Woodland-Like Manifestations in Nebraska, Part I

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See also Part II of this article, which describes woodland remains at other sites.

Cataloging Information:

Photographs / Images: Ash Hollow Cave (excavation of cave, entrance to cave), Site 19 (rim sherds), Dad's Lake Site (rim sherds and body sherds, lake, shifting sand), Naper Site (rim and body sherds), Ough Site (site, specimens, bone artifacts), Eagle Creek Site (rim and body sherds, restored vessel, chipped flint specimens), Hw-6 Site (rim sherds), Wellenstien Site (restored vessels, rim and body sherds), Enders Site (restored vessel), Larson Site (restored vessel), Pk-1 Site (restored vessel base), Moon Lake Site (pottery and flint specimens; Whitten Site (shell beads, bone armlet, restored vessel)

Line Etchings: Vy-1 Site—terrace and excavated area, excavated sections and features, Valley County in Nebraska, Vy-1 rim profiles

Woodland-Like Manifestations In Nebraska

BY

A. T. HILL and MARVIN KIVETT

Camp of the Archeological Survey in Washington County, Nebraska

Foreword

By ADDISON E. SHELDON

This number of NEBRASKA HISTORY is devoted to archeological explorations in Nebraska during the year 1939. The explorations were made under Director A. T. Hill and his associates. Mr. Hill and Mr. Marvin Kivett, WPA Supervisor of the excavating crew, have written the story of these explorations. That story constitutes an important addition to our knowledge of prehistoric life in Nebraska.

This is the seventh number of NEBRASKA HISTORY giving special emphasis to explorations in the prehistoric field since 1925. Under the present publication arrangement one out of each four issues of the magazine is given to this department of the State Historical Society's work. They give a summary of the places explored, the prehistoric evidences discovered, the methods of the work, and some of the conclusions and surmises made thereon. The total results of each campaign include the addition of thousands of artifacts, hundreds of photographs, maps and drawings which find place in the Historical Society Museum for further studies and for the information of the public.

Three out of each four issues of NEBRASKA HISTORY are devoted to the main objects of the Historical Society's work: History of the Trans-Missouri Region; Public Information Service; Biography; Evolution of Nebraska People and Government; Patriotic Defense of Nebraska and American Institutions. These aspects of our work are of chief interest and importance to our people. They are the inspirations of our best literature; of the children in our schools; of our faith in a better future founded on the highest ideals and experiences of the past. These subjects constitute the great bulk of the Historical Society program, of its work and its correspondence.

In this program of Nebraska historical research, study and publication has arisen similar research, study and publication in the field of prehistoric man. The problem and the mystery of man's origin and of man's destiny on this planet will always be one of consuming interest to the human race. These reasons furnish the foundation for further extension of the archeological section of the State Historical Society's many activities.

The editor of this magazine is often asked the meaning and value of these explorations into buried Indian house and village sites in Nebraska. In our state no remains have been thus far found of ancient civilizations, like those of the great Southwest Region of the United

States; of Mexico; or Central America. It is not likely that such buried civilizations ever existed in Nebraska. What are found, in increasing abundance, are the evidences of various primitive Indian tribes who formerly lived here. The evidences show that some of these tribes were hunters; some of them combined hunting with primitive farming. They built different types of houses and made different types of implements. Most of the materials made by them have perished. What remains, with increased study and comparisons, yields increasing knowledge of the life lived upon these plains.

The authentic historic period of knowledge of the Plains Indian tribes begins with accounts of the Coronado expedition, which reached the fortieth degree of latitude in August, 1541. Many buried house sites explored belong to the historic period,— since the time of the Coronado expedition. Other discoveries in the Plains region stretch far back of Coronado. Such evidences have been found in Nebraska and Colorado, in Kansas, and in New Mexico. The diligence and devotion of Nebraska explorers in this field are adding every year to the sum of knowledge and to the details of life of these former people of the Plains.

The detailed descriptions of broken potsherds,— the cord-wrapped impressions, the punctate patterns, the incisions, the thumb nail imprints, the flare of rims, the itemized mixture of clay, sand and clam-shell — these make tiresome reading for the uninitiated. They are the foundation for the scientific surmises, the imaginative conjectures, the fascinating ideals of the archeologist of a vanished human society related to ours.

The Poet is the true interpreter of Science. Pottery is the best record of man's prehistoric life. Listen to the Persian poet, Omar Khayyam, glorify the Pot and the Potter:

"Then to the Lip of this poor earthen Urn
I lean'd, the secret Well of Life to learn:
And Lip to Lip it murmur'd — "While you live,
"Drink! — for, once dead, you never shall return."

I think the vessel, that with fugitive
Articulation answer'd, once did live,
And drink; and that impassive Lip I kiss'd,
How many Kisses might it take — and give!

For I remember stopping by the way
To watch a Potter thumping his wet Clay:
And with its all-obliterated Tongue
It murmur'd —"Gently, Brother, gently, pray!"

For has not such a Story from of Old
Down Man's successive generations roll'd
    Of such a clod of saturated Earth
Cast by the Maker into Human mould?

* * * * * * * *

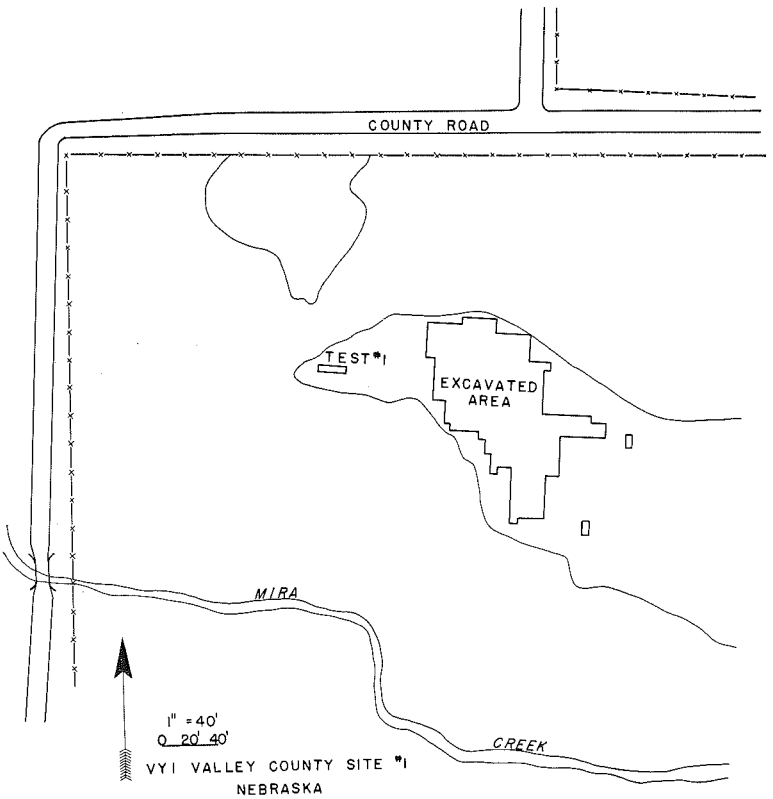
As under cover of departing Day
Slunk hunger-stricken Ramazan away,
    Once more within the Potter's house alone
I stood, surrounded by the Shapes of Clay.

Said one among them—"Surely not in vain
"My Substance from the common Earth was ta'en,
    "That He who subtly wrought me into Shape
"Should stamp me back to shapeless Earth again?"

Another said, "Why, ne'er a peevish Boy
"Would break the Cup from which he drank in Joy;
    "Shall He that of his own free Fancy made
"The Vessel, in an after-rage destroy!"

None answer'd this; but after silence spake
Some Vessel of a more ungainly Make;
    "They sneer at me for leaning all awry;
"What! did the Hand then of the Potter shake?"

Thus with the Dead as with the Living, *What?*
And *Why?* so ready, but the *Wherefor* not,
    One on a sudden peevishly exclaim'd,
"Which is the Potter, pray, and which the Pot?"



MAP I. Map showing terrace and excavated area at Vy-1.

Introduction

The 1939 field season of the Archeological Survey of the Nebraska State Historical Society was under the direction of Mr. A. T. Hill. During the fore part of the season Caryle Smith of Columbia University assisted in a survey of Greeley, Howard, Sherman and Valley counties in Central Nebraska. Intensive excavations were carried on at several earth-lodge village sites and burial grounds. The majority of these sites have been tentatively classed as a variant of the Upper Republican aspect, with an admixture of other elements regarded as more typical of the Nebraska aspect.

One of the sites investigated on the W. H. Schultz farm, lying a few miles west of North Loup, appeared quite distinctive by comparison with others in the vicinity. The junior writer replaced Mr. Smith at this time and served as assistant to Mr. Hill during the remainder of the season. It was decided to make additional tests at the Schultz farm and work was accordingly started on October 12. Since this site was first to be excavated in Valley County, it was given the county symbol with the number one (Vy-1).

Approximately twelve days were spent in excavating the site with the aid of fourteen men furnished by the Work Projects Administration of Nebraska. Without this aid it would have been impossible to make a thorough excavation. Much of the success of the survey is due to the workmen and officials of this organization, who cooperated in every way possible. It is a pleasure to acknowledge our indebtedness to the landowner, Mr. W. H. Schultz, who extended many courtesies to the survey. Mr. Paul Mortensen of Cotesfield rendered valuable service by locating sites and by permitting the members of the survey to examine his collection of archeological materials. Mr. John L. Champe, Dr. W. R. Wedel, Dr. James B. Griffin, Mr. W. C. McKern, Mr. Paul Cooper, Mr. T. M. Stout, Mr. E. Fitcher, Dr. C. B. Schultz and Dr. Calvin Goodrich were very helpful in giving information and constructive criticism for this paper. Other members of the party were George Metcalf of Wauneta and Lee Madison of Greeley, Nebraska.

The first portion of this paper is concerned with a description of cultural remains at the Vy-1 site. Comparisons are made with a Woodland pattern trait complex for the upper Mississippi Valley as compiled by W. C. McKern. Because of the extremely limited amount of work which has been done in Woodland-like sites in the central Great Plains area, and since the nature of the Woodland remains elsewhere is still poorly defined, few definite conclusions have been at-

tempted. It is hoped, however, that the work at Vy-1 will set up a tentative trait complex as represented by one carefully worked site in Nebraska. Further work must be done in additional Woodland-like sites in the region before it can be determined in how far the trait complex for Vy-1 is representative for sites bearing the so-called Woodland type of pottery in the Great Plains.

