly equal

Ch-1 Site

intervals at distances varying between five and six feet from the center of the fireplace. All but one post mold contained fragments of rotten wood, and the average diameter was three and one-half inches. Depths of post molds from the surface varied from seventeen to twenty-eight inches. A few scattered post molds, which did not appear to have any direct connection with the structure, were found to the southeast, south, and southwest. None were found on the east and west and it was not possible to carry the excavation farther north without disturbing the crop. The proximity of the floor to the surface of the field may have caused other posts, if such ever existed, to have been obliterated by plowing. It is possible, too, that the structure consisted originally of a central framework supported by five posts with leaning poles converging at the center, forming a conical house. Such a structure may have been as much as fifteen feet in diameter. Few artifacts were encountered, but those that were found belong to the same culture represented throughout the site.

Feature 1

Feature 1 was found in area three, in the southeast part of the site. It was rectangular in ground plan and consisted of eight (or more probably nine) posts arranged in three rows running parallel to each other. (Pl. 4, 2 and Pl. 10, 3) The rows had three post molds each; one had two post molds and an area disturbed by rodents at the point where the last post should have been. The pattern measured ten feet north and south, and nine feet east and west. Each post was equidistant from the others of the row; but the middle row of posts was approximately a foot closer to the west row than to the east one. Most of the molds contained fragments of rotten wood and seven contained bison leg bones inserted vertically between the posts and the walls of the holes. In two cases, the tops of the bones were bleached and cracked as though they had been exposed to the elements while in that position. The tops of the bones were buried to a depth of from eight to ten inches at the time of excavation. The remains of the posts suggest timbers varying from three to six inches in diameter with their bases buried from five to twelve inches below the floor. Within the southeast quarter of the pattern was a patch of gray ashes twelve inches across and one inch thick. Across the top of one of the post molds was a pointed implement made from the leg-bone of a bison with the toe bones still articulated, which may have served as a digging implement. Thirty inches north of the northwest corner was a shallow and poorly defined pit containing stained earth, bison bones, and a bone hide-flesher. Four feet east of the structure was a larger and deeper pit. Within the structure, artifacts common to the rest of the site were moderately abundant, and near the southeast corner was found a sheet-iron "jingle." The weather-beaten tops of some of the bones suggest the absence of side

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walls, and the presence of a fire outside indicates a structure used in mild weather. The evidence suggests a structure resembling the brush-roofed shelters still found on some western reservations and serving as protection from the sun.

The three structures found at the site present a problem. One of these, Feature 1, was probably a summer shelter of brush of a type common on many of the western reservations today. Only in the case of Houses 1 and 2 was there any agreement, and that only in that both were small, circular, with central fireplace, and floor at or but slightly below the original ground surface.

House 2 is reminiscent in many ways of the hogans described by Mindeleff as typical of those used by the Navaho during the last half of the 19th century.²¹ There seems to be no standard size for the structures described by that author, but the measurements of four show them ranging in diameter from twelve to eighteen feet, and others are mentioned which inclosed an area twenty-five to thirty feet in diameter. They were circular and built over a shallow excavation ordinarily less than a foot in depth. Three timbers formed the central foundation and two others frame the entrance. The posts framing the entrance are planted about three and one-half feet apart, the tops slanting inward and joining the three others at the top, the five posts thus forming a circle. The doorway is formed by driving two forked poles into the ground close to the entrance posts. А pole is placed across these, with two others running from here to the main frame of the entrance. The whole structure, after the space between the framing poles has been filled with short timbers, is covered with bark or grass, and earth heaped over the whole. The doorway structure projects from the sloping side of the conical hogan, much like a dormer window.

The Hidatsa built a shelter for semi-permanent use as a hunting lodge which, except for the use of four central supports, might well be the sort of structure represented by House 2. This was not so carefully constructed as the permanent houses, and green foundation posts were commonly used in order to reduce the fire hazard. In a circle around the four forked foundation poles were placed other poles, set as closely together as possible. Some of these were long and met at the top, but others were shorter and served to fill the space between the longer poles.

Over these poles, a layer of brush — buckbrush, chokecherry or willow — was laid, and this in turn overlaid by a thick layer of long grass. Over this, dirt was piled to a thickness of four inches and carried up the sloping sides for about eight feet. Above this, strips of bark or short puncheons were used to cover the poles to a point some two feet below the point where the poles crossed, the upper-

²¹ Mindeleff, 1898.

most part being left open to admit light and air and to permit the escape of smoke.

No covered entrance-way was built with structures of this type, an opening being left in one side to serve as an entrance, with a skin serving as a door.

Lodges of this type had a floor diameter of about twelve feet, the height from fireplace to the crossing of the poles being about ten feet. The poles used in its construction averaged about three and one-half inches in diameter.²²

House 2 could easily have been some such structure as the Hidatsa hunting lodge or the Navaho hogan. House 1 might be explained as an attempt to build a structure in the general form of those used by the protohistoric Pawnee, in a land where heavy timber was not available.

It is possible that better-made structures conforming more closely to those found in the central and eastern parts of the state are present at this site. All surface indications point to the fact that the most intensively occupied portion of the site was in area 2, and from fifty to one hundred fifty feet north of the excavation in that area. Due to the fact that this area was planted to alfalfa, we found ourselves unable to excavate this portion of the site.

In more than one instance in both prehistoric and historic sites, remains of small houses have been found which conform only in a very general way to the usual house pattern. Since our excavations were in every case near the edge of the site, further excavation in area 2 might result in more information on the dwelling pattern of these people.

Later Structures

The trench in area two near its west end cut through the north side of a mound. The mound, which was circular, approximately two feet high at the center and about thirty feet in diameter, was further explored by trenching through its center. This excavation disclosed that the mound was the remains of the sod house of an early white settler. The soil of which it was formed was alkaline, nearly white in color, and contained at the center of the mound a small amount of glass, china-ware, wire, nails and leather. No pottery or worked flint was present until the dark soil was met, when the aboriginal horizon began. No artifacts of European origin were found in the immediate vicinity except within the mound itself.

Pits

The most characteristic feature of the Ch 1 site is irregularly shaped, shallow pits. Pits of various shapes and sizes were extremely

²² See Wilson, Gilbert L., 1934, pp. 411-415, from which this account is summarized.

abundant. The outline varied greatly but the majority of them consisted of several shallow, connected basins ranging from twelve inches to fifty-one inches in depth, and from one foot to fifteen feet in diameter, with the majority between four feet and six feet in diameter. (Pl. 2, 1, 2; Pl. 3, 1, 3; Pl. 11, 1, 2)

The pits found in the south half of the trench in area one were, as a rule, shallower than those toward the north end, or those in the other trenches. This might be accounted for by the fact that since the surface is more sharply sloping here, erosion has been greater. The shallowest pit found in the excavation in this area was only one foot in depth, while the deepest one measured thirty-eight inches.

Pits averaged deeper along the south side of area two. Out of a total of fifty-seven pits from this portion of the site the shallowest pits measured fifteen inches in depth, while the deepest pit of the entire site — pit L59 (Pl. 2, 1), fifty-one inches in depth, was found here.

Pits were less numerous in area three, and measured from fifteen inches up to thirty-five inches in depth.

In making the table given below, depths of pits were tabulated by areas and separated in groups by four-inch levels. No attempt was made to correlate one area with another, but rather to determine into what depth-group the largest percentage of pits in each area could be arranged. Once this was determined, all pits of less depth were thrown into one group, and all of greater depth into another.

Area	Depth	No. of Pits	Percentage
1	12"-19"	30	.35
1	20"-23"	35	.40
1	24"-38"	21	.24
2	15"-26"	28	.49
2	27"-30"	18	.31
2	30"-51"	11	.19
3	15"-17"	3	.20
3	18"-21"	6	.40
3	22"-35"	. 6	.40

Depth measurements of all pits were next grouped without attention to area, with the following results:

Depth	No. of Pits	Percentage
18"-21"	48	30.77
12"-17"	33	21.15
22"-51"	75	48.08

More pits have a depth of eighteen to twenty-one inches (inclusive) than are numbered in any other group with a four-inch range. Only seventeen (10.79%) are more than thirty inches deep; and of these, but four (2.56% of total) exceed forty inches.

As has been noted earlier, erosion by both wind and water has removed a certain amount of soil from the surface of the site. Some of this has been redeposited along the south side of area two as a wide low ridge. This has resulted in giving the pits uncovered here a slightly greater depth than those excavated in other parts of the site. By allowing three inches for wind-deposited soil here, and deducting that amount from the depth measurement of pits, we bring the largest four-inch group to within three inches of the largest fourinch group from area 1. It is entirely possible that soil to this amount has been eroded from area one, and that approximately half of the pits in this site were originally from twenty-four to twentyeight inches deep. At present it can only be said that at this site 107 (68.59%) pits were found to range from eighteen to thirty inches in depth, with thirty-three (21.15%) shallower, and with only sixteen (10.25%) exceeding that depth.

Pits generally occured as groups of bowl-shaped depressions, some deep and others shallow, each more or less definite, but also definitely connecting with others of the group over a lower place in the rim. (Pl. 2, 2.) Some, however, were definite in themselves and isolated by several feet from others. (Pl. 2, 1.) An occasional deep pit might have a floor made up of two or more shallow depressions, and this condition was common in the shallower pits. There seems to be no relation between size and shape of the pits and their depth.

The fill within the pits generally consisted of dark soil, often very dark, containing animal bones, charcoal, occasional lenses and beds of white ashes, particles of burned earth, and artifacts. (Pl. 11, 1, 2.) A few of the pits found in area three showed lighter in color than the surrounding soil. Small, unworked river pebbles up to the size of a hen's egg were often found, but large stones were extremely rare. The occasional pieces of burned earth appear to have found their way into the pits along with other refuse. In no case was a bed of burned earth present below the lenses of ash. The only evidence of fires ever having burned in the pits was the presence of an occasional lens of charcoal, generally small, and containing, in the majority of cases, many burned stems and leaf blades of some coarse grass resembling bluestem. In a few cases the charred material resembled corn husks. In every case the impression was given that the material had burned where found and probably consisted at the most of only a few handfuls of grass or corn husks. In no case was any quantity of white ash present, nor was a bed of burned earth present below these shallow charcoal lenses. Large beds of white ash, however, were common in the pits unassociated with charcoal layers, and in general it may be said that pits containing large beds of white ash yielded the greatest number of artifacts.

A thin brownish deposit of the same texture as the soil was found in several pits both on the walls and at the bottom. It is possible that the brown deposit may represent vegetal material used as a lining, or blown in by the wind while the pits were open. One pit, S8, contained a layer of badly decayed wood or bark near the bottom. Laminae of fine black silt were found in some pits and appear to be evidence for natural filling by the erosion of the walls. (Pl. 11, 2.)

Exceptions to the usual type of pits were two which more clearly resembled the usual cache type found in the plains. These were both found in the north-south excavation in area one. Pit 13 in section 6L1, at the depth where it could first be outlined, was not quite circular. (Pl. 3, 3.) The mouth measured 28 inches east-west and twenty-four inches north-south. The floor was slightly hollowed. Total depth was thirty-five inches. Approximately twelve inches below the surface the sides were undercut until the diameter became thirty inches. The fill was composed of dark soil containing only small flecks of charcoal.

Pit 44c was the largest of a connected group in section 43L1, The pit proper was a straight-sided hole in the bottom of a pit of the usual type. This pit, while differing from the true cache, also differed from the usual pit in that the sides were straight and the bottom flat. The mouth was not quite circular in outline and measured forty-four by forty-eight inches. Resting on the floor, which was thirty-nine inches below surface, was a bison skull, the decayed horns still attached. Across the front of the skull rested a large section of the articulated vertabrae of a bison. With this were other bison bones, two pieces of worked bone, a fragment of clam shell and a few sherds. The upper part of the skull was covered with what appeared to be clean undisturbed soil to a thickness of three inches. Above this the fill was that usual to the pits: Dark soil containing charcoal, a small amount of pottery, a quantity of worked stone, a bone awl and a bone bead. The bison skull had evidently been thrown on the floor of the pit and covered with clean soil.

A few other pits deserve mention. Pit L39 was in the north part of section 5L34, twenty-two feet south and sixty-five feet west of the fireplace in house 2. It was circular in outline, sixteen inches in diameter and bowl-shaped. Its extreme depth was eighteen inches, about half of which was dug in the subsoil. The pit was about half filled with smooth river pebbles, averaging in size somewhat larger than hen eggs. Mixed with the stones was a generous amount of charcoal. The walls and floor of the pit showed no signs of fire and the stones and charcoal seem to have been thrown into the pit.

Another isolated pit, L31, in section 3L51 (area two), was circular in outline, thirteen inches in diameter and twenty-seven inches deep, at least three inches of the depth probably being due to re-

deposited soil. The sides were straight but the bottom was deeply cupped. The fill above the bottom contained only a few flecks of charcoal and small bone fragments. At the bottom were fifty small thin flakes of flint, all of which were of the same color and apparently struck from the same core. Most of the flakes were too small and thin to be used in the manufacture of tools.

The purpose for which these pits were dug remains unknown. Only pits having deep basins would seem to be suitable for storage purposes. The soil itself does not appear to be suitable for the characteristic bottle-necked cache pit of the plains. The walls, unless reinforced in some way, would quickly crumble if the pit remained open for even a short time. Some evidence of this having happened is present, but is uncommon.

At the Dn 1 (Nichols) site on Muddy Creek in Dundy County, thirty miles south of Ch 1, and which yielded identical material, two pits were found which, in shape, conformed to the usual pattern of the plains cache. Both of these had held extremely hot fires and the sides were burned to a red color and extremely hard.

These pits differed from true caches in that no neck was present. It is entirely probable, however, that necks may have been present originally and have been removed by erosion and the plow, or they may have slumped into the pit before it was filled. Due to this the top measurements cannot be given with certainty, but at the point where it could be first outlined, some nine inches below surface, pit one measured forty-six inches in diameter. The sides sloped outward to a point ten inches above bottom. Here the walls sloped inward until the floor was reached. The greatest diameter was sixty-two inches while the flat floor was forty inches in diameter. The floor was fifty-seven inches below the surface. (Pl. 3, 2.)

The second pit much resembled the first except in depth. The mouth where it could first be outlined had a diameter of thirty inches; a greatest diameter of sixty inches was reached at a point some eight inches above the flat floor which had a diameter of forty inches. Depth was thirty-six inches.

The fills of both pits were nearly alike. The bottoms were covered with ash and charcoal to a depth of five or six inches. Resting on this layer was a bed of limestone rocks eight to ten inches thick and with the interstices filled with ash and charcoal. These ranged in size from as large as a man's fist to stones eight to ten inches in diameter, and the lower ones were burned until they were crumbly. Resting on these was a thin layer of charred corn cobs, husks and in the largest pit was found, resting upon the stones, a complete ear with husks still covering the kernels.

The fill above showed, in the lowest level, a rather heavy admixture of burned earth in rather large lumps and may represent the slumped mouth of the pit. Above this, the fill was that common to all pits: Dark soil, a small amount of charcoal, sherds and broken bones. From the upper part of one pit came a charred plum seed and what appeared to be a hackberry seed. From the thick bed of ashes and charcoal, and the numerous rocks in the bottom, it would seem possible that these two pits represented cooking ovens.

Nothing resembling these was found at the Ch 1 site.

It is possible that most of the pits were dug for the disposal of odoriferous garbage and village refuse. This is rendered more probable by the non-discovery of any midden area other than the pits. Pits in the vicinity of the house remains may represent borrow-pits where earth was obtained for covering the sides and roof. Pits in the form of connected basins possibly represent small pits dug at different periods, but no overlapping could be distinguished in excavating them. On the other hand, one pit which contained a large bed of undisturbed white ashes proved to have a bottom made up of two shallow basins.

During the course of excavations conducted during 1940 at the N 1 site (Burkett), a protohistoric Lower Loup village site in Nance County, Nebraska, two series of pits were found which conformed very closely to those which were found at Ch 1. A like group was found at the historic Pike-Pawnee site in Webster County (Wt 1) in 1941. These pits in every case were very close to where the floor of an earth lodge was excavated. All contained a fill of dark earth, animal bones, charcoal, and beds of white ash. These are believed to represent borrow-pits from which earth had been taken for use in covering lodges, and which later had been filled with refuse.

Trash-filled pits are a characteristic trait of Woodland sites in Nebraska.²³ Pits at these sites, however, are more regular in shape than those from the Ch 1 site, and appear to represent both subsurface habitations and storage pits. The smaller pits, which are believed to have been used for storage purposes, somewhat resemble pits occasionally found at the Ch 1 site. It is possible that some of the largest pits at Ch 1 may represent subsurface floors of some type of dwelling, but no definite proof of this was discovered.

Perhaps an explanation of the Ch 1 pits lies in a combination of purposes. Some, especially the deeper ones, may have been dug originally to serve as caches, others as borrow-pits, while still others were dug primarily for the disposal of refuse. Whatever the original purpose, ultimately all served for disposition of refuse.

Post Holes

As previously mentioned, scattered post molds forming ne pattern were not uncommon in this site. Several were found just south of House 2. Some of these scattered post molds contained long bones

23 Hill, A. T., and Kivett, Marvin, 1941, pp. 153-161.

pushed down beside the posts as was done at Feature 1. A few post molds contained decayed wood in varying conditions. No post molds were over six inches in diameter and only a few were that large. In sections 4L36 and 4L37 were four post molds. One pair were sixtythree inches apart on a northwest-southeast line. Three fect south another pair, oriented in the same direction and forty-five inches apart, were found. These posts are approximately equidistant from House 1 and House 2, being west of the former and south of the latter structure. It is suggested that the posts might represent the former presence of a "meat rack," or that hides in the process of tanning might have been stretched between them.

Immediately west of these posts, in the northwest quarter of section 4L37, a group of thirty-one artifacts was found. The group occurred in a roughly circular distribution, and was nine inches below the surface. The group consisted of two large chipped celts, eleven side-scrapers or knives, eleven scrapers and seven large flakes. While their position suggests that they had been placed in a cache, no outline could be distinguished.

Some post molds encountered were arranged in groups of two or three, but as many were alone as were grouped.

A few patches of burned earth were found in various parts of the site, sometimes near pits but never near post molds except in House 1, House 2 and Feature 1. These patches varied in diameter from fifteen to twenty-two inches and probably represent outdoor fireplaces. In no case, however, was the earth beneath burned to sufficient depth to suggest long-continued use.

Artifacts

The Ch 1 site proved to be rather rich in cultural material. Chipped stone artifacts were the most numerous, followed by pottery, bone, ground stone, antler, metal (of European origin), wood and leather. Since pottery is believed to be the most important cultural determinant, it will be treated first.

The most abundant ware at the Ch 1 site is dark in color, ranging from a glossy black to a dull grey with a small number of buff

Pottery

to orange-red sherds. Many grey and buff sherds are smoke-blackened to such an extent that all the ware seems black at first glance. Many sherds bear a thick crust of soot, which, while it is easily peeled away, requires a great deal of effort to remove entirely. Variations of color may be present on the same sherd, part being black and part grey. In sherds of this sort, the colors may change gradually or there may be a sharp break. Color of the core of the sherd is generally the same as interior and exterior surfaces, but buff or orange-red sherds sometimes have a black core. Occasional sherds have one dark and one buff surface. The dark color of the ware is probably due to the use of a smothered fire in baking the ware, since sherds re-burned in an open fire invariably come out some shade of red. The paste is well worked, fine in texture, and the structure is very compact. Fracture is in straight lines and the break is clean and granular. Tempering consists of fine sand sparingly used. An occasional sherd shows a heavy amount of tempering, but large amounts of sand are unusual, as is the use of large particles of sand as a tempering agent. Fine particles of shell were noted in a few sherds, but their presence may be accidental rather than intentional. Forty-two sherds (less than one percent of the total) show a heavy tempering with mica particles which give the sherds a spangled appearance. (Pl. 5, 4, c.) The ware is rather brittle and breaks readily into many small pieces, but does not crumble readily and has little tendency toward splitting. In hardness, the bulk of the sherds test less than four (Fluorite), but harder than three (Calcite). A few test five (Apatite), and some, particularly the buff-colored sherds, run as low as three. Some of the mica-tempered sherds test less than three, but harder than two (Gypsum), while very few tested four. In thickness, the sherds fall between extremes of 3/32", and 3/8", the majority being less than .25". One hundred sherds taken at random were measured for thickness with the following results:

3/32" - 4	6/32'' - 19	9/32" — 5
4/32" 16	7/32" 18	11/32" 3
5/32" - 22	8/32" - 12	$12^{\prime}/32^{\prime\prime}-1$

Mica-tempered ware is slightly thinner, 32 of the 42 sherds measuring 5/32" or less in thickness. The ware is not uniform in thickness, slight differences often occurring in the same sherd. Except for the base, no part of the vessel seems to have been intentionally thickened. Rims, shoulders and body sherds average the same in thickness, while lips may be the same thickness, slightly thicker or slightly thinner.

Judged from the sherds and the four restored pots from the site, the vessels were small to medium in size, with miniatures present and large pots rare or non-existent. Characteristic of the site is a pot of about one gallon capacity, with conoidal or sub-conoidal base,

round shoulder, sloping upper body and slightly constricted neck. The neck is merely a line of juncture between rim and body, and rim is only slightly flared. Restored pots of this type measure from $7\frac{1}{4}$ " to $10\frac{1}{4}$ " in height, with greatest width from $6\frac{3}{4}$ " to $10\frac{1}{4}$ ". A less common type of pot has a rounded base with globular body, neck very slightly constricted and rim almost straight. A restored pot of this type measures $4\frac{1}{4}$ " in height, with a greatest body diameter of $4\frac{7}{4}$ ". Collars are entirely absent. Restored pots measure as follows:

No. 1 — Greatest diameter of body 4%", diameter of neck, 4%", height 4%". The body of this pot shows very faint grooving and has been well polished. Grooves have been completely erased from rim. Lip is smooth. (Pl. 6, 1.)