The second portion of the paper deals briefly with the general distribution of known Woodland-like sites in Nebraska. For most of these sites few data are now available beyond the location and nature of occurrence of the remains. Their Woodland affiliations are postulated on limited sherd samples with a very limited association of other materials. All of those considered (except where otherwise stated) were found by (or first reported to) the Nebraska State Historical Society. It is not expected that we can solve at the moment many of the perplexing problems concerning the Woodland occupation of Nebraska, but a presentation of the data now at hand may be worth while in giving some indication of the nature of these problems.

Geography of the Area

Valley County is located in central Nebraska on the northern edge of the Peorian loess region, which covers the adjacent areas to the southeast and west. The county slopes from the northwest corner to the eastern boundary where the North Loup River continues into Greeley County. The county is in the Loup River drainage area, with the Middle Loup River crossing the southwestern section and the North Loup River crossing the northeastern section. Secondary drainage is provided by smaller waterways, chief among which are Turtle, Mira,[1] Davis and Dane creeks, with their numerous tributaries.

Editor's Note

[1] *"Mira Creek"* is the correct spelling of this name, on authority of the U. S. Land Surveyor-General, also of Horace M. Davis, a first-born of that neighborhood and a veteran newspaper editor at Ord.

A few miles from the North Loup River the creek runs through hills and a valley of sticky clay. The banks of the creek were truly *miry*, and many of the early settlers so pronounced its name. An early neighborhood impression was that the creek was named for Myra Thresher, a popular young lady who grew up in the valley. One of the principal branches of the creek was called Coon Creek — or Raccoon Creek, and the entire length of the stream bore the name "Raccoon Creek" on the map of U. S. Land Survey plats of 1868-70. But every reference to the creek in the public records of Valley or Greeley County, or in the local press, has spelled the name M-i-r-a. This is an indisputable fact.

This spelling was adopted also for the post office and precinct bearing that name. It was adhered to by the official atlas of Nebraska in 1885, approved by the U. S. Land Survey, is still used in the Rand McNally maps, and has remained the accepted local spelling through all the years. The topographers of the U. S. Soil Survey map of Valley County (published by the U. S. Department of Agriculture in 1932) undertook to change the name to "Myra." The Nebraska State Historical Society

Under normal climatic conditions, springs are fairly numerous along the lower valley slopes. Along both the Middle Loup and North Loup rivers are bottom-lands which are inundated frequently, but the majority of the smaller streams are deeply cut and seldom leave their channels.

The county lies in the prairie section of the United States, and there is little timber except along the major streams. The early settlers reported that much the same situation prevailed when it was settled in 1872. At present hardwoods predominate; they include willow, elm, boxelder, cottonwood and ash. Wild grapes, plums and choke-cherries are common edible forms along the terrace and bottom lands.[2]

The climate, which is continental and temperate, is well suited to the production of grain and livestock. The soil in the area consists of Hull-silt loam, which is considered one of the best general farming soils.[3]

The Vy-1 site (Plate I-1) is located on the left bank or north side of Mira Creek, six miles west and three-fourths mile north of North Loup, Nebraska. Mira Creek is an intermittent stream heading about three miles to the northwest of the site, and drains into the North Loup River approximately nine miles to the southeast. The site covers the west edge of an eroded terrace which appears to have been the old creek bank before the creek straightened its course and flowed farther to the south. (See Map I) The terrace is well above flood level and probably is never inundated. The terrace rises gradually to the east to culminate in a series of ridges which continue to the North Loup River valley to the east.

A broad valley with well developed terraces continues upstream to the northwest. To the southeast the creek flows in a narrower valley among steeper hills which slope rather sharply to the bank of the creek. On the north side of the valley the hills are gently roll-

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maintains the spelling of the original U. S. Land Survey office, which was adopted by the pioneers and fixed by sixty years of usage.

For much the same reason the names of the city and county of Kearney, Nebraska, are spelled with a second "e". Fort Kearny, after which both the city and county were named, is correctly spelled "Kearny," because that was the original spelling of the U. S. War Department and of the family of General Stephen W. Kearny for whom the fort was named. Also, the historic village in Washington County is spelled "Fontanelle" on the map instead of "Fontenelle," the correct spelling of the name of Logan Fontenelle for whom the village was named.

[2] Field notes and personal observations, 1939.

[3] For additional information on the geography of Valley County see Gemmell, Nieschmidt, Lovald, Hayes and Bacon, 1932, from which this summary was made.

PLATE I. 1. Vy-1 terrace from the northwest.
2. Workmen excavating Features 10 and 10A.

ing. Thus, the valley is well sheltered from high winds by hills and ridges which roughly parallel the course of the stream.

Various tests on the terrace indicate that the site extends along the west terrace front for a distance of approximately 150 feet from north to south. Mira Creek has eroded away a part of the south end of the site, as cultural materials were exposed in the bank. Some village trash extended as far as 200 feet from the west edge of the terrace to the east. A small drainage ditch has subjected the north edge of the site to wash and erosion from the hills to the east and north, so that some cultural materials have been exposed on the slopes. The site and surrounding fields have been under cultivation for a number of years. However, collectors of the area reported that cultural materials have been plentiful on the surface only in the last few years. Several residents mentioned a prairie-dog village which once occupied the terrace. Skeletons and burrows of these animals were so common throughout the excavations that it was often difficult to distinguish their workings from those of the earlier aboriginal inhabitants.

One hundred yards east of the site on the north bank of the creek was an area littered with potsherds, flint chips, and bone fragments. The pottery sherds were unlike those in the aera excavated and resembled more closely those found in Upper Republican sites.[4] Although these two sites were in close proximity, no pottery of Upper Republican type was found on the surface nor in any of the excavations at Vy-1. Several other sites with potsherds very similar to those in the Upper Republican aspect were located up and down the valley, evidencing the popularity of the valley for aboriginal peoples.

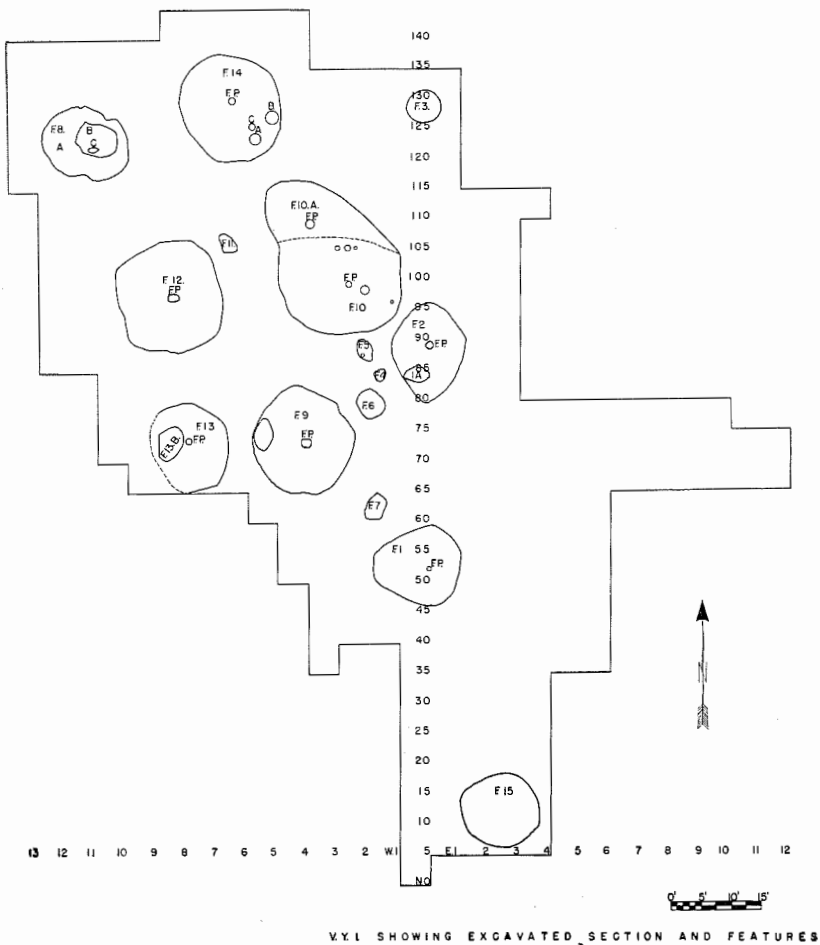
Method and Extent of Excavations

Preliminary tests in the site indicated an extent and depth of cultural materials that could only be due to an occupancy of some permanance. Moreover, the pottery was of types found elsewhere in Nebraska chiefly in deeply buried strata exposed by ravine-cutting; or, less commonly, in shallow surface sites. It was deemed advisable, therefore, to excavate the site thoroughly in an attempt to secure all possible information.

The site was staked off in five-foot squares and numbered in units of five from the south end of the site to the north side. (See Map II) The southeast corner stake in each square was retained throughout as the designating stake. Squares to the east and west were numbered consecutively, with the letter E or W prefixed to the number to indicate whether the squares were east or west of the primary line.

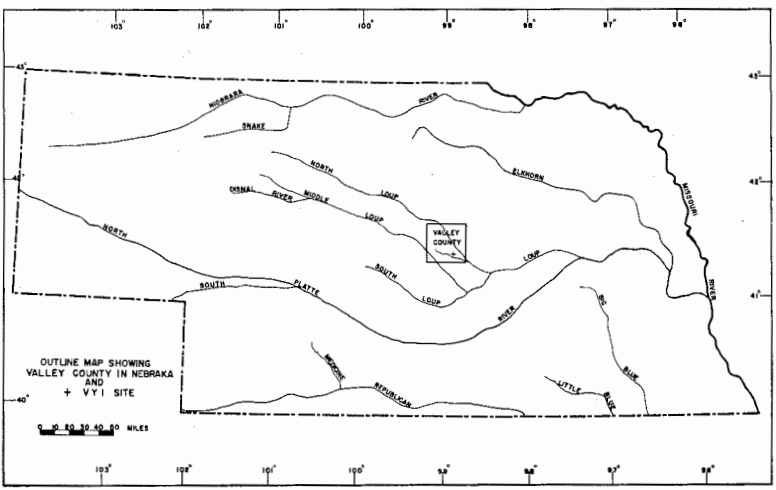
[4] Wedel, W. R., 1935, pp. 185-188.