No. 2 — Greatest diameter of body $6\frac{3}{8}$ ", diameter of neck $4\frac{1}{2}$ ", diameter of mouth 5", height $7\frac{1}{8}$ ". This pot is covered from base to lip with ridge-and-groove markings and has parallel diagonal incisions across the lip. (P1. 5, 1.)

No. 3 — Greatest body diameter 7", neck diameter 5%", diameter of mouth 6", height $8\frac{1}{4}$ ". Ridge-and-groove marked from base to lip. Parallel diagonal incisions across lip. (Pl. 5, 2.)

No. 4 — Greatest diameter of body $10\frac{14}{7}$, diameter of neck $7\frac{14}{7}$, diameter of mouth $7\frac{12}{7}$, height $10^{\prime\prime\prime}$. Body carried groove-and-ridge marking. This has originally covered the entire pot but has been erased from the rim. The lip bears the usual parallel diagonals, but impressed rather than incised. (Pl. 6, 2.)

Seventy percent of the body sherds are smooth, with a well polished, often shiny exterior.24 The remainder bear broad, shallow tooling marks such as could have been made by drawing a flat, smooth tool or a paddle over the surface while the paste was yet plastic. (Pl. 5, 4, B, D.) After this treatment, the vessel was later subjected to the same burnishing action as the untooled ware. At times, this burnishing action almost completely erased the tool impressions. Many smooth sherds when held under a strong light give the impression that they were once grooved. The same impression is received from the "feel" of many sherds. These, however, are only impressions; consequently, where grooves and ridges cannot be distinctly seen the sherds are classified as smooth. It is very probable that all pots were subjected to the paddling process, the tool marks or grooves being later erased. Toolmarked rims number 140 or almost 33% of the total of rim sherds, while 272 rims are smooth. Whenever tooling is present, it originally seems to have covered the entire body. Grooves always run vertically. Vessels were sometimes marked with the

²⁴ This proportion agrees closely with the estimate made by Wedel on sherds from Ft 9, the Dick site, in Frontier County. Wedel, p. 180, 1935.

grooved paddle from base to lip, and grooves and ridges then erased from the rim by use of a tool which left horizontal "trowel marks." Seven rim sherds show faint tool-marks remaining where this smoothing was incomplete. Sherds tempered with mica are never tooled, and, while smooth, show no polishing. Interior surfaces are smooth but seldom as well finished as the exterior, and marks left by the smoothing tool are often present.

A few sherds show incised decoration, one rim sherd showing two incised parallel, horizontal lines. Three sherds forming a portion of a small pot show a number of parallel, horizontal lines, the space between them being filled with parallel diagonal lines all sloped in the same direction. This pattern apparently covered the entire upper body of the vessel from shoulder to neck. One small sherd shows an incised triangle: Base upward and apex almost meeting the apex of a triangular element whose base is downward.

Neither slip nor painted decoration was present. One small micatempered sherd bears three nodes arranged in a row on the exterior surface. These are not punched nor are they raised by pinching, but are apparently applique.

Flaring rims are characteristic, and while the flare may be pronounced it is generally slight. Generally, the flare is formed by the angle at which the rim meets the body, the rim proper being without curve, although curved rims are present. A few rims seem to have risen vertically and without flaring; and a few, after flaring outward, turn back and form a reverse curve. One rim sherd suggests the presence of a spout.

Due to the tendency of this ware to break into very small pieces, the percentage of indeterminate sherds is high. In the following table one column is given in which the figures have been corrected to show the percentage with sherds of indeterminate shape left out of account. Since rim sherds tend to break at the neck, it is quite possible that the percentage given for vertical rims is below the true figure.

	Corrected by eliminati			
	Number	Percentage	of Indeterminates	
Flared	211	49.65	86.12	
Indeterminate	180	42.35		
Vertical	16	3.76	6.53	
Reverse curve	11	2.59	4.49	
Bowl	7	1.64	2.86	
TOTAL	425	99.99	100.00	

Lips are both flat and rounding in outline. Rounding lips occasionally have a pronounced bevel which may be on either side. Pressure used in forming the flat lip often displaced a small amount of paste and formed a small beading about the rim immediately below

the lip, and in extreme cases the pressure caused a thickening of the rim, giving it a slight wedge shape in profile. The lip is the area most commonly chosen for decoration, 62 of the 425 rim sherds (14.59%) being so treated. Decoration usually resulted in a slight thickening of the lip. The most common decorative motif was with parallel diagonal incisions across the lip. Parallel diagonals were occasionally impressed with a blunt tool rather than incised with a sharp implement. Next in favor were impressions punched in the lip. These punctates were impressed in several ways. One, with a tool leaving a round mark; a second, with a tool leaving an impression which is oval or ovoid in outline, in which case they tend to be placed diagonally to the lip; or, third, with a square-ended tool which was held at such an angle that it produced a triangular punctate with the apex more deeply impressed than the base. The herring-bone motif is present both impressed and incised, but more common is a shallow impression or round notch across the lip produced with a smooth, round tool or the back of a finger nail. Sharp notches are present and one lip shows transverse single-cord impressions. Percentages of various types of lip decorations are as follows:

Parallel diagonal incisions	27)	3048.39%
Parallel diagonal impressions	3)	
Punctate; round, ovoid and triangular	12	19.35%
Incised herring bone		711.29%
Impressed herring bone		
Round notch (Impressions of round tool or finger na		14.52%
Sharp notch	3	4.84%
Cord impressed	1	1.61%

Sherds of bowls were recovered from this site but restorations were not possible. In size they do not seem to have been large. Nothing can be determined with certainty as to the shape of the base of these vessels, but round bottoms are suggested. In at least one case the mouth of a bowl was somewhat constricted, faintly suggesting the seed bowl of the Southwest. Tooling marks made by the grooved paddle were present on some bowl sherds while others were smooth. As with the pots, some lips showed decoration while others were plain.

No handles or lugs were found, but one rim sherd bearing a vertically placed lug or ear has been found on the surface of the site in the past.

One of the outstanding traits of the Dismal River pottery complex is the ridged or corrugated surface achieved by the use of grooved paddles, the surface afterward being burnished. Within the limits of Nebraska, vessel surfaces in prehistoric times, where not left plain or smoothed, were generally roughened with a cord-wrapped paddle. In the protohistoric Lower Loup Aspect, however, as in the case of the Dismal River, the tooled ware is the predominating type, with cord impressions absent or extremely rare. "Nearly one-half of the body sherds are polished, and all show traces, more or less distinct, of the use of grooved paddles,"²⁵ This might be a description of body sherds from the Ch 1 site. Other pottery traits were held in common by the two groups, though in differing proportions, among them being the sub-conical basal forms of pots. This form predominates in Dismal River pottery and is present at the N 1, Burkett site.²⁶ The common body shape is also similar to one type from the same site,²⁷ except in regard to handles which are never found on Dismal River vessels. Lip decoration as given for Lower Loup vessels by Dunlevy finds a counterpart in the ceramic remains from Ch 1, but in differing percentages.²⁸

The grooved paddle surface treatment of pottery seems to be a trait common to all historic and protohistoric groups in the northern plains area, arising in late prehistoric times. Historic Mandan pottery is marked with vertical grooves and ridges, and the most common type is said to be "large jars of elongate-globular form, that is, with rounded shoulders and semi-pointed bases."29 This, except for size, resembles Dismal River ware. Rim forms, however, are totally unlike. Sherds from historic Hidatsa³⁰ and Arikara³¹ sites show the same surface treatment, while Cheyenne pottery shows the paddle marks placed horizontally and partially obliterated by subsequent smoothing. Chevenne body sherds are said to have indicated vessels that were generally without angular shoulder.³² Dismal River pottery in contrast to that from the Arikara, Mandan, Hidatsa and Cheyenne sites does not show a combination of grass wiping and paddle marking, but does show a tendency toward smoothing and completely erasing the grooves in the neck area.

Protohistoric ware, probably Mandan, from the Rygh site in South Dakota also shows surface treatment with grooved paddle,³³ while sherds from the prehistoric Arzberger Site in the same state exhibit both cord-wrapped and grooved paddle surface treatment.³⁴ Finally, sherds treated with the grooved paddle are reported from the lower deposit in Ludlow Cave in the northwest corner of South Dakota.⁸⁵

²⁵ Dunlevy, 1936, p. 174.
²⁶ Ibid., p. 176.
²⁷ Ibid., p. 177, fig. 12, 1061.
²⁸ Ibid., pp. 178-179, and fig. 13, B, C, G, I.
²⁹ Strong, 1940, p. 364.
³⁰ Ibid., p. 365.
³¹ Ibid., p. 369.
³² Ibid., p. 373.
³⁸ Ibid., p. 379.
³⁴ Ibid., p. 385.

The use of the grooved paddle in the surface treatment of pottery is thus an older trait in the northern area than in the Central Plains, where it does not appear until protohistoric times.

Aberrant Ware

A few rare sherds of an aberrant ware were found. Of thirtythree sherds four were portions of rims. The color ranges from brownish to gray, and the temper consists of coarse sand well distributed throughout the paste, which is generally coarse in texture. The exterior surfaces generally bear deep parallel imprints of twisted cord. A few sherds are covered with shallow, interlocking punctations. One rim is straight with vertically arranged cord impressions on the exterior surface, terminating at a rounded smooth lip. Another rim, slightly curved, bears vertical cord impressions on the exterior surface, and the flat, slightly thickened lip also bears cord imprints. The rim carries two deep punctates placed diagonally, one being 1/2", the other 11/4" below the lip, the punctates forming nodes on the interior surface. One body sherd bears a series of small, shallow impressions, which suggest the use of a toothed wheel in forming the decoration. (Pl. 5, 4, A.) No sherds of this ware were found in the excavation in area one, but they occurred in excavations in both areas two and three, as well as in test sections dug well to the west and to the southeast of the main trenches. None came from the trash-filled pits, and in general they were found close to subsoil. It would appear from the data at hand that the material, while rare at the site, follows the terrace edge rather closely. Since no excavations could be made in area two except near the terrace edge, a concentration of the material might well be present in other parts of the area.

These sherds appear to belong to some Woodland manifestation. Small sites yielding a few sherds of this type, either alone or mixed with other material, are not uncommon in the vicinity. Two surface collections from sites on the south fork of the Stinking Water Creek contain both Dismal River and Woodland sherds, while three sites are known on the Frenchman River, two of which yield Woodland sherds alone, while one yields a few Woodland sherds overlain by Upper Republican pottery.

Pipes

Pottery pipes of a type distinctive in this area are a trait of the culture. Stone pipes occur as well, but are much less common. No complete pipes were found, nor are any known from the site. Numerous large fragments, however, permit the type to be defined. A straight, tubular pipe of clay, tapering toward the mouthpiece where it flares out into a "bit" which is lozenge shaped or ovoid in cross-section, is characteristic. (Pl. 7, 1, A, B, C, D.) Other forms may occur, but are much less common. The bowl portion is occasionally

square in cross-section (Pl. 7, 1, G,) and bits are known which do not flare and are round. (Pl. 7, 1, K, F.) Typically the pipes are well made from the same paste used in pot making, are finely finished, and furnish some of the best examples of the ceramic art from the site.

In sharp contrast to the pots, pipes are often decorated, the decoration consisting of incised lines, and, less commonly, punctates. Decoration occurs only on the portion of the pipe beyond the mouthpiece. The most common motif is with parallel incised lines encircling the pipe and occuring in series of from two to more than ten. (Pl. 7, 1, L.) All decorated sherds bore these lines and two carried additional incising. On one sherd, two parallel lines encircled the pipe immediately below the lip of the bowl. A row of short incised lines depended from the lower line. Another pipe-bowl fragment was encircled by four parallel incised lines. The space between each two lines held a row of tiny punctates so arranged that each "dot" came between each pair in the next row. The pipe is broken in such a manner that the entire design cannot be traced, but apparently a row of incised triangles encircled the bowl, the apex of each resting on the last line, with the base to the opening in the bowl. Depending from the lowermost line were a number of triangular elements, equidistant from each other; bases formed by the line, and with each apex toward the smoker. These were separated from each other by a number of short incised lines also dependent from the lower line. Nearer the bit end, another pair of parallel lines ran in opposed directions. (Pl. 7, 1, J.)

In a few cases pipes were so made that the use of a stem is indicated, but the majority had bowl, stem and mouthpiece modeled as a whole. These pipes were probably modeled over a core which burned out in the firing, and one sherd indicates that two cores were used, one to form the bowl and a separate one for the hole through which the smoke was drawn.

Sherds indicate one pottery pipe was of the elbow type, but it is so badly broken that little can be told about it. (Pl. 7, 1, H.)

Pipe lengths cannot be given because of the fragmentary nature of the material. However, it is doubtful if any exceeded 4" in length. The most perfect "bit" or mouthpiece had a width of 1-3/32", was $\frac{1}{2}$ " thick, with the diameter of the bore 3/16".

It may be well to mention here that pipes from this site were not all of clay. Most important of the smoothed stone artifacts from the site are the stone pipes. A fragmentary elbow pipe of limestone came from the excavations in area three. Most of the stem portion is missing, but enough remains to show that stem and bowl did not quite form a right angle, the bowl sloping very slightly outward. The pipe is round in cross-section, and a small projection or nub is present on the back of the bowl near the base. The bowl is 1½" in diameter and 1¾" high. Both holes are conical, that in the bowl being about

 $1\frac{1}{4}$ " deep and $\frac{3}{4}$ " in diameter at the top. No "cake" was present in the bowl, but both exterior and interior were blackened and stained. Pipes of this type were previously unknown from the site, and no others suggesting the type have been found. (Pl. 7, 1, E.)

One piece of catlinite, or red pipestone, was found which shows a high polish. Signs of a drilled hole can be seen, but the fragment is too small to give a clue to the shape of the pipe. A small piece of steatite, however, seems to have formed part of a tubular pipe of the same general pattern as those of pottery "cloudblowers" previously mentioned. Fragments of tubular pipes of steatite are known from the surface of the site, and one from the Olmstead collection is shown. (Pl. 7, 1, I.)

This pipe is tubular and tapers toward the stem. The rim of the bowl is very thin, but bowl wall becomes thicker toward the center. The pipe measures 2-3/32" in length, with a greatest diameter of 34". The extreme diameter of the bore is 54". The bore tapers for approximately 15%" and then contracts sharply to a width of 5/16", the small end of the pipe having a diameter about 3/32" larger than the bore. The inside of the bore is rough with many parallel horizontal striations caused by the tool used in drilling. The outside of the pipe is smooth, highly polished and carefully finished without decoration of any sort. It is not improbable that a stem of wood, or perhaps of bone, was used with this pipe.

The common pipe from this site is of the straight, tubular "cloudblower" variety. They are most commonly fashioned from clay, with flaring mouthpiece, and often bear incised decoration. Stone pipes are present but rare, and resemble those of pottery except that flaring mouthpiece and decoration are not present. Other forms of pipes are exceedingly rare.

Pipes of this type are typical of the Pueblo cultures in both the prehistoric and historic horizons.³⁶ Pipes of pottery from prehistoric cultures of the eastern plains region are generally curved or trumpet-shaped, and, except in one case, bear only³⁷ a very superficial resemblance to those from Dismal River sites. Pipes from other cultural groups belong sometimes in the block shaped group, while others are of the elbow type. The pipe being used in most religious ceremonies, the natural assumption would be that a group carrying a

²⁶ Roberts, Frank H. H., Jr., 1929, pp. 124-125. 1930, pp. 140, 141 and 153. 1932, pp. 133, 134.

McGuire, 1897, pp. 378, 370. Figures 6, 7, 8. The mouthpiece of the pipe shown in Figure 6 can be duplicated with "bits" from the Ch t material. It is noteworthy that these three pipes bear incised parallel lines encircling the pipe; while the pipe from Taos bears, in addition, triangular elements pendant from the lowest line with the apexes of the triangles toward the smoker.

³⁷ Wedel, 1935, p. 200 and Pl. VIII, r.

southwestern type of pipe as a trait would probably carry a number of non-material traits also, especially in matters of religion and ceremonv.

The authors are aware of no tubular pipes of stone from the Plains area in true historic times.

The tubular stone pipe is given by Steward as a trait of the Shoshoni Culture,38 and he describes and figures a tubular pipe of steatite from the prehistoric Promontory Point culture of the Salt Lake Basin.

Other Pottery Objects

A small ball of burned clay was found. This was not quite round, and measured approximately .38" in diameter.

Work in Stone

Work in chipped stone was abundant at Ch 1. Chert and jasper predominated, but quartz, quartzite, chalcedony and obsidian were well represented, with other varieties of stone present in small amounts. Little or none of this occurs locally in any great amount, though small quantities might be obtained from neighboring gravel beds. Large, roughly finished celts and end scrapers are typical of the site, but finely flaked stone work is also present.

End Scrapers

The most common object of worked stone at this site was the common "snub-nosed" or end scraper, of which the lower surface is flat or slightly curved but generally unworked. The dorsal surface usually has a pronounced keel or ridge, though some examples are almost flat. Most commonly they are roughly triangular in shape with the base somewhat curving. (Pl. 8, 2, A, B, C, H.) In general, only the base was worked to any extent. Long narrow flakes were removed here, producing a square or slightly beveled edge. In general, end scrapers from this site are larger and more roughly made than artifacts of this type from the prehistoric sites in Nebraska, but small and carefully flaked examples with a retouch on all edges were not uncommon. A very few end scrapers have a broad notch in each side, perhaps to facilitate hafting with a handle of wood or antler. (Pl. 8, 2, E.)

Side Scrapers

Side scrapers were also numerous. A common type is planoconvex in cross-section, long in proportion to width, tapering toward ends, and with blunt scraping edges on both sides. (Pl. 8, 2, I.) Another type of side scraper, much like the above, is flat in crosssection, with straight rather than tapering sides, and with the ends rounding or squarish. The edges are beveled for scraping rather

³⁸ Steward, 1937, p. 85.

than cutting, and generally have been finely retouched all around. Many flakes are also present in which all retouching is on one side, and the bevel is short and abrupt. Flakes are of various sizes, and generally no attempt has been made to shape them.

Projectile Points

Hundreds of projectile points have been found on the surface of this site in past years. Oddly enough, comparatively few were recovered during excavations, and few of those found were unbroken. In general, those found are small and well made. A total of 111 points were found, of which seventeen were so broken as to be unclassifiable. Of the remaining ninety-four, sixty-four (68.08%) were triangular unnotched points (Pl. 7, 2, H, I, J), twenty-one (22.34%) were side-notched triangular (Pl. 7, 2, E, F, G), while nine (9.57%) were stemmed. (Pl. 7, 2, P.) Breaking this down further, using Strong's system of classification,³⁹ we have the results shown in the following table:

Triangular, unnotched, straight base, Triangular, unnotched, concave base Triangular, side-notched, concave base Triangular, side-notched, straight base Barbed, expanding stem, concave base Barbed, expanding stem, straight base Shouldered, unbarbed expanding stem, convex base

- Shouldered, unbarbed, expanding stem, SCa2..... straight base
- Shouldered, unbarbed, expanding stem, SCa3...... 1......... 1.07% concave base

Two points vary enough from the usual pattern to deserve mention. One, of chert, side-notched, with concave base (NBb1), has a small piece broken from the base and from the point. One side is deeply serrated or notched, eight notches, at least, having been present. The point is slightly over 1¼ inches long. The other point is of obsidian, and the base is missing. Both sides carry deep notches. It has been suggested that these points may have served as saws. (Pl. 7, 2, N, O.)

An occasional projectile point from the site seems too large to have been used on an arrow and more probably served to tip a spear, or was hafted for use as a knife. Only one was obtained during the 1939 excavations, but at least four others are known to have come from the site in the past. The exact size cannot be given, as most of those known are broken. The fragment obtained by the Historical

³⁹ Strong, 1935, p. 89.

NBa	 40	····	42.55%	
NBb	24		25.42%	
NB1	 14		14.90%	
NBa1	 7		7.50%	
SCb1	 3		3.21%	
SCb2	 2		2.14%	
SCa1	 2		2.14%	
SCa2	 1		1.07%	
Society (Pl. 7, 2, K) is, except in size, identical with arrow points of NBal type, while the two fragments in the collection of the junior writer are stemmed. The width of the point found in 1939 is $1\frac{3}{6}$ inches, and is broken too near the top to allow an estimate to be made of its length. The stemmed points referred to above are slightly more than $1\frac{1}{2}$ inches in extreme width, and probably were between four and five inches long originally. One perfect specimen from the site is slightly over five inches in length.

Knives

Objects classed under this heading are common at the site, and range from simple retouched flakes to well-made diamond or lozengeshaped tools with four cutting edges alternately beveled. On artifacts of the latter type, the edges are of about the same length. A type commonly found, however, has a rounding base with the pointed portion of the blade longest, and with only this point beveled on alternate sides of the edges. (Pl. 8, 2, D.) Other artifacts classed as knives or cutters are pointed on both ends, enlongated oval in outline, and with edges beveled on both faces. A specimen taken as typical of the group measured 23⁄4 inches in length, 11⁄8 inches in width, and 9/16 inches in thickness. Another specimen, with one end broken off and missing, measured 23⁄8 inches long, 11/16 inches wide and 5/16 inches thick.