Each workman (Plate I-2) was assigned an individual square to excavate by six-inch levels to a depth at which subsoil was reached. Any discolorations which showed in the sterile subsoil were regarded as separate features and were numbered in the order in which they were excavated. The locations of significant artifacts were noted and plotted on a field graph of the sections. The excavation of the site in six-inch levels was thought sufficiently detailed to show any stratigraphical differences which might appear. After the various features had been photographed and mapped, the excavated areas were filled so that large quantities of earth would not accumulate and hinder further excavations. A fifteen- to twenty-foot space was kept



MAP II. Excavated sections and features at Vy-1.

clear of dirt between that area which had been excavated and the portion which remained unexcavated. Profiles were made of all sections and correlated with the notes. Fifteen discolored areas were



MAP III. Valley County in Nebraska.

located in the sterile subsoil, with numerous subfeatures occurring in the larger discolored zones. The entire area excavated at the site was 150 feet long and 130 feet wide, with the long axis north and south, and covered 8,750 square feet.

The various features which represent excavations made in the sterile subsoil by the inhabitants of the site will be considered under the term "Feature" in the order in which they were excavated. The original use and shape of the various features will be interpreted as definitely as possible with the available information. Plates for Vy-1 have both the centimeter and inch scales.

Feature 1

Feature 1 (Map II) occurred on the southwest side of the site where the ground sloped toward the creek bottoms. It showed in the sterile loess subsoil as an oval area of dark soil mixed with burnt earth, potsherds, and other debris. Removal of the mixed soil disclosed a basin whose floor lay at a depth of 50 inches below the surface on the east or uphill side, and at a depth of 42 inches on the west side. The excavated soil was well mixed with charcoal fragments, animal bones, flint chips, potsherds, and fragments of burnt earth. Several of the burnt-earth fragments showed smooth concave

surfaces, as though they might have been pressed against small timbers when soft. Some hard-baked clay fragments showed impressions which may have been made by grass or small twigs.

An oval concentration of ash which was found in the central area overlying burnt earth was apparently the remains of a fireplace. The fireplace was not in a pit but occurred at the floor level, and consisted of 2 inches of white ash overlying 2 inches of burnt earth, with a diameter of 24 inches.

The floor sloped upward at the edges, forming a roughly circular basin with a diameter of 13 feet 6 inches north by south and 14 feet 6 inches east by west. The floor was even and appeared to have been originally excavated with some care. On the east side of the basin near its outer edge were three circular discolorations, 6 to 8 inches in diameter, which may have been postholes. These occurred in a line and were approximately 24 inches apart. The remainder of the floor had been disturbed so extensively by rodents that it was impossible to determine additional postholes.

Feature 1 may have represented the remains of a semi-subterranean house or shelter. The apparent lack of additional supports, and of burned roofing clay, and of large charcoal fragments identifiable as beams, probably indicates a flimsy covering over the basin. This may have consisted of skins, bark, or matting.

Feature 2

Feature 2 was a shallow oval basin near the central portion of the site. Its diameter was 13 feet north by south and 16 feet east by west. An unusual amount of stones and other debris lay on the surface of the ground in the area above the basin. The mixture of potsherds and trash continued with no sterile stratum from the surface of the ground to the bottom of the basin, where sterile yellow subsoil was reached. Small pockets of ash, such as might result from the dumping of household trash, occurred throughout the fill. Chunks of burnt earth as large as 9 cm in diameter were common in the basin, especially in the first 12 inches of soil immediately above the floor.

The floor of the basin was quite even with the exception of several rodent burrows. It sloped slightly downward toward the central portion of the basin, where a fireplace was found. The fireplace was roughly circular in shape with a diameter of 12 inches. The burnt earth, which was 2 inches in thickness, was overlain by 2 inches of fine white ash. Several fragments of charcoal as large as 7 cm in diameter came from the basin at the floor level, and from a small secondary basin which occurred on the floor at the southwest side of the basin. The skeleton of an adolescent, excavated in the soil over the basin, will be considered in another section of this paper.

Although there were no evidences of postholes in the basin, there is little doubt in our minds that it was the remains of another house or shelter. There was no indication as to how the structure was covered, but it is likely that a light covering as suggested for Feature 1 served as a roof.

Feature 3

Feature 3 was a small basin, roughly circular in shape, with a diameter of approximately 6 feet. The basin was filled with black soil mixed with animal bones, potsherds, stones, burnt earth, and ash. The floor of the basin was uneven, with no evidence of a fireplace. Feature 3 was smaller and less symmetrical than either of the preceding features. It may have been a pit originally used for the storage of foods and later utilized for the disposal of trash.

Feature 4

Feature 4 was a small pit nearly circular at its orifice and with a diameter of 25 inches. The walls belled out somewhat toward the bottom, so that the pit resembled one of the cache pits which are common in village sites throughout the Central Plains area. The dark soil which filled the pit was well mixed with potsherds, animal bones, charcoal, ashes, and fragments of burnt earth.

Feature 5

Feature 5 occurred near the north central portion of our excavations. It consisted of an oval-shaped pit with a diameter of 5 feet at its longest axis. The walls tended to be vertical, with a flat floor and a small secondary pit near its west wall. The soil which filled the pit was dark and mixed with the usual type of trash. A small restorable vessel came from the secondary pit and will be considered in the section on ceramics. Feature 5, like Feature 4, appeared to have been a discarded storage pit.

Feature 6

Feature 6 was a basin nearly circular in shape with a diameter of 4 feet 10 inches. The basin walls were sloping and the floor was nearly flat. The basin was filled with soil mixed with animal bones, flint chips, and potsherds. A few fragments of charcoal and burnt earth occurred near the floor. The original use of the basin is not known. However, it is quite possible that it also served as a storage pit.

Feature 7

Feature 7 appeared as an oval discoloration in the yellow subsoil. Its diameter was 3 feet 9 inches north by south and 3 feet

east by west. The feature was filled with dark soil mixed with much trash. Charred twigs were very common but were in no definite strata. The pit was symmetrically shaped and was probably used for storage purposes.

Feature 8

Feature 8 (Plate II-1) was an oval basin with somewhat irregular walls. It had a diameter of 14 feet at its longest axis (which was east by west) and a diameter of 12 feet north by south. The basin contained fewer animal bones and less camp detritus than was usual in the other features. There was no evidence of burning in the basin, and even the lumps of burnt clay which were common throughout the site were not present here. The soil occurred in strata which were separated by silt lines. The floor of the basin was very uneven and appeared to have been excavated with little care. The shape and size of this feature were quite similar to those which have been designated as houses or shelters. However, there was no evidence of a fireplace, and it is possible that the basin may have been excavated to secure earth for use elsewhere in the village. It is also possible that the basin may have been intended for a house but was never finished.

Feature 9

Feature 9 was circular in shape with a diameter of approximately 17 feet. The floor was even and sloped upward at the edges, with the deepest point near the center of the basin. A fireplace was found at floor level near the center of the area. The diameter of the burnt earth was 17 inches with a depth of 2 inches. Two inches of white ash devoid of burnt earth or debris overlay the burnt earth.

The fill was dark and contrasted sharply with the sterile yellow subsoil into which the basin had been excavated. Like several of the others, the presence of this basin could be determined in the accumulated soil overlying the basin by the abundance of intermixed refuse. The senior author has suggested that much of this may be attributed to the filling of the basin by the inhabiants of the site after it was abandoned. Rodents working in the area had also scattered debris throughout the soil.

A concentration of small charred twigs mixed with fragments of burnt earth occurred in a small secondary pit on the west side of the basin. It is likely that the primary basin was the remains of a house floor. The floor was carefully scraped in an unsuccessful attempt to locate postholes or other subfeatures. Here, as in nearly all the other features, rodents had burrowed so extensively that it is doubtful whether a posthole could have been determined with any degree of certainty.

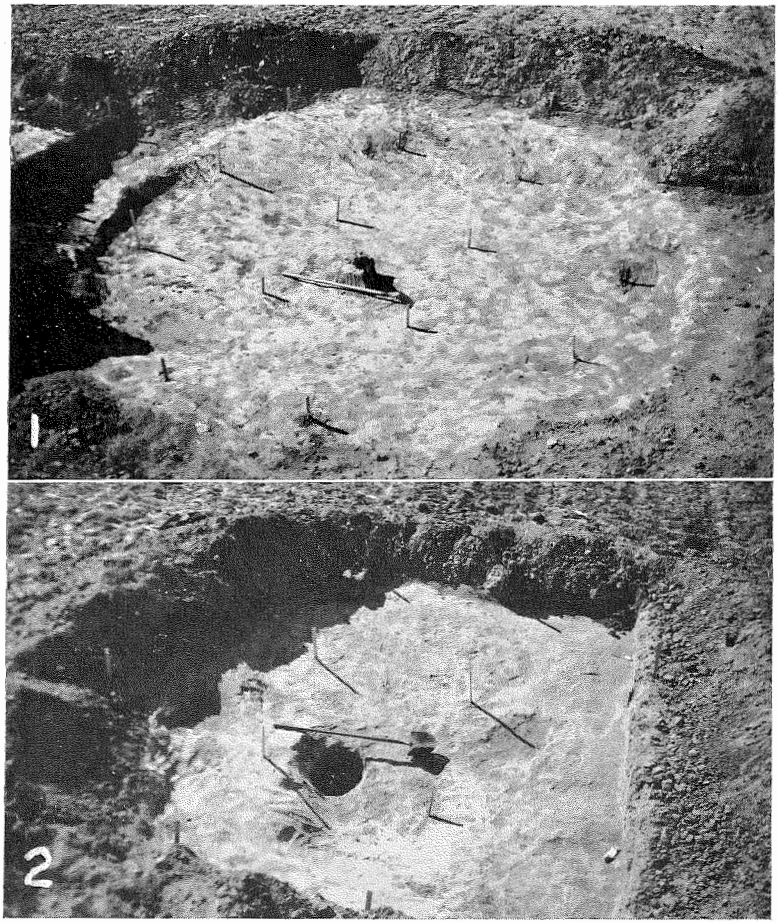


PLATE II. 1. Feature 8 with fireplace in central area.
2. Feature 12 showing secondary feature.