Flake knives occur frequently. These have two finely retouched parallel edges, and are sometimes retouched on the ends. The ventral surface is flat or slightly curved while the dorsal surface shows where two — or, more generally, three — flakes, had been previously removed while the flake formed part of the core. In size, flake knives found here vary from one to four inches in length and the width is about one-third the length. In addition, many rough flakes of no uniform shape show more or less careful retouch. It is probable that many thin sharp flakes were also used as cutting implements.

Rather long narrow blades are quite abundant. These are triangular in outline, and the base always shows a sharp break. Edges may be beveled on both sides or on opposed sides. Nothing is definitely known as to the shape of the base, but it is believed that they were rounding.

Celts

Celts were well represented, both by perfect specimens and fragments. (Pl. 8, 2, F.) Small ones were found, but the large, roughly flaked type was most common. They were generally made from a slab of chert which still retained the original crust on the midportion of the blade. Some of the better finished examples are oval in outline, but most are only slightly ovate and may be oblong with rounding ends. Specimens have been found which are thick, roughly triangular

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slabs flaked only at the wide end. Three celts give the following measurements:

Length	Width	Thickness
7″	4″	1-3/16"
81/4"	41⁄4″	13/16"
2-13/16"	1-11/16"	1/2"

One long piece of chert which bears the original crust has been flaked on one end only. In shape, it more nearly represents a chisel or gouge. In length it measures nine inches, with a width varying from three to three and one-half inches. Thickness is eleven-sixteenths of an inch.

A broken celt made from greenish quartzite very much resembles in size, workmanship and material some of the scrapers from the historic Pawnee sites.⁴⁰

Drills

Two types of drills occur at this site, both in considerable numbers. Neither type is commonly found unbroken. One type consists of a narrow spike of flint projecting from an expanding base. The sharp pointed spike is rounding or ovoid in cross-section, and seldom or never as much as one-quarter inch in greatest diameter. The expanding base flares sharply away from the drill. In most cases the base is a retouched or, sometimes, an unretouched portion of the original flake from which the artifact was shaped. (Pl. 7, 2, L, M, Q.) In other cases, however, it is clear that previously fashioned artifacts have been reworked into drills. Drills of this kind are found in which the base is the well-worked scraping portion of the common planoconvex end scraper. Others have been fashioned from the four-edged knives; and drills, the bases of which show them to have originally been projectile points, are not unknown from this site.

In addition to the expanded-base or T-type drill, and equaling it in numbers, are the straight drills. These are both straight and elongated ovoid in outline. The straight specimens usually terminate in a blunt, square end (Pl. 7, 2, A), while the others taper to a point at each end. (Pl. 7, 2, B.) Both square ended and pointed end types are rounding to oval in cross-section, and are generally well flaked. Many show polish, the facets caused by removal of flakes being almost worn away on some specimens. These may have been used for drilling stone pipes, bone, wood, etc., while the smaller expanding base drills seem adapted for such uses as perforating leather. No perfect specimens of the straight type were found, but surface finds indicate a length which varied from two inches to four inches. One specimen larger and more roughly made than usual measures two and one-half inches in length, and appears to be broken near the middle. Its greatest width is .81 of an inch and greatest thickness .53 of an inch.

One broken drill had a short, thick protuberance on the edge, apparently about midway between point and center. This type was known previously from surface finds,⁴¹ but only one was found in the excavations. Surface finds in the past indicate that artifacts of this kind are fairly common here, and may have up to three or more of these knob-like protuberances on the edge or edges. (Pl. 7, 2, C, D.) One surface find of this type is rather large, over five inches in length, with ends squared, and with two short arms of equal length placed opposite each other, which give the specimen the appearance of a Latin Cross.

Object of Unknown Use

A broken artifact of unknown use came from pit L 7 in area two. The object is carefully flaked from clear quartz, measures .75 of an inch in length, and has one end broken off. The sides are slightly constricted, and it measures .44 of an inch in least width. At the perfect end, the width was .50 of an inch. At each corner of the perfect end was a small sharp point or barb, while a short, pointed tang was placed between the points. (Pl. 6, 3, I.) The broken end was probably identical with the perfect one. Two other specimens of this type are known from the site, one in the possession of the tenant, Floyd Lovitt, and the other being in the Olmsted Collection now belonging to the Nebraska State Historical Society. (Pl. 6, 3, J.) The Olmsted specimen is made from obsidian.

The two compare as follows:

	Length	Least Width	Greatest Width
Olmsted Specimen	1.125"	.50″	.61″
Excavated Specimen	.75″	.44"	.50"

Pecked and Polished Stone Arrow Shaft Smoothers and Abraders

Objects of ground stone include only a few forms. Arrow-shaft smoothers were most common, forty-eight fragments being found. Four fragments from section 28, in area one, have apparently been a matched pair of the long "nail buffer" type. (Pl. 8, 1, A, B, C, D.) The most nearly complete one of the pair, when repaired, measured just under seven inches in length. Another nearly complete specimen measures $3\frac{3}{4}$ inches long, 1-7/16 inches in greatest width (from which it tapers slightly toward each end), and is three-quarters of an inch thick, with

41 Olmsted, 1932, pp. 175-177.

a very shallow groove. Occasionally, one bears a groove on each side. Most of the fragments appear to have been put to other uses after having been broken; either as awl sharpeners or for other purposes for which an abrader was needed. Arrow-shaft smoothers and other abraders are made generally from a hard, dark red Dakota sandstone. A few are made from a coarser, soft sandstone which is abundant locally. One piece of rather hard limestone seems to have been used for an arrow-shaft smoother. The piece, which is slightly over three inches in length and approximately two inches thick, bears a groove on one side.

Seven irregularly shaped pieces of sandstone bear from one to six grooves on one or more faces. These grooves are generally deeper on one end or at middle than over their entire length, and were possibly used to sharpen awls. (Pl. 8, 1, G.)

Thirty-seven fragments of sandstone showing polish on one side were found, two of which bore stains of red paint. While most of these are broken, three pieces have been definitely worked to an oval or ovate outline. The most nearly complete example of the type measures, in its broken state, four inches in length, three inches in greatest width, and ranges from one-half inch to three-quarters of an inch in thickness. Some of these are of very fine-grained and hard sandstone, and may have been employed as manos in grinding corn. (Pl. 8, 1, F, H.)

From a large pit, L7, which lay in Sections 3L12, 3L13 and 3L14, came a flat slab of sandstone. The sides are smooth and both faces are smooth and polished. One face is more polished than the other, and has a suggestion of a hollow. The slab is rectangular in outline, measures thirteen inches in length, five and one-half inches in width, and is about one and one-half inches thick. (Pl. 8, 1, E.) Near it was a piece of coarse sandstone, ovate in outline, with one convex polished face. One end was broken off and missing; its length was six inches, width four inches, and it measured two and one-half inches in thickness.

Metates and Anvil Stones

Six fragments of metates were found. These were all of a compact sandstone, and bore part of a shallow trough with sloping sides. One piece of hard, tough stone (quartzite?), which measured eight inches in length by seven inches in width, and which was three inches thick, is slightly hollowed out, and was probably used in pounding wild berries, pemmican, or corn.

Grooved Maul

One broken maul, or hammer, has been broken through the middle. It is made from some tough, hard stone, and probably was selected because of its natural shape. It has been pecked only enough to remove rough corners and shape it roughly. The groove about the middle is shallow. Length of the fragment is about three inches. It is oval in cross-section, one and one-half inches by three inches in diameter, and the end is much battered and chipped. Artifacts of this class are occasionally found on the surface of Dismal River sites, and are, so far as is known at present, always roughly made from naturally shaped stones.

Beads

From the upper eight inches of earth removed from the trench in the cornfield came a small, round, flat, stone bead identified as turquoise. It is dull blue in color, one-fifth of an inch in diameter, and .06 hundreths of an inch in thickness, with a perforation .06 hundreths of an inch in diameter. The hole is slightly off center and runs obliquely. Beads of this type are known from the surface of this and other sites of the culture in the area. (Pl. 6, 3, K.)

Beads of turquoise are a southwestern trait, and, while they might be secured by trade or by raiding parties, they none the less show contact with that area. In the past, a partially drilled and broken turquoise bead was found at the Dn 1 site, previously mentioned. This would suggest that the material was brought to the site and worked rather than that the finished product was obtained by trade or otherwise. It should be carried in mind, too, that in the past the Dn 1 site has yielded surface sherds of Puebloan or Pueblo-like pottery.

Pecking and Polishing Stones

Quite common in all parts of the excavation were rounded river pebbles, ranging in size from less than a hen's egg up to a pound or more in weight. Many are pitted and worn on one or both ends, and were undoubtedly used in working stone, and probably served as hammers for other purposes. A few flat pebbles, which are very highly polished, may have been used to smooth and burnish pottery.

Pendant

From the upper part, but below plow level, in pit S8 came a polished piece of stone. (Pl. 6, 3, B.) One end is rough but appears to be slightly polished. All other surfaces bear an extremely high polish. It appears to have been D-shaped in outline originally. All edges and corners have been ground to a rounding surface. Nearer to one edge than to center is a bi-conical perforation whose greatest diameter is somewhat over one-quarter of an inch, and which measures about twelve-hundreths of an inch in least diameter. The greatest length of the object is one and three-eighths inches, the width one and one-eighth inches, while its greatest thickness is slightly over three-quarters of an inch. The material from which it is fashioned

was identified by Dr. E. F. Schramm, of the University of Nebraska, as a "hydrocarbon, similar to Gilsonite."⁴²

Other Objects

From Section 2R1 (area one) came a small piece of sandstone containing a fossil shell. The stone is unworked and was probably brought to the site merely as a curio, since fossils of this type are not found locally. The presence of a few small pyrite concretions might be explained in the same way.

Several fragments of hard, tough stone showing a high degree of polish on part of their surfaces came from various parts of the site. All are too fragmentary to allow determination of their original shape and use.

Of interest, since a small percentage of sherds carried mica as a tempering agent, was the presence of a small amount of this material in trash-filled pits. No fragment was large, and none showed signs of having formed part of an ornament. The largest piece came from Section 6L34 and was irregular in outline, its greatest diameter being about three-eighths of an inch.

Paint

Red pigment in tiny flecks occurred throughout the fill of the pits as well as in the general village level. The flecks were generally minute, but in a few instances were as large as a pea. In color, they range from bright red to red-brown. In a few instances, irregular splotches of red pigment several inches in diameter were found in Small pieces of hematite showing striations where the surface pits. has been cut and scraped were not uncommon. In addition to the hematite, pieces of yellow and buff ocher occurred in the site. Several lumps of pale green clay were also found, which, when mixed with water, could be utilized as a pigment. Lumps of chalk such as were found here, and easily obtainable from deposits in near-by canyons, would furnish material for white coloring, and black was easily obtainable from charcoal. That they were not wholly dependent upon charcoal for this color, however, is indicated by the presence of rare lumps of graphite.