Features 10 and 10A

Features 10 and 10A were connected, hence were excavated as one feature. Together they were the largest of the single features. They were overlain with an accumulation of black earth and trash which averaged approximately 30 inches in depth. The single excavation was roughly oval in shape with the long axis extending southwest to northeast.

As our excavations continued it soon became apparent that the feature was made up of two smaller basins which overlapped. These two basins apparently had been originally oval in shape with the long axis east to west. Feature 10A, which lay north of Feature 10, had been partly cut away by the inhabitants of the village in constructing Feature 10. Feature 10 was approximately 20 feet in length and 15 feet in width with an average depth of 30 inches — about 6 inches deeper than Feature 10A. Thus the outline of Feature 10 was readily discernible cutting through the floor of Feature 10A. A fireplace which occurred at the floor level near the center of Feature 10 was oval in shape. Six inches of fine ash measuring 15 inches in diameter overlay an area of burnt earth with approximately the same diameter and a thickness of 3 inches. No evidence of postholes was found in Feature 10, although several small secondary pits did occur. The floor of the feature was saucer-shaped and sloped upward rather sharply at the edges. Small bits of charcoal, animal bone, potsherds, and lumps of burnt earth occurred throughout the fill. Several of these pieces of burnt earth showed flat surfaces as though they may have been placed against a smooth surface when still soft, but there was no evidence of grass having been mixed with the clay.

Feature 10A

This was somewhat smaller than Feature 10, with a length of approximately 8 feet 6 inches and an estimated width of 5 feet 6 inches before being partly destroyed by the construction of Feature 10. Like Feature 10, a fireplace occurred near the center of the basin at the floor level. This fireplace was nearly circular in shape; it had a diameter of approximately 15 inches with a 2-inch layer of fine white ash overlying 3 inches of burnt earth. No postholes or secondary pits occurred on the floor, which rodents had cut up extensively. The basin sloped up gradually on all sides, the lowest portion being near the center around the fireplace. The soil in this basin was also very black and mixed with trash such as animal bones, flint chips, potsherds, and lumps of burnt earth measuring from 5 to 9 cm in diameter.

Apparently both Features 10 and 10A are the remains of some type of semi-subterranean structure. No evidence of an entrance was

found and a semi-subterranean entrance may not have been used. These features will be considered in more detail in a summary of the various features which occurred at Vy-1.

Feature 11

Feature 11 was a small irregularly shaped pit which was located in square N-105 W-6. The pit tended to be oval in shape with the long axis extending north by south. The orifice of the pit at the surface was approximately 33 inches in length and 21 inches in width. The bottom of the pit, which was flat, was 30 inches below the surface of the ground. The pit was filled with much the same type of material as that extending over the entire village. This consisted of black soil mixed with broken animal bones, flint chips, potsherds, bits of charcoal, and small lumps of burnt earth. The burnt earth showed no particular shape and appeared to be evenly distributed throughout the pit. Three unworked mussel shells lay on the floor of the pit. There was nothing in the pit to suggest its original use. However, the shape and size suggest that it was possibly used for the storage of foods and other materials and later filled with refuse.

Feature 12

Feature 12 (Plate II-2) was a circular basin with a diameter of approximately 17 feet. The floor of the basin, cut into sterile yellow subsoil, sloped gradually upward at the sides with its deepest point near the center of the basin. A fireplace near the center had a diameter of 13 inches. The fireplace was at the floor level 26 inches below the surface of the ground. It consisted of 2 inches of fine white ash overlying an inch of burnt earth.

There were no postholes or other discernible discolorations in the basin. The soil which filled it was very black and was thickly mixed with potsherds, animal bones, some charred twigs, burnt earth, and other debris. There was no evidence of burning on the walls, but several reddish patches of burnt earth occurred on the floor west of the fireplace. Feature 12 was apparently also the remains of a semi-subterranean shelter or structure which probably served as a habitation. There was no indication as to the type of roof which may have covered it. However, it is likely that it was covered with some type of light perishable covering which when burned would leave little trace. This may have consisted of light timbers covered with skins or bark. The absence of postholes or of sizable charred wood remains makes it unlikely that the basin had a very substantial covering.

Feature 13

Feature 13 had been partially destroyed by erosion so that its original outline was difficult to trace. Most of the west half had been

washed away. However, from the portion remaining it appears to have been a basin originally circular in shape with a diameter of approximately 14 feet. The floor of the basin, which had been excavated into sterile yellow subsoil, sloped upward at the sides. It had been so badly eroded that no evidence of a fireplace could be found. An oval-shaped secondary pit occurred just west of the center of the basin. The orifice of this pit at the floor level measured 5 feet 6 inches in length and 3 feet 6 inches in width, with the long axis lying north to south. The bottom of the secondary pit lay 21 inches below the floor level of the basin. The pit was filled with burnt earth, several pieces of which showed grass impressions. Practically no trash such as occurred in the larger basin was present in the pit.

The basin contained approximately 5 inches of dark soil, all of which had been disturbed by the plow. Some animal bones and burnt earth occurred in this 5 inches of soil, but may have been dragged there by constant plowing. Feature 13 possibly represented the remains of a semi-subterranean structure, but extensive erosion had damaged it to such an extent that no definite conclusions could be reached as to its original shape and purpose.

Feature 14

Feature 14 was another circular basin with a diameter of 17 feet. The floor, deepest near the center, sloped upward on all sides. Slightly north of the center were the remains of a circular fireplace 12 inches in diameter. It consisted of an inch of ash overlying 2 inches of reddish burnt earth. The deepest portion of the floor lay 22 inches below the surface of the ground. It had been so extensively burrowed by rodents that it was very uneven. Three small pits in the southeast side of the basin may have been small storage or cache pits. The orifices of two of these had a diameter of approximately 18 inches each and their depth was 9 inches; the third had a diameter of 14 inches and a depth of 6 inches. These pits contained only black soil. The basin was filled with black soil mixed with refuse. A concentration of burnt earth occurred in the 6 inches of soil immediately above the floor. Some charred twigs also lay on the floor but no large fragments of charcoal were found.

Feature 14 was apparently also the remains of a semi-subterranean structure which had been filled with refuse after it was abandoned. As in the other basins of this type, no evidence of postholes or large timbers was found.

Feature 15

This feature was another shallow circular basin measuring 12 feet north by south and 13 feet east by west. The basin was approximately 32 inches in depth, with the floor sloping gradually downward

toward the center and sharply upward at the sides. The basin had been excavated into yellow subsoil to a depth of 15 inches so that the shape was readily discernible. Approximately 17 inches of black soil mixed with cultural materials covered the basin and the entire surrounding area. No change was noted between the soil outside the basin and that within. The mixture consisted of broken animal bones, potsherds, lumps of burnt earth, charcoal fragments, and some flint chips. There was no definite evidence of a fireplace in the basin such as occurred in several of the pits. However, ashes mixed with burnt earth were scattered freely over the floor.

No postholes were found, but here, as over most of the site, the ground had been much disturbed by rodents. It is quite possible that Feature 15 was the remains of some type of shelter or structure, but positive evidence was lacking. Its symmetrical shape would argue against usage simply as a borrow pit or as a refuse dump.

Summary of Feature Measurements

Features	Diameter North South		Diameter East West		Depth below surface		Depth into subsoil		Sub-feature depth	
	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.
1	13	6	14		4	4	1			
2	16		12	9	3	6	2			6
3	5	8	6	3	3	6	2	1		
4	2		2		4	4	2			
5	4		3	3	4		2		1	10
6	5		4	6	1	8	1			
7	4		3	3	1	6	1	2		
8	12		14		1	3		9		6
9	17		16		3	6		8	1	3
10	24		20		3			9	1	6
11	2	6	1	9	2			8		
12	18		17		2	6	1			
13	14		11	6		9		7	1	8
14	17		16		2			8	A—	9
									B—	9
									C—	6
15	12	6	13		3		1	2		

PLATE III. 1. Bone work. A — Bison rib with serrated end. B — Distal ends of deer metapodial bones. C — Perforated phalanges.

2. Bone work. A — Type 1 awls. B — Type 2 awls. C — Tubular bone heads.

Bone Work

Bone was utilized rather extensively in the making of artifacts by the inhabitants of Vy-1. Most of the bone specimens are well made and show a fairly high development of bone work. Bone artifacts have been classified tentatively on the basis of their use as interpreted by the authors. Almost without exception, the implements were fashioned from mammal bones.

Phalanges

Only seven of the many bison phalanges encountered at Vy-1 were modified. (See Plate III-1,c) Six show circular to oval perforations carelessly made in the ventral surface. These perforations extend only into the medullary cavity where the cancellous tissue has been removed. The perforations vary in diameter from 16 to 22 mm; they show no polish or other evidence of extensive use.

The seventh phalange has been perforated longitudinally from the proximal to the distal ends, where the ventral portion of the articular surface has been removed. The perforation is very symmetrical and appears to have been made with care.

These perforated bison phalanges have been reported from various cultures, but their purpose remains obscure. It seems unlikely that the holes were made only to extract marrow. It has been suggested that they may have been used as dice or as markers for gambling.[5] Possibly they were used in connection with bone awls or with drills. The base of the awl or drill could have been inserted into the perforation of the phalange to rest against the interior opposite the perforation. The phalange would give a broader surface for the hand and would serve in lieu of a thimble or drill rest. The cancellous bone is gone from the interior of several of the phalanges, which could be explained by the pressure of the awl against the soft bone. Reindeer phalanges from Belgian shelters, pierced in a similar manner, have been called whistles.[6]

Bone Awls

Bone awls are represented by seven complete specimens and numerous fragments. (See Plate III-2, A, B,) In general these are divisible into two main types. The first type, represented by four complete specimens, includes those made from split metapodial bones of the bison or deer. The distal end had been removed from all the specimens and the point sharpened. Three of the awls of Type 1 show some evidence of the cancellous bone of the articular surface

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[5] Wedel, W. R., pp. 202-203, 1933.
[6] Marquis de Nadaillac, 1894, pp. 111-112.

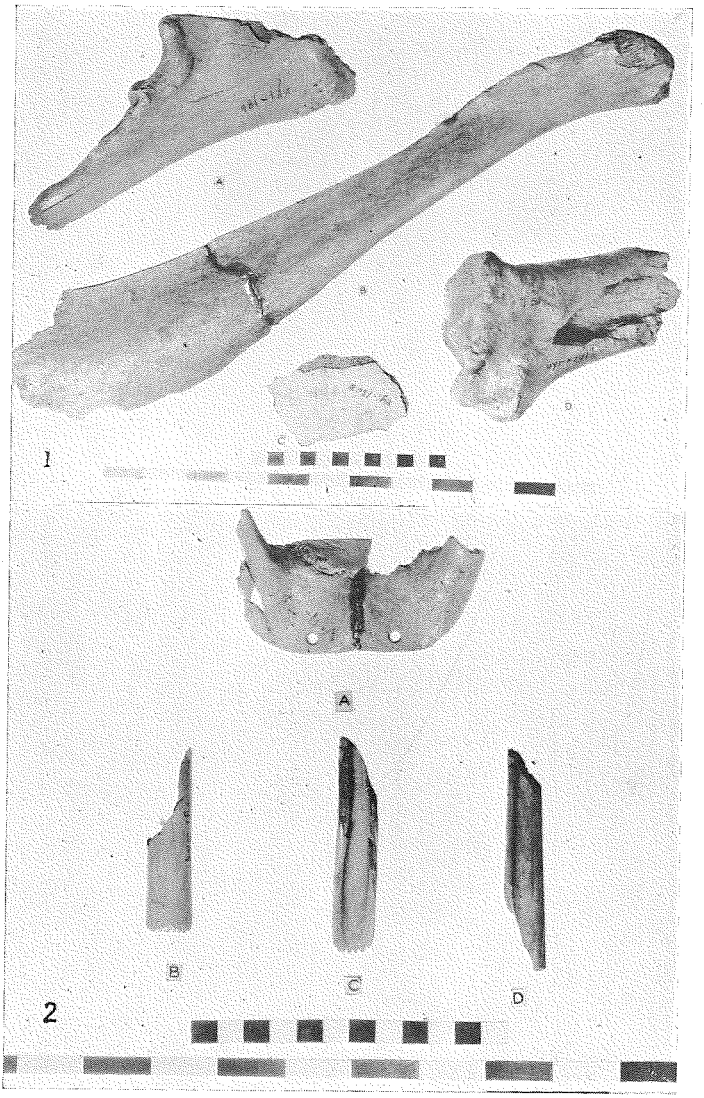

PLATE IV. 1. Bone work. A — Ulna pick. B — Scapula beaming tool. C — Polished scapula. D — Perforated bison ulna.

2. Bone work. A — Worked deer cranium. B — Parts of bone fleshers.

which forms the butt of the awl. There seems to have been a tendency to remove the articular surface entirely. On one of the four specimens the entire surface had been removed. Another has an incised line encircling the area just below the cancellous bone, as though an effort toward its removal had been begun. Awls of this type vary from round to square in cross-section. They vary from 110 mm to 148 mm in length. A typical specimen is 140 mm in length, with a maximum width of 10 mm and a thickness of 6 mm. The points tend to be very narrow and sharp.

The second type is made from rather thick, dense splinters of bone. The points tend to be rather blunt but well finished, while the remainder of the splinter is rough and shows little or no dressing down. These implements appear to have been hastily utilized from any bone splinters that came to hand. There are three complete specimens of this type, and all tend to be flat in cross-section. They vary in length from 55 mm to 90 mm. A typical specimen measured 70 mm in length, with a maximum width of 20 mm.

Another specimen which may be mentioned in this section is made from dense bone, is well finished, and shows a polish over its entire surface. Its shape resembles that of the awls. The point is broken off but the butt is rounded and flattened. In cross-section the object is flat at the base, becoming more oval near the broken end. It measures 102 mm in length and 6 mm at its greatest width at the base. The object is somewhat different from an awl and may have served as an ornament — either in the hair or in the clothing.

Tubular Bone Beads

Bone beads (Plate III-2, c) are represented by seven complete specimens. These are all tubular and are probably made from bird bones. They vary in length from 17 mm to 80 mm, averaging approximately 40 mm. The diameter varies from 3 mm to 10 mm. Most of the beads have been only moderately polished and are rather carelessly finished. Several leg bones of birds were found with one of the articular surfaces removed, showing the initial stage in bead-making. There is nothing which distinguishes these beads from the tubular specimens which have been found in other cultures in Nebraska.

Beaming Tool

Included in the collection from Vy-1 is the right scapula of a bison which appears to have served as a beaming tool. (Plate IV-1, B) It may have been used to remove hair or surplus flesh from hides, or for some similar purpose. The scapula has been split longitudinally from the glenoid cavity to the inferior border parallel to the spine. The cut surface shows a very high polish and becomes slightly

concave in its central portion. The proximal end is also polished and may have served as a handle. An incised line has been cut at right angles to the distal end, as though removal of the extremity had been intended but never completed. The distal end shows no polish, so the implement was probably held only by the proximal end. The spine had been roughly removed and presents a very jagged surface. The surface of the blade has not been modified and shows little polish. The implement is 40.3 cm in length and measures 9 cm at the distal end, with a width of 5 cm at the proximal end. So far as the authors are aware it is the first specimen of this type of implement to be reported from the area.

Fleshers or Gouges

Fleshers or gouges (Plate IV-2, B, C, D) are represented in the collection by three incomplete specimens. Apparently these are made from the metacarpal bones of the deer or antelope. Two include the points and blades, while the third is the blade with the point missing. One of the blades with the point is 80 mm in length and has a width of 16 mm at the blade. The blade has seven serrations about 1 mm in depth equally distributed over the bit of the blade. The entire blade shows a high polish and appears to have been much used. The blade slopes upward gradually but is broken off 55 mm from the bit. The other blade also has a serrated bit (which is 15 mm in width) and has five serrations cut parallel to the long axis of the bone. The blade of this specimen is also well polished.

The third specimen is the blade with the bit missing. The medullary cavity is well polished and has been worn down considerably. This incomplete specimen measures 85 mm in length and has a width of 15 mm.

These specimens (so far as the authors are aware) have not been reported from a prehistoric site in this area. It is interesting to note that artifacts, possibly of very similar form and perhaps of similar function, have been reported from the Lower Loup focus,[7] Historic Pawnee,[8] and Dismal River aspect[9] in the Central Plains. These are all made from the metacarpal bones of the bison. However, all three of our specimens from Vy-1 are incomplete, and we have no conclusive proof that these are the same type as those described from later Plains horizons.

One right ulna (See Plate IV-1, A) of a bison in the collection may be regarded as an implement. The proximal end or point shows

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[7] Dunlevy and Bell, 1936, p. 198.
[8] Wedel, W. R., 1935, p. 84.
[9] Unpublished manuscript, Nebraska Historical Society, 1940.

a high polish such as might result from much use. The tip of the point is missing, so it is impossible to determine its exact shape. The distal end had been partly destroyed by rodents, hence we were unable to determine whether it had been finished down in any way. These implements have been described elsewhere, but no very satisfactory method of hafting has been suggested.[10]

The senior author has suggested that the distal end may have been wrapped with hide or similar material and held in the hand. A cord or piece of rawhide may have been attached to the wrist and extended to the area proximal to the olecranon, in order to give additional leverage in digging or loosening earth.

A bison radius (Plate IV-1, D) is unique in the collection, inasmuch as the articular surface on the proximal end has been perforated near the central portion parallel to the long axis of the bone. This perforation, nearly circular, is very symmetrical, and cuts longitudinally through the cancellous bone into the medullary cavity. The perforated edges of the cancellous bone are slightly polished. The exterior of the bone shaft is also polished, as though from being rubbed against another object. Since the radius is broken off 16 cm below the proximal end it is impossible to determine its use or original shape. So far as the authors can determine, nothing of this type has been found in other sites in Nebraska, and we have no knowledge of its use.

Worked scapulae were nearly absent from the site. The only piece which has been finished down is a fragment of a scapula blade. (See Plate IV-1, C) This is well finished on two sides, but the thicker portion (where it was apparently attached to the remainder of the blade) is broken off very unevenly. This may have been a bone knife or it may have been a portion of a scapula hoe. From the fragment it is impossible to determine its original shape. The piece, roughly rectangular in shape, measures 8 cm by 5.5 cm.

There are five distal ends of deer metapodial bones (Plate III-1, B) in the collection. All have been cut very close to the nutrient foramen. The distal end was probably removed so that the shaft could be utilized for awls and other implements. In every case an incision has been made partly through to the medullary cavity. Force was apparently then applied and the bone broken off. Occasionally the break was very uneven. This seems to have been a common method of securing workable bone.

Perhaps one of our most interesting specimens (Plate III-1, A) from Vy-1 is a bison rib which appears to have been broken. At one

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[10] Dunlevy and Bell, 1936, p. 244. Cooper and Bell, 1936, p. 118. Strong, 1935, p. 67. Wedel, 1935, p. 201.

end the rib slopes diagonally to the costal groove. The edges are well polished and are serrated at the upper end. The cancellous bone is gone from the interior of the polished surface. These serrations (of which there are six over an area of 1 cm) are rather blunt, and are parallel to the long axis of the rib. There is some evidence that serrations once covered the entire end (which is 3 cm in length), but have been worn away.

It is interesting to note that when this tool is drawn across plastic clay it leaves a scarified surface such as is present on the interior of many of the pottery sherds from Vy-1. This may indicate a technique similar to that described by Holmes on certain pottery wares from the eastern United States.[11] Holmes says in part:

"The interior (of a vessel) has been scarified with a comb, or a serratedged tool, the teeth of which, occurring about ten or twelve to the inch, were blunt and not very even. The original and principal function of this scarifying tool was no doubt that of modeling, but in cases it was drawn back and forth in such a manner as to produce simple, irregular, patterned effects, illustrated in plate CXXXIX. These combs were probably notched bits of wood, shell, or bone, not over an inch or two in width."