Work in Bone and Antler

Worked Scapulae ---

Bone work was abundant at the site and there was a variety of forms. Most common were hoes or spades made from the scapulae of bison. These were found whole or fragmentary in most of the pits in all excavations. Usually, but not always, the articular end was present. The scapula spine seems to have been broken away without

⁴² Dr. Ralph Linton of Columbia University agrees with this identification, and suggested a southwestern origin for the material.

first having been grooved. A few fragments showed holes, probably for the repair of cracks in the blade of the tool.⁴³ Edges of many of the tools were well worn, some showing notches worn back from the edge. A cache of four hoes was found in Pit S 16 in area three. One specimen had a trace of badly decayed wood running from the proximal end at an angle of approximately forty-five degrees to the long axis of the bone. It is probable that this was the remains of the haft. The method of hafting, as illustrated here, seems to have been to place one end of a curved (or more probably somewhat L-shaped) haft against the bone blade, where it was bound securely.

Hoes were not the only artifacts found at this site in the manufacture of which the scapula of the bison had been utilized. Two cleaver-shaped knives or choppers were found which had been fashioned from these bones. The central portion of the scapula, from which the spine has been removed, forms the back and grip of the tool. The grip, or portion held in the hand while using, has apparently been formed by breaking rather than by cutting away the unwanted portion, and, while rough, bears a high polish. The cutting portion is rather short with a blunt point, and is wide at the center in proportion to its length. Both specimens are sharp and well polished, and in both the bevel is from one side only.

Many other fragments of scapula, often apparently broken portions of hoes, seem to have been put to use as knives or cutters, and scrapers. These items are not uniform in pattern and secondary use is inferred from the degree and position of polish present.

One broken scapula has been worked only on the scapula spine, so far as can be told from its present condition. The sides of the spine are well polished, and the edge is sharp. It may have served as a knife or as a beaming tool.

Awls

Bone awls were numerous and may be grouped into three categories; flat or spatulate awls; splinter awls, and awls which are round to somewhat triangular in cross-section. Awls are usually made from rib fragments, those fashioned from split metapodials of deer or antelope being extremely rare. No awls were found in which any trace of the proximal end of the bone remains.

The flat awls have been fashioned from split ribs, apparently those of bison. The ribs have been cut and split at the edge, thus producing two flat slips of bone, one side of which is smooth. The cellular material was ground away from the other face, one end rounded and the other end ground to a long, sharp point. Awls of

43 See Wedel, 1934, p. 201, and Cooper, 1936, P1. XXI.

this type seldom exceed an inch in width, but vary greatly in length, measuring from eight inches to less than three inches. Twenty-four of these awls were found. (Pl. 9, 2, I, J.)

Awls which are round or somewhat triangular in cross-section were almost as common. These tools have been made from large splinters broken from the edge of a flat thick bone. Such material might have been furnished by a rib split lengthwise or by the spine removed from the bison scapula during the manufacture of hoes. The splinters were ground into shape, with nicely rounded butts, and taper from butt to tip. Some are round, but in most cases the crosssection is triangular, with rounding corners. Commonly, traces of the porous inner tissue of the bone can be seen on one side. In the greatest diameter, these artifacts generally fall between thirty-five hundreths of an inch and forty-five hundreths of an inch, and average somewhat less in length than the flat type, although very short and very long specimens are found. (P1. 9, 2, G.)

Both types of these awls are found in Lower Loup sites in the east central part of the state. Awls of these types in the collection of the Nebraska State Historical Society come from the Burkett site (N 1) and from the Wright site (N 3). Outside of the state awls of the flat type have been reported from a Mandan site in North Dakota.⁴⁴

A few awls were found at Ch 1 which have been made by sharpening chance splinters. (Pl. 9, 2, K.)

An artifact which may be the point of an awl has a pronounced thickening about three-quarters of an inch from the point. From here it tapers each way. Unfortunately, it is so broken that the original shape cannot be determined.

Punches

Six artifacts have been classified under this heading. These closely resemble the round awls except for having a round, blunt point. They are, in all cases, highly polished and average somewhat less in length than the awls of the same type. Steward reports a bone object from Utah which he calls a flint flaker which seems to be identical with these.⁴⁵ (Pl. 9, 2, C.)

Tubes

Tubular beads of bone were common. All were made by cutting off the ends from wing or leg bones of small animals and birds, and all bear a high polish. They run from one and one-fourth inches to one and three-fourths inches in length, and seldom exceed .30 of an inch in diameter. Ends cut off in manufacture were also recovered.

⁴⁴ Will, G. F., and Spinden, H. J., 1906, p. 171 and P1. XXXV. 45 Steward, 1937, Fig. 8, K.

One-half of a larger tube, split lengthwise, apparently cut from the metapodial of a small deer or antelope, was found. It measures two and seven-eighths inches in length and nine-sixteenths of an inch in greatest diameter. The fragment bears a very high polish and was covered with finely incised short, opposed diagonal lines, or chevrons, arranged in rows encircling the artifact.

Fleshing Tools

Fleshers were made from metapodials of elk or buffalo with the proximal end cut off and the shaft cut diagonally, resulting in a gouge-shaped tool which was used for scraping skins. The edge was cut to form a number of fine teeth or serrations in the case of half of the specimens, while with the others the edge is smooth. (Pl. 9, 2, H.) These tools are highly polished, and the tool was found articulated with the ankle bones in most instances. They were fairly common at this site, ten being found. One interesting specimen had been broken and discarded before it was finished. The bone had been shaped by the grooving and breaking method. The grooves are shallow in proportion to the thickness of the bone, — too shallow as it proved, for, in breaking, the end of the bone broke back through the groove into the shaft, ruining the tool. Evidently the bone was first scored and then broken roughly to the desired shape, after which it was finished by grinding.

Toothed hide-fleshers of bone are known from N 1 (Burkett Site)⁴⁶ and from historic Pawnee sites,⁴⁷ but appear to be very rare in prehistoric sites.

Two hide-scrapers with notched edges, apparently made from metapodials of deer, are described from a Woodland site in Valley County.⁴⁸ The trait thus appears to have been present in the early prehistoric pottery-making cultures within the state, but becomes very weak or absent in later prehistoric aspects.

Hide Tanners

Several more or less hemispherical bone objects made by cutting the large joint ends from the leg bones of bison are classed under this name. In a few cases, the hard bone has been partly removed from the cancellous inner portion which has been rubbed smooth. Tools of this type, used in tanning skins, are known from historic Pawnee sites.⁴⁹

⁴⁶ Dunlevy, 1936, p. 198, Plate XIV, D.
⁴⁷ Wedél, 1936, p. 84 and Plate 10, E, K.
⁴⁸ Hill, A. T., and Kivett, Marvin, 1940, p. 166.
⁴⁹ Wedel, 1936, p. 93.

Paint Brush (?)

A small shapeless piece of the porous inner tissue of a bone was found which was heavily impregnated with red pigment. Historic and protohistoric tribes are known to have used such pieces of cancellous bone for paint brushes, and it is suggested that such may have been the use to which this was put.

Bear Claw Pendant

A bear claw two and three-eighths inches in length came from Section 3L37. It has been drilled near the articulation for suspension as bead or pendant, and bears six transverse incised lines on the under part of the claw. (Pl. 9, 2, M.) Another specimen, almost identical with this, was taken from a pit at this site in the course of a preliminary survey.

Projectile Points

Five perfect or fragmentary projectile points of bone and antler were found, while three more are known from the site, both as surface and sub-surface finds. In length, these points range from three and one-half inches to four and one-half inches, of which approximately three-fourths of an inch is tang. The blade portions end abruptly, and the bone is cut away to form a sharp but narrow shoulder from which the round tang rises and terminates in a point. The points are well made and highly polished. (Pl. 9, 2, A, D.) Projectile points of this type are known from N 3 (Wright site), a Lower Loup site in Nance county excavated by the Nebraska State Historical Society in 1936; and one came from N 1⁵⁰ (Burkett site) in the same area and with the same cultural affiliation.

Shaft Wrench

Only one broken artifact of this type was secured. It is badly broken but has apparently been made from a bison rib and carries but one perforation, the edges of which are much worn. Only one other artifact of this type, also broken, is known from this site. In view of the hundreds of projectile points picked up on this site in the past it seems odd that artifacts known to have been used in the manufacture of arrows⁵¹ should be so scarce.

Phalanges

From area one came two bison phalanges, each of which bore a hole, apparently punched, through the ventral surface. In neither case did the hole extend entirely through the bone but extended only

⁵⁰ Dunlevy, 1936, p. 197 and Plate XIII, E, also Hill, A. T. and Wedel, Waldo R., 1936, p. 58.

⁵¹ Hill and Cooper, 1937, p. 239.

one-fourth inch into the porous inner tissue. Objects of this type have been reported previously from prehistoric sites in the state 52 Their use is uncertain.

Scraper Hafts

Two artifacts were found which had been made from cut-off antler tines. The tip end of each tine had been cut away to form a notch into which an end scraper fits nicely. (Pl. 9, 1, B, C.) In the museum of the Nebraska State Historical Society are several scrapers made from elk antler by historic peoples. In these specimens the beam has formed the handle, while a projection formed by cutting off a tine has been notched for the reception of an iron scraper blade. The basic principle is the same as with the archeological material where the natural curve of the tine has been utilized to form the haft. While the use of antler-scraper hafts is known for historic tribes within the area, it has not before been reported from earlier cultures. A scraper haft identical with those secured at Ch 1, and coming from a site of the same culture (Ft 9) in Frontier County, is in a collection made by John Adams of Curtis, Nebraska, now on display in the State Historical Society Museum. (Pl. 9, 1, A.)

Bone Picks

An occasional ulna of elk or bison was found in which the distal end, while generally broken, showed a high polish. Tools of this type are reported from historic,⁵³ protohistoric⁵⁴ and prehistoric⁵⁵ sites in various parts of the state and are generally considered to have served as picks in loosening the earth. In one post-hole of structure 3, lying across long bones driven down beside the post, was a bison metapodial one end of which had been broken off. The jagged end, which terminated in a point, was well polished and the bone may have been used as a digging tool.

Miscellaneous

A few very highly polished artifacts have been cut from a flat, Y-shaped turtle bone. The branching arms of the bone had been removed by grooving and breaking to form a spatulate tool. They average about two and one-half inches in length and in least width one-half inch, while the greatest width is about three-fourths of an inch. (Pl. 9, 2, L.)

A small slip of highly polished bone, curved, and showing an old break at each end, was found. The fragment measures two and

⁵³ Wedel, 1936, p. 82.

⁵² Wedel, 1935, p. 202, and Hill and Kivett, 1940, p. 163.

⁵⁴ Hill and Wedel, 1936, p. 57 and Dunlevy, 1936, p. 198.
⁵⁵ Wedel, 1935, p. 201 and Cooper, 1936, p. 56.

five-sixteenths inches in length, seven thirty-seconds of an inch in width, and one-sixteenth of an inch in thickness. (Pl. 9, 2, F.)

Among the commonly found bone objects are some made from rough splinters of bone apparently broken from rib edges or possibly from the spines of scapulae. These are generally short, varying from one and one-half inches to three inches in length and worked only on one end, the other being rough and jagged. The worked end tapers, sometimes in a series of short steps or square shoulders and less often in a short, abrupt bevel. In either case the taper ends in a short, round projection which has been cut squarely by the groove-andbreak method. These objects may represent scrap material discarded in the making of bone awls or punches. (Pl. 9, 2, O, P.)

The ulna of some small animal (antelope?) has the pointed tip broken off. The broken edges show considerable wear and the whole artifact shows a certain amount of polish.

An artifact of bone which in cross-section is somewhat rectangular with rounding corners, has a rounding base and a slight taper toward the point which is broken off and missing. The object is four and one-half inches long and slightly over one-half inch in width. Near the rounding base is a tiny bi-conical hole. No use can be definitely assigned to this object which seems too large for a needle. (PI. 9, 2, B.)

Several fragments of metapodials and ribs show a considerable amount of polish on the broken end. They may have been used as tools for loosening the soil.

A curved piece of antler just over five inches long was shattered at one end by an unlucky shovel blow. Both ends, however, seem to have been broken before it was discarded. It is rectangular in cross section and tapers from a thickness of one-half inch to threeeighths of an inch, the smaller end bearing traces of a shallow groove. Width is nine-sixteenths of an inch. Three of its flat surfaces are highly polished while the other is rough and irregular and appears to have been gnawed by rodents.

A slightly curved slip of antler measures three and one-half inches in length, seven-sixteenths of an inch in width, with a thickness of three-sixteenths of an inch. It is well polished and seems to be completed. Two others, identical in material and shape and of approximately the same measurements, came from earlier test pits dug in the site.

An antler tine about two and one-half inches long has been scraped to a sharp point and the flat base shows it to have been cut off by grooving and breaking. (Pl. 9, 2, E.) Objects of this sort have been found in a protohistoric site in southeastern Nebraska and it has been suggested that they represent unfinished projectile points.⁵⁶

⁵⁶ Hill, A. T., and Wedel, Waldo R., 1936, p. 58.

Six thin, flat, polished scraps of antler, square, rectangular or triangular in outline, which have been cut by the groove-and-break method, may be "scrap" material. Although no pendants of bracelets of this material were found it seems probable that these fragments represented the waste material from the manufacture of such articles. (Pl. 9, 2, N.)

A fragment of beaver incisor has been ground and sharpened, and bears transverse striations from the grinding.

Work In Shell

Objects of shell were rare and mussel shells, broken or otherwise, were not common. All specimens found seem to have been used as articles of personal adornment.

From a pit in area two came a pear-shaped pendant of thin mussel-shell. It was pierced with a very small hole at the smallest end. The object measures one and one-fourth inches in length and slightly less than one inch in greatest width. (Pl. 6, 3, H.)

Three objects of shell which closely resemble each other are badly broken. It seems probable, judging from the one complete specimen known to have come from this site, that originally these objects were about two inches long, tapering toward each end, and that each end was pierced. The best example of these objects obtained is seven-eighths of an inch long, three-eighths of an inch in greatest width, with a perforation at the unbroken end which measures ten-hundreths of an inch in diameter. They were probably used as ornaments. (Pl. 6, 1, L.)

Objects of Metal

No metal came from the excavation in area one, but objects of copper, brass, and iron were found in areas two and three. A few conical beads or "jingles" of copper and iron, a tubular brass bead, four iron awls and rare amorphous bits of metal were found in association with aboriginal material. Metal objects came from pits, structures and from the general village level.

Jingles

Several cone-shaped objects have been roughly rolled from pieces of sheet copper and sheet iron. The workmanship is poor and the edges are sometimes jagged. Two of these were found on the floor of House 1. The most neatly made specimen is seven-eighths of an inch in length. Another is one and one-half inches long with a

diameter of five-eighths inch at the large end and one-quarter of an inch at the point. The largest is slightly over two inches long. (Pl. 6, 3, C, D.) These are reported from Ft 9 (Dick site) of the same culture in Frontier County,⁵⁷ and have also been found in the N 3 (Wright site) Lower Loup focus in Nance County, and at Pt 13 (Monroe site) in Platte County, which may also be assigned to the Lower Loup Aspect.⁵⁸ Jingles of this type are quite commonly found decorating the fringe on leather articles made by historic peoples.

Tubular Bead

One tubular bead rolled from sheet copper was found.

Projectile Point (?)

A piece of brass, triangular in outline, had a ridge or thickening running lengthwise of one face. The edges of this have been neatly and evenly cut, or more probably, cut and ground, while the base has been broken by bending. Its length is one and five-sixteenths inches and it measures nine-thirtyseconds of an inch in width at the base.

Iron Awls

Four iron awls were found. All were of the same pattern. (Pl. 6, 3, E, F, G.) The portion used in the haft tapered to a point and was square in cross-section, the blade being round in cross-section and also tapering to a pointed end. One, which is typical of all, was five and three-fourths inches long. The round portion measured two and one-fourth inches in length, while the greatest diameter, which was across the square cross-section near the center, was five-thirtyseconds of an inch.

Other Metal Objects

One piece of iron may not belong to the aboriginal horizon since it came from the plow-disturbed upper soil. It is flat in cross-section, triangular outline, three and one-half inches long, five-eighths of an inch in width across the base, and the base and one side are ragged from cutting with a chisel.

Another object from a greater depth has apparently been reelshaped originally. Two arms are broken close to the body and the object is badly rusted. Greatest length one and one-eighth inches, least width three-fourths of an inch. Thickness three-thirtyseconds of an inch. (Pl. 6, 3, A.)

⁵⁷ Wedel, 1935, p. 181. ⁵⁸ Unpublished field notes of A. T. Hill.

Leather

A few small pieces of what appeared to be leather were found in an ash lens which occurred in one of the pits. They were ragged scraps without definite form.

Food Stuffs and Animal Remains

Animal bones broken and split for the marrow were extremely abundant. Bones of the bison predominated and those of elk, deer and antelope occurred in large numbers. Canine remains, especially the skulls and foot bones, were not uncommon in pits. Remains of beaver and land turtles were especially common, one pit alone yielding twelve beaver skulls while another yielded the remains of even more box-turtles. A few remains of larger turtles from the stream were present but no fish remains were noted. As yet the animal bones from the site have not been completely identified, and the presence or absence of horse bones has not been established. It is probable that horse remains are rare or entirely absent. A list of the faunal remains thus far identified, from this site, is given below. Identifications are by C. Bertrand Schultz and Edson Fichter, University of Nebraska State Museum.

CLASS REPTILIA

ORDER TESTUDINATA (CHELONIA) Turtle (2 species)

Gen. et Sp. Indet.

7 Terrapene sp. — Box-turtle

CLASS AVES - Bird (5 bones)

CLASS MAMMALIA

ORDER CARNIVORA

FAMILY CANIDAE

Urocyon cinereoargenteus (Schreher) — Gray fox Canis sp. (probably domestic dog)

ORDER RODENTIA

FAMILY CASTORIDAE

Castor canadensis (Kuhl) — Beaver

ORDER ARTIODACTYLA

FAMILY CERVIDAE

Odocoileus virginianus (Boddaert) — Virginia deer

FAMILY ANTILOCAPRIDAE

Antilocapra americana (Ord) - American pronghorn

FAMILY BOVIDAE

Bison bison (Linnaeus) - Plains bison

Charred corn cobs, kernels, and husks came from a few pits in fairly large quantities, but in general the remains of corn were not

plentiful at the site. In addition to charred remains of corn the site yielded a few charred pits of the native wild plum, hackberries, and perhaps choke-cherry. It would seem that the inhabitants of this site depended primarily upon hunting for subsistence, with horticulture of secondary importance.

Burials

No burials were found although several days were spent in testing nearby hill tops and slopes; nor are there any reports of burials having been discovered in the past along this stream. The only human remains found in the excavations within the village site were two teeth. It is noteworthy that the senior writer, who has spent many years in study and survey of sites of this culture, has neither found nor heard of a burial which could be attributed to this complex.

Dendrochronological Evidence

Dates of the De L'Isle map and the Bourgmont narrative take on an especial significance in view of the dendrochronological evidence obtained at the Ch 1 and Dn 1 sites. Charcoal samples from these sites were submitted to H. E. Weakly, Junior Agronomist at the North Platte experimental substation of the University of Nebraska, College of Agriculture, who for some years has given a great deal of attention to the dendrochronology of central and western Nebraska. Very little of the material submitted was usable, much of it being from hardwoods, but Mr. Weakly in his report says:⁵⁰

"I have charted five Dundy specimens (Dn 1) and constructed a composite chart from them which covers forty-two years. This chart matches my master chart for North Platte very well at an outside ring date of 1709. The agreement is 93 per cent at this point. It would be much more desirable to have a chart established for the region nearer where this material came from, as there are frequently rather wide differences in rainfall between localities separated by relatively short distances. For this reason, I do not consider the above dating as entirely reliable and conclusive.

"The Chase County (Ch 1) material contained six specimens which I have been able to use in whole or in part. . They give a usable series of thirty-two years with an outside date of 1706 on the same basis as the material from Dundy County."

⁵⁹ Letter to A. T. Hill from H. E. Weakly, March 4, 1941,

NEBRASKA HISTORY

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Culture Determinants						
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Trait +	÷	-	6	2	з а	↔
Trait present, but rare	Сh	Dn	Εt	\mathbf{G}^{q}	с і	U
I. Pottery					٦ ٦	
			• •	~~	躙	
Tempering: Fine sand	Х	Х	Х	Х	Х	Х
Tempering: Mica						
Tempering: Generally sparse but may be abundant	Х	Х	Х	Х	Х	Х
Hardness: 3-5	Х	Х	Х	Х	Х	Х
Paste: Compact, flaky	Х	Х	Х	Х	Х	Х
Color: Exterior surface buff to black	Х	Х	Х	Х	Х	Х
Color: Majority gray to glossy black	Х	Х	х	Х	Х	Х
Color: Interior surface generally black	Х	Х	Х	Х	Х	Х
Color of paste: Generally black; follows surface color	Х	Х	х	Х	Х	Х
Surface marked with grooved paddle	Х	Х	Х	Х	Х	Х
Surface: Smooth	Х	Х	X	Х	Х	Х
Tooling on rims often erased		Х	Х		Х	
Exterior commonly burnished		Х	X	Х	Х	
Base: Conoidal or sub-conoidal		Х				
Constricted neck		Х		Х		
Sloping shoulder	Х	?				
Rim generally vertical or straight flaring	Х	Х	Х	Х	Х	Х
Incised body decoration	—					
Majority of lips undecorated	Х	Х	Х	Х	Х	Х
Decoration present on lips	Х	Х	Х	Х	Х	Х
Lip decoration, herringbone, parallel diagonals	Х	Х	Х	Х	Х	Х
Size: Small to medium	Х	Х	Х	Х	Х	Х
Miniatures						
Bowls	Х			Х		