The authors of this paper feel that a similar use was probably made of this tool on several of the vessels from Vy-1.

One object (Plate IV-2, A) in our collection is made from a portion of the cranium of a white-tailed deer *(Odocoileus virginianus)*. The skull has been cut into a roughly rectangular shape measuring 8 cm by 4.5 cm and including the base of the antlers. The edges have been well polished down into the cancellous bone. The antlers are 3 cm in length and appear to have been broken off. The medial sides of the antlers have a series of fine diagonal serrations. There are two circular perforations near the anterior edge on either side of the suture. The perforations are well made and have a diameter of 4 mm. The piece shows careful work and was evidently held in high regard. The perforations were probably made so that a cord or fiber could be attached. The authors have seen nothing of this type from the area and do not know of one previously reported. The specimen may have been used as an ornament.

Work in Chipped Stone

Work in chipped stone, which was not plentiful from Vy-1, in general can be divided into four main types. These include projectile points, scrapers, knives and drills. The material used consists of

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[11] 20th Annual Report, B. A. E., Holmes, 1903, p. 154.

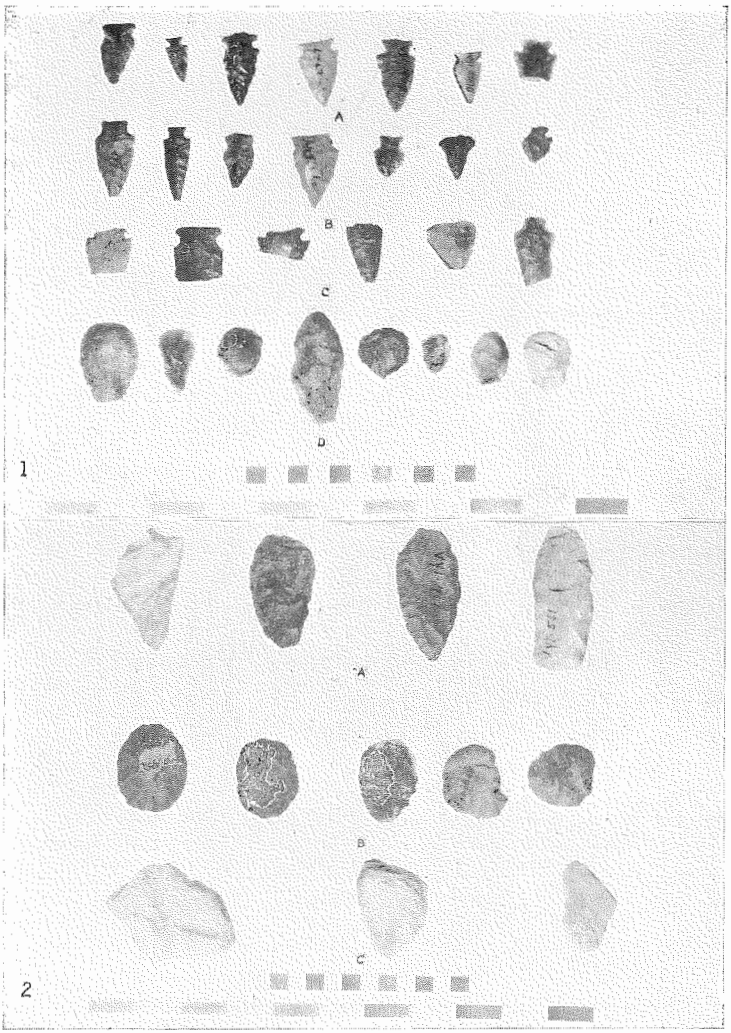

PLATE V. 1. Chipped flint. A, B, C — Projectile points. D — Chipped scrapers.
2. Stone work. A — Chipped knives. B — A crude type of scrapers. C — Abrading stones.

jasper, flint, chert and agate.[12] All of these materials can be secured within a hundred miles of Valley County.

Projectile points, (Plate V-1, A, B, C) of which there are 13 complete specimens, vary from 18 mm to 37 mm in length. Eight (64%) are from 25 mm to 37 mm in length. Four points were broken and could not be classified. When the complete points were classified as to form, the following results were secured:[13]

Stemmed, expanding stem, straight base	(SCa2)	—4	30+%
Triangular, straight base, two side notches	(NBal)	—4	30+
Stemmed, shouldered only, concave base	(SCa3)	—2	15
Stemmed, expanding stem, base slightly convex	(SCal)	—1	7+
Triangular, lanceolate type, horizontal base	(NAb2)	—1	7+
Triangular, straight base, no notches	(NBa)	—1	7+
Complete points		13	96+%
(Broken Indeterminate		— 4	
Total		17	

From the table it is seen that seven (or 52+%) of the classified points were some variation of the stemmed type, while six (or 44%) of the points were some form of a triangular type. Additional information on the relative measurements of these points is given in the following chart:

Type	Form	No. Occuring	Length	Base Width	Greatest Blade Width
No. 1	SCa2	4	37 mm	9 mm	14 mm
No. 2	NBal	4	34 mm	19 mm	20 mm
No. 3	SCa3	2	25 mm	10 mm	15 mm
No. 4	SCal	1	36 mm	11 mm	20 mm
No. 5	NBa	1	23 mm	16 mm	16 mm
No. 6	NAb2	1	23 mm	8 mm	15 mm

These results might be compared with Strong's findings in Level II at Signal Butte.[14] Most characteristic of this horizon were stemmed projectile points (SCb2, SCa2). These types made up 61 percent of the Level II points. Stemmed types comprised 53 percent of the points from Vy-1 — where, however, the sample was regret-

[12] Identification by Geology Department, University of Nebraska, 1940.
[13] Based on typology of Strong, W. D., *An Introduction to Nebraska Archeology*. Smithsonian, Miscellaneous Collections, Vol. 93, No. 10, pp. 88-89, 1935.
[14] Strong, W. D., ibid, 1935, pp. 269-270.

tably small. Thus, these two sites have in common a slight preponderance of stemmed points which from present evidence appear to be an old type in the Plains area.

It is not entirely satisfactory to compare such results because of the relatively small number of points which made up the total from Vy-1. It is only possible to say that, from the points available for study, the majority from Vy-1 were stemmed, were small, showed moderately delicate chipping, and were made from a core or a thick coarse flake.

Chipped Scrapers

Type 1

End, or "plano-convex" scrapers (Plate V-1, D), were more numerous than projectile points and included thirty complete specimens. All have a concave ventral surface and a keeled dorsal surface.

These scrapers can be subdivided into two distinct classes or types. Type 1 is the common form of the Central Plains area. Specimens are usually elliptical to ovoid in shape. The ventral surface is usually smooth and flat and may be curved, depending upon the plane of cleavage. The dorsal surface is convex, with a gradual slope on three sides and an abrupt slope on the end. This type is characterized by a length somewhat greater than the width. There were 18 scrapers of this type, ranging from those with very delicate chipping to those with very crude chipping. The majority tend to be rather crudely made. In size these ranged from 18 mm to 55 mm in length; 11 were from 25 mm to 28 mm in length. The range in width is from 17 mm to 40 mm, with the width always less than the length.

Type 2

Scrapers of Type 2 have a flat dorsal surface with the chipped surfaces slanting sharply to the ventral side, which is nearly always horizontal and unchipped. This type varies in shape from oval to circular. The width is usually equal to or greater than the length. There were 12 scrapers of Type 2; they range in length from 16 mm to 28 mm. Six of these measured from 12 mm to 14 mm in length. A typical specimen of Type 2 measured 11 mm in length with a width of 12 mm.

The materials from which these scrapers were chipped consisted of brown jasper, grayish flint, green quartzite, and reddish-banded chert. The specimens do not vary significantly from those described from various other prehistoric village sites in Nebraska. It has been suggested that when in use they may have been set into or lashed to bone or wood handles and used as hide scrapers.[15] If actually

[15] Wedel, W. R., 1936, pp. 49-50.

used as scrapers it would have been very difficult to hold the smaller type directly in the hand unless it was provided with some type of handle.

What may be a scraper of a somewhat cruder type is represented by ten specimens. These are crudely chipped on both sides so that convex surfaces result near the center of the specimen. All are oval to circular in outline, with some secondary chipping occurring around the edges so as to give a thinned border. They vary in length from 22 mm to 52 mm, with six of them being from 32 mm to 35 mm in their greatest length. These ten specimens are made from native stone, such as grayish flint, brownish jasper and dark gray flint.

Knives

Five chipped stone artifacts have been classified as knives. (See Plate V-2, A) These vary in shape from oval to rectangular, with chipping which tends to be rather crude. On the basis of form these may be divided into two types. Type 1 (NAb2), which is represented by three specimens, is rectangular in shape, and chipped on both sides with the cutting surface chipped to a sharp edge. A typical specimen measures 8.2 cm in length with a width of 3.5 cm.

Type 2 (NAb1) is oval in outline with a slight point at one end. The chipping on this type is coarse, although some secondary chipping occurs on the edges of the blade.

There were five fragments of knives which could probably be grouped under these two types. There was no evidence as to whether these knives were hafted, but it is probable that some type of bone or wood handle was used. These are not unlike specimens from other prehistoric village sites in Nebraska. None of the common diamond-shaped or "Harahey" knives were excavated at Vy-1.

One specimen which has been classified as a drill completes the list of chipped implements. It is made from a flake of white chalcedony. The flake is 42 mm in length and 11 mm in width. It has been delicately chipped to a fine point at one end, whereas the remainder of the flake is unmodified. In cross-section the specimen has a flattened oval shape.

Abrading Stones

Abrading stones (Plate V-2, C) are represented by four specimens. All are made from irregularly-shaped pieces of white calcareous sandstone which outcrops along the lower stream courses in Valley County. The specimens vary in length from 4 cm to 7.5 cm. The boat-shaped, paired abrader which is found so commonly in the Central Plains was not present at Vy-1. All show grooves which run in haphazard fashion over the surface with no regard to the shape of the specimen. Most of the grooves are such as might result from the

polishing and sharpening of bone awls or sticks. The sandstone from which these specimens are made is very friable, and several fragments which show little human workmanship may have been extensively modified at the time they were discarded but have weathered smooth again.

Ceramics

In proportion to other artifacts, ceramic remains were very abundant at Vy-1. They are of particular interest since the same or closely similar types have been reported but not described from sites widely distributed throughout Nebraska. For most of these occurrences, few or no details are available concerning the associated artifact types, and in no case has it been possible to determine the nature of the village complex.

The collection with which this paper is concerned consists of the following: Five restored pots; various incomplete pots; total number of sherds 3,384. (Rim sherds 256, body sherds 3,128.)

A few words in regard to the method of classifying the various sherds may not be out of place at this time. At the time of excavation, the sherds were separated by six-inch levels within five-foot squares. In the laboratory they were further divided with the body sherds in one group and the rim sherds in another. The rim sherds from each six-inch level were then arranged on a chart to show the principal characteristics of each. At first there was no particular attempt to separate the rim sherds as to types but only to record the characteristics. This chart allowed one to secure the total number of sherds as well as the number which had a particular trait, and to record any correlations of the various traits. After these traits had been recorded, comparisons were made between the various levels to determine stratigraphic differences.

It was soon determined that no important differences were discernible for the various levels and that the pottery appeared fairly homogeneous. The sherds from the various levels were then placed together, reclassified as to types for the entire site, and again checked for stratigraphical differences in type. Hardness of the sherds was calculated by the method suggested by B. March.[16] Our opinion of the texture of the sherds is stated in relative terms, including the size and amount of the tempering materials and the texture of the paste itself.

It was not thought practicable to test all the body sherds, so a series of 600 were selected proportionally from the six 6-inch levels and tested. Color was determined by the general impression received

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[16] March, B., Standards of Pottery Description, 1934.

from looking over all the sherds rather than by individual instances of color.

The ware varies in color from light tan to black, with the majority of sherds a dark gray. A single sherd, due to irregularities in firing, may show a variation of colors. In no case was a paint or slip used. Hardness, which was tested on the outer surface of the 256 rim sherds, varied from 2 (gypsum) to slightly more than 5 (apatite). There were ten rim sherds with a hardness of nearly 2, 98 with a hardness of about 3 (calcite), 108 with a hardness of nearly 4 (fluorite) and 31 with a hardness of 5. Sherds with a hardness of 2 are not typical and come from miniature vessels with very little tempering. Thus the majority of the sherds have a hardness of 4, which is somewhat greater than, for example, Upper Republican pottery. Texture varied from fine to coarse. By way of comparison, the authors would class the bulk of Upper Republican sherds as of medium texture. Of the 256 rim sherds 16 were fine-textured, 93 medium-textured, and 147 coarse-textured. Thus, the overwhelming majority were of medium to coarse texture. On many of the most coarsely tempered sherds the aplastic projected through the surface to produce a sand- or grit-studded surface which tended to crack along irregular lines. Tempering materials consisted of sand, grit, and some limestone fragments. Sand, which could have been secured from the stream bed, was used in 91+% of the sherds. Angular grit, which may have resulted from the crushing of river pebbles, was the tempering material in 8+% of the sherds, and limestone fragments mixed with sand were used in 0.5%. A few sherds have fragments of unidentifiable shells which the authors believe were probably unintentionally included with the paste. The tempering material varied in size from very fine to fragments 5 mm in diameter. Most of the sherds bubble readily and become soft and crumbly when immersed in water. The characteristic structure of the ware is granular, although a few of the sherds from miniature vessels show a tendency to flakiness. Variation in the thickness of sherds is comparatively great. The range is from 2 mm to 18 mm. The greatest relative thickness usually occurs on sherds from near the base of the vessels. A series of 600 sherds taken proportionally from the six 6-inch levels showed the following thicknesses:

Thickness in mm.	Number of sherds	Percent of sherds
Under 3	6	1
3 to 6	180	30
7 to 9	290	48+
9 to 12	114	19
12 to 18	10	1+
Total	600	99+

Rim profiles (Figure I) may be divided into three general types. Most numerous are the flaring type (Figure I, Type 1) which made up 60+% of the total; constricted rims (Figure I, Type 3) included 21%; and vertical rims (Figure I, Type 2) constituted 19%. The

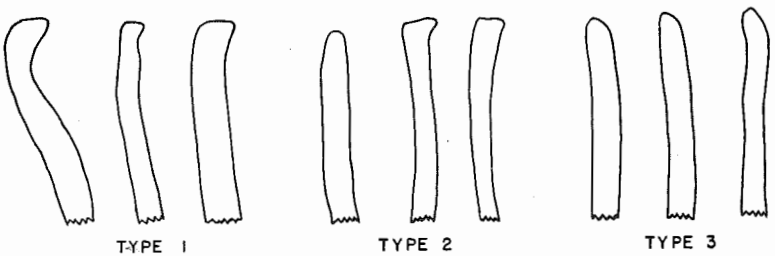

FIGURE I. Vy-1 rim profiles. The exterior surface in each is to the right.

shoulder was so poorly defined on the majority of the rim sherds that it was difficult to ascertain the exact angle of attachment. The rim has usually been considered as that portion of the pot which modifies the orifice of the vessel. The degree of flare may be expressed in terms of the angle between the perpendicular and a straight line from the neck to the lip. The degree of flare outward from the perpendicular varies from 0° to 32°. Those sherds which are classified as constricted have an angle of flare inward varying from 0° to 30°.

The lip, which has been considered as the area marking the junction of the inner and outer surfaces of the vessel, was classified in two general divisions: (1) flattened, and (2) rounded. Both types were often modified by decorations and the resulting form was the basis of classification. The lip was classed as flattened in 75% of the cases, while 25% were rounded.

Some form of decoration was present on 132 of the 256 rim sherds. The areas decorated were the lip, the rim, lip and rim, and inner lip. The inner lip is the inner edge of the lip which joins the inner rim. Decorations were present on the lip of 29 rim sherds, while 84 of the sherds were decorated on the exterior rim, 11 sherds on both lip and rim, and 8 sherds on the inner lip. Thus the exterior rim was the most common area decorated.

Techniques of Decoration

One method of decoration (Plate VI-1, A-F) consisted of spiral cord impressions, apparently produced by wrapping a string around a stick or rod so that the imprint of the cord remained in the soft clay. A second type (Plate VI-2, A-I) consisted of outer bosses which apparently were made by punching from the interior of the

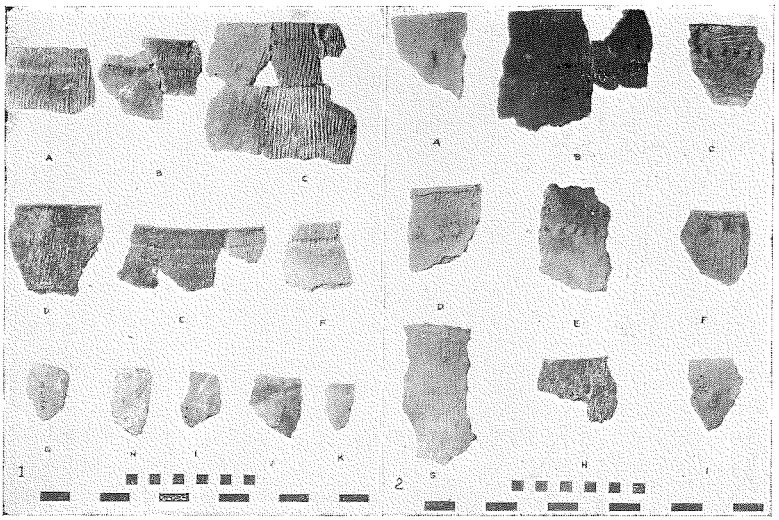

PLATE VI. 1. Rim sherds. A-F — Spiral cord impressions. G-K — Rim sherds from miniature vessels.
2. A-I — Rim sherds with outer bosses.

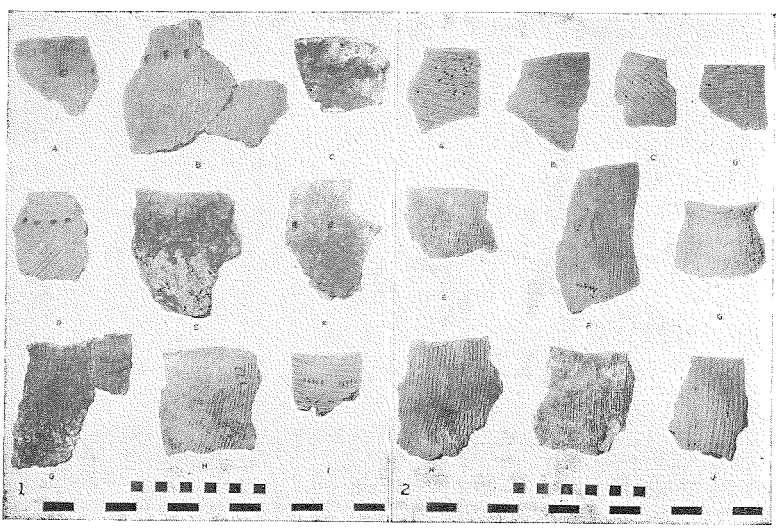

PLATE VII. 1. A-I — Rim sherds showing punctate decorations.
2. A-D — Rim sherds with diagonal cord marks. E-J — Rim sherds with vertical cord marks.

vessel with a round blunt instrument. A third type-variant of the preceding involves outer punctates (Plate VII-1, A-I) which seem to have been made by punching from the exterior of the vessel with a round blunt instrument. A fourth decorative technique was incising, which was made by a sharp-edged implement drawn along the surface. The remaining type of ornamentation — trailing — consists of a broad shallow impression which occurred in straight lines and was probably made by a blunt instrument.

The most common ornamental feature was the exterior punctate, which occurred on 47 of the 132 decorated sherds. In order of frequency this was followed by cord-wrapped rod impressions which were found on 34 rim sherds. Exterior bosses were present on 20 specimens while incising occurred on only four. One sherd bore trailing. A combination of the exterior punctate and the cord-wrapped rod impression was used as decoration on 12 rim sherds and a combination of exterior bosses and the cord-wrapped rod impressions were found on 14 sherds.

Surface Finish

Two types of surface finish were present on the sherds. Those which were smooth (Plate VI-1, G-J) with no evidence of a definite body treatment formed one group, while sherds showing some variation of cord impressions made up the second group. For the most part the cord-impressions consisted of a general over-all roughening; single impressions were absent. The cord-impressed sherds were subdivided into three groups on the basis of the direction in which the cord impressions were applied. In the first group the impressions were applied vertically (Plate VII-2, E-J) so that they extended in parallel lines downward from the lip of the vessel. Another group had the cord marks applied diagonally to the rim (Plate VII-2, A-D), so that they encircled the vessel in a general spiral effect downward from left to right. The third group bore cord marks which were applied in a rather haphazard manner so that a criss-cross effect usually resulted. (See Plate VII - 1, F).

Only 7 of the 256 rim sherds were classified as smooth. All came from miniature vessels with slightly flaring rims, practically no tempering, and with a tendency to flakiness. The remaining 249 rim sherds showed a surface finish resulting from one of the types of cord-marking described above. The greatest number (or 141) of the rim sherds were of this type, with cord marks applied vertically. Sixty of the rim sherds had cord marks applied diagonally, while 48 of the rim sherds had cord-roughening which was criss-crossed.

Restored Vessels

The five restorable vessels range in height from 6 cm (Plate VIII - 2) to 44.5 cm. (See Plate VIII - 1) All have a conoidal base

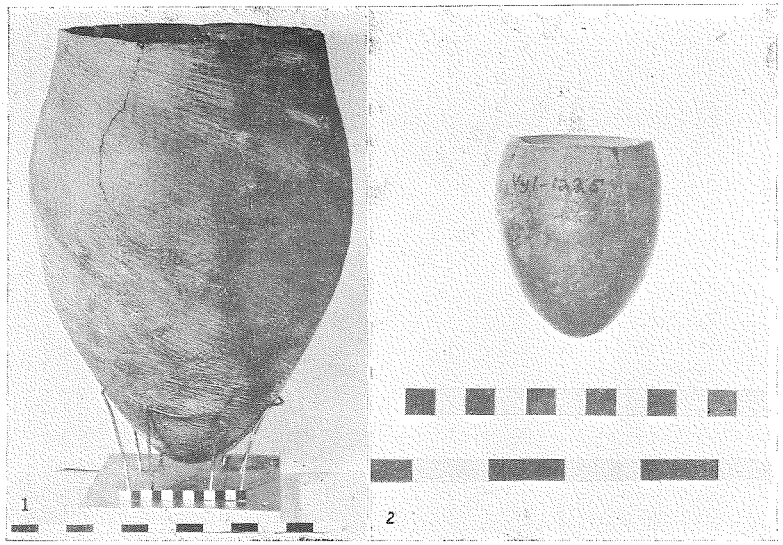

PLATE VIII. 1. Largest restored vessel from Vy-1.
2. Smallest restored vessel from Vy-1.

PLATE IX. 1. Restored vessel from Vy-1 with criss-crossed cord marks.
2. Restored vessel with cord marks applied criss-cross fashion.

and a poorly defined shoulder. The range in hardness is from 2 (gypsum) to 5 (apatite). The smaller vessels tend to be soft while the larger ones are definitely harder. This is probably accounted for by lack of tempering materials in the smaller vessels. The lip is flat in four instances, rounding in the fifth. Capacity ranges from ½ pint to about 6 gallons. The color varies so greatly on individual pieces that it is impossible to assign a single specific color to a given vessel. This is probably due to the irregularities in firing. However, the tendency is toward a dark gray or black color. The miniature vessel shows no tempering materials. The four larger vessels have tempering ranging in size from very fine sand to pebbles 5 mm in diameter. The rim profile is most often slightly flaring, with four vessels having this form and one being slightly constricted. The orifice diameters vary from 4 cm to 25.6 cm. The greatest diameter is approximately midway down on the body. However, one small jar (Plate IX - 1) has its greatest diameter at the orifice. The larger pots have the shoulder slightly better defined than do the miniature pieces, though none show a well defined shoulder. All have their greatest thickness at the conoidal base. The specimen shown in Plate VIII - 1 had a thickness of 8 mm at the rim and a thickness of 1.6 cm at the base. None of the restored vessels show any special decorative attempts such as have been described for many of the rim sherds. Perforations are present on either side of cracks on the vessels. Cords or fibers were probably passed through these to keep the cracked pieces from falling away and completely destroying the vessel.

The restored jars show the usual two types of body treatment, that is, cord-roughened and smoothed. Only one vessel, the smallest in the collection (Plate VIII - 2), has a smooth surface. Of the remaining four, two had the cord impressions (Plate IX - 1, 2) applied criss-cross fashion. This effect, incidentally, seems to be more common on sherds from smaller vessels. Another pot (Plate X - 1) had the roughening applied vertically so that fine parallel cord impressions extended to the base. The impressions were often interrupted near the base by shallow lines which appeared to have been applied haphazardly by a blunt instrument. The reason for this change in body treatment is not known. Possibly the vessel was standing in soft earth or similar material so that the cord impressions could not be carried to the bottom until the upper portion was partially dry. The surplus clay may have been rounded off later with a blunt implement. The largest vessel in the collection has cord marks which extend diagonally from left to right around the vessel toward the base. The markings are not continuous but show many breaks and overlappings. Here, again, they give way to impressions of a blunt instrument on the base. Occasionally the blunt indentations are alternated with short incisions, apparently made with the thumb nail. All of the vessels

(and particularly the larger ones) show finger impressions on the interior, as though the fingers had been used anvil-fashion in shaping the pots. A few sherds have scattered cord marking on the interior surface, though it is not clear just how a cord-wrapped paddle would have been used in the final shaping of the vessel interior.

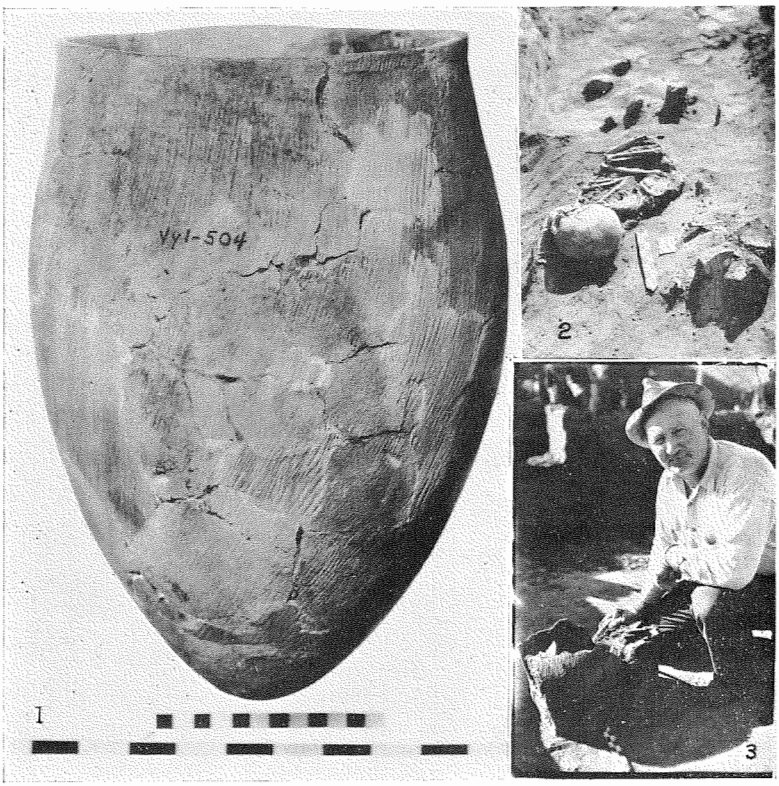

PLATE X. 1. Restored vessel from Vy-1 with vertical cord marks.
2. Remains of an adolescent from Feature 2.
3. Workman excavating restorable vessel at Vy-1.

Approximately 20% of the sherds had a coating of charred organic material on the interior of the vessel, and in some cases this extended down over the outer rim. No handles or lugs were noted at the site.

To summarize briefly, the ware from Vy-1 appeared to be essentially utilitarian, presumably for cooking foods and for storing various materials. On the majority of the sherds a cord-wrapped paddle was probably applied in the final shaping on the outer surface, while the bare hand — most commonly, or in rare cases a cord-wrapped paddle

—was used as an anvil on the interior of the vessel. Sand tempering was used in approximately 91+% of the sherds, grit in 8+%, and limestone fragments mixed with fine sand made up the tempering in approximately 0.5% of the sherds. The ware was relatively hard and thick, with a majority of the sherds being around 4 (fluorite). This is probably due to the type and quantity of tempering. The ware has a granular texture and tends to crack along ragged lines.

The predominant shape has a sharp conoidal base, with vertically elongated walls which terminate in a simple rim. Rim forms terminate in a rounded or flattened lip, with a flattened lip form being most common. Decorated areas include outer rim, lip, narrow inner, and narrow outer lip. Techniques of decoration include imprinting with a cord-wrapped tool; punching from without to create outer punctates; and interior bosses, sharp incising, and trailing made with a blunt implement. Some perforations were present but were apparently used for repairing the vessel rather than for decoration.

Patterns of decoration include lateral lines of bosses or punctates about the rim, cord-wrapped stick impressions on the lip surface, or a combination of these. Vessel surfaces were almost universally cord-roughened; in very rare sherds they seem to have been smoothed. The cord impressions were most commonly applied (1) vertically, or (2) diagonally from left to right, or (3) haphazardly so that a criss-cross effect resulted. The rim sherds, on the basis of profile, fall into three types. Most common are flaring rims followed by constricted, and finally by vertical rims. No definite correlation between rim profiles, body treatment and decorative technique was discernible.

The ware from Vy-1 is sufficiently distinctive on the basis of texture, thickness, color, body treatment and tempering to be separated without difficulty from sherds of other aspects in the area. They represent a type which has previously, and provisionally, been assigned to a little-known Woodland horizon in the central Great Plains area. Certain exceptions to this statement will be elaborated upon in a later section of this paper.

Worked Shell

Mussel shells were very common at the site but only one worked specimen was found. This was a pendant made from the hinge of a thick mussel shell. The