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	Ch 1 Dn 1 Ft 9 Gd 2 1, 2, 3 and 4 C 1
II. Pipes	Но
Clay: Tubular	X X X X
Incised decorations	ХХХ
Mouth piece round	XXX
Mouth piece flared	ХХ
Elbow pipes of clay	— X
Tubular pipes of steatite	Х
Limestone pipe, elbow-shaped	
III. Work in Stone	
Arrow points, triangular	XXXXXX
Arrow points, notched	XXXXX
Arrow points, stemmed	X
Lance points	<u> </u>
Serrated points	
Knives: diamond-shaped	ХХ— —
Knives: ovate	XXXXX
Plano-convex scrapers: small, medium	ххххх
Plano-convex scrapers: medium to large	ххххх
Tangs present on end-scrapers	
Plano-convex side scrapers	ххххх
Long flake knives	ХХХ
Chipped celts	XXX X
Expanding base drills	ххххх
Straight drills, square ends	ХХ —

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Straight drills, pointed ends	х	х			Х	
Straight drills: Side protuberances	Х					
Arrow-shaft buffers	Х	Х	X		Х	
Arrow-shaft buffers: Multiple grooves	Х	X				
Abraders with multiple grooves	Х	Х	Х			
Sandstone abraders: Flat surface	Х	Х	Х		Х	
Metates	Х					
Manos (?)	Х				Х	
Grooved maul						
Turquoise beads						
Pendants of polished stone						
Hematite paint	Х	Х	Χ			
Pebble pecking stones	Х	Х	X		Х	
Presence of mica	<u>.</u>					
Presence of graphite						
Presence of obsidian	X	х	х	х	Х	Х
IV. Work In Bone						
Pison scopula hoss	v	v	v			
Bison scapula Injuga cleaver chang	Λ	Λ	Λ			
Dison scapula with chorpored mine						
Lison scapula with sharpened spine	v					
Elat amla of aplit tiba	л V	v				
Flat awis of split ribs	л	Λ				
Personale record on triongular in gross section	v	v	v		+	
Done awis, round or triangular in cross-section	л v	л v	л			
Tubelen hande	л v	л v	v			
I ubular beads	Λ	л	л			
Incised tubes	v	v				
Lootned neshers of elk or bison metapodials	А	Λ				
File tanners						
Paint "Drush" (f)						

	ч <u>,</u>	Ch 1	Dn 1	Ft 9 Gd 2	[o 1, 2, 3 and 4	C 1
Bear-claw pendants					Η	
Projectile points, stemmed		Х				
Perforated rib "shaft-wrench"						
Flat, spatulate objects		Х	Х			
V. Work In Antler						
Scraper hafts		Х				
Projectile points: stemmed		Х				
Flat polished strips		Χ		Х		
Polished ends of antler tines		Х		х -	-	
VI. Work In Shell Pendants, pear-shaped Oblong shell objects, bi-perforate		 x				
VII. Habitations and Village						
Earth lodge		Х				
Built on or very little below ground level		Х				
Circular		Х				
Fireplace in center		Х				
Villages unfortified		Х	х		?	
VIII Miscellaneous						
Pottla packed cache			,			
Irregular pits trash-filled		x	x		2	
Pits have concave bottoms		x	x			
Pits generally rather shallow	÷	x	x			
Pits occur along		x	x			
Pits occur in groups and connected		х	х			
Presence of corn		X	x	х		
Conner ingles		X		Х		
Other trade material		Х	X		?	



Graphs of trait percentages and comparison of six sites on the Dismal River aspect.

- 1. Comparison of all traits at six sites.
- 2. Comparison of all pottery traits, exclusive of pipes, from six sites.

In the preceeding pages is given a list of traits found at the Ch 1 site. These are compared in adjoining columns with traits found at a number of other sites yielding material belonging to the same complex. In addition to the Ch 1 excavation material for this comparison came from Dn 1, in Dundy County, Gd 2, in Garden County, and Ft 9, in Frontier County. For the latter site, in addition to specimens excavated there by the Nebraska State Historical Society, data secured from a collection made by John Adams, of Curtis, and consisting of both surface and subsurface material, was used.

Material from the original discovery sites on the Dismal River, Ho 1, 2, 3, and 4, is from the collection of the senior writer and has been lumped under one heading rather than given by sites.

In comparing these sites one should not lose sight of the fact that at none of them has excavation been carried on to an extent comparable to that at Ch 1. Dn 1 and Ft 9 sites at which the next greatest amount of work has been done give a larger series for comparison than do the other sites. The material (all excavated) from the Gd 2 site is scanty. The small collections from the sites on the Dismal River and from C 1 in Cherry County are of surface material and thus do not give an adequate sample for comparison against sites where a large amount of excavation has been done. This is especially true in the matter of worked bone, antler and shell; worked stone and pot sherds, while resisting decay, have been subjected to the trampling of livestock at these sites, and badly broken.

Material from the Ch 1, Dn 1, and Ft 9 sites is nearly or quite identical, even down to the types of stone used, and these stations are apparently all components of a single focus. The Dismal River level from Gd 2 probably falls into this focus, also.

Sherds from the discovery sites on the Dismal River exhibit the main characteristics of those from Ch 1. These sites occupy "blowouts" and surface-found sherds generally show the effects of the almost continual sand blast to which they have been exposed. For this reason, perhaps, a large number do not show the burnished, glossy surface finish so characteristic of sherds from the four previously mentioned sites. In general, sherds from the Dismal River are more heavily tempered, and the tempering particles larger, than with sherds from the southern sites. This may mean very little, since identically similar sherds come from the Ch 1 site but in much smaller proportion. Four sherds from the Dismal River bear shallow oblong pits arranged in rows on the exterior surface and apparently impressed by the use of some blunt implement. One small sherd carries a narrow, sharp ridge on the exterior, which at first glance suggests applique. A small blowout site yielding sherds of this type exclusively is known in Dundy County, but at present so little is known of the trait that we can do no more than note its existence.

Summary and Conclusions

In the preceeding pages an attempt has been made to present the archeological evidence secured at the Ch 1 site by the archeological Survey Party of the Nebraska State Historical Society of 1939. Pottery from the site is identical with the second type of ware described by Strong from sites on the Dismal River in Hooker County, and on the basis of which he tentatively set up the Dismal River culture.⁶⁰ Two kinds of pottery were found here, Type one later being assigned to Woodland, a pattern which at the time of discovery was not recognized.

At present the Dismal River culture is known only from the High Plains; in Nebraska only in, or adjacent to, the Sand-Hill area. It is protohistoric, since small amounts of contact material come from the same horizon as the aboriginal material and the sites are undocumented. Dendrochronological evidence, however, allows us to suggest that Ch 1 and Dn 1 were occupied in the early eighteenth century. The sites are generally small but, as in the case of the Ch 1 site, may be rather large. The habitation type is not definitely known but there is some evidence pointing toward the use of some form of earth lodge, perhaps in conjunction with the skin-covered tipi and the use of brush shelters. Sites are characterized by numbers of trash-filled pits of irregular shape and varying depths. The pottery is dark, with compact paste and very fine grit tempering. Decoration is usually present only on lip, and bodies are definitely marked with grooved paddle in about thirty per cent of the sherds. Vessels are generally subconoidal with sloping shoulder, constricted neck, and straight to slightly flaring rims. Polished, glossy finish on exterior. In form, vessels suggest Woodland ware and may derive from some northern Woodland phase. Tubular pipes of clay with incised decoration are most common, but undecorated tubular stone pipes are a trait. Work in chipped stone is abundant, with a wide variety of forms. The same is true of bone and antler. Work in polished stone is not abundant and forms are few. There is little use of shell. Metal is present in small amounts. Dog remains are -common but the presence or absence of the horse has not been established. The subsistence pattern seems to have been a compromise between hunting and horticulture, with the former of most importance and horticulture secondary.

Traits are those general to the Plains but with a strong northern influence, and the culture was probably influenced from the area immediately to the east. A Southwestern influence is seen in the use of the cloudblower pipe and turquoise beads. The culture has been provisionally identified with the Padouca who occupied the area in protohistoric and early times. Although these people are usually identified with the Comanche it is equally probable from present

60 Strong, 1935, pp. 215-217.

evidence that they were an Athapaskawan group. It is possible too, that the name Padouca was applied to tribes of differing linguistic stocks who occupied the High Plains area at various times. This remains to be worked out in the future. At present there is need for more work to the north and northwest as well as to the south, and when this is done it may be possible to definitely identify the Dismal River aspect with some tribal group.

Although it is impossible at present to attribute the cultural remains to any specific linguistic or tribal group, we feel certain that the trait list set up for the site allows us to classify the Ch 1 site as a component of the Stinking Water focus of the Dismal River aspect, phase and pattern as yet undetermined.

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PLATE I. I. The Ch I Site, from the south. 2. The west side of the site, showing beaver pond.



PLATE II. I. Pit L 59, area 2. Ch 1. 2. Pit L 66, area 2. Ch 1.



PLATE III. I. Pit 13, section 6, area I. Ch I. 2. Cross-section of pit in Nichols Site. Dn I. 3. Pit 41, area I. Ch I.



PLATE IV. I. Fireplace and post hole pattern of House 2, Ch I. 2. Post hole pattern of Feature I, Ch I.



- PLATE V. I. Restored pot from Ch I.
 - 2. Restored pot from Ch 1.
 - 3. Dismal River rim sherds from Ch 1.
 - 4. Body sherds from Ch I: A, Woodland; B, C, D, E, Dismal River. C is mica-tempered.



PLATE VI. I. Small restored pot from Ch I.

- 2. Restored pot from Ch I.
- 3. Shell, metal and stone artifacts from Ch I. A, iron object; B, pendant; C, D, metal danglers; E, F, G, iron awls; H, shell pendant; I, J, flaked stone objects; K, turquoise beads; L, broken shell ornament.



PLATE VII. I. Pipe fragments from Ch I. E, I, are of stone; others are clay.

2. Flaked stone artifacts from Ch 1: A, B, drills; C, D, drills with side projections; E. F, G, H, I, J, P, projectile points; K, broken lance point; L, M, Q, drills; N, O, projectile points with serrate edges.



PLATE VIII. I. Pecked and polished stone artifacts from Ch I: A, B, C, D, arrow-shaft smoothers; E, polished sandstone slab; F, H, manos; G, abrader.

2. Chipped stone artifacts from Ch 1.



PLATE IX. I. Antler scraper-hafts. A, from Frontier County; B, C, from Ch I.
2. Artifacts of bone and antler, Ch I.



PLATE X. Maps of the three structures found at Ch I.

- I. House I.
- 2. House 2.
- 3. Feature 1.


PLATE XI. Cross-section diagrams of two pits at Ch I. I. Pit L 49. 2. Pit L 61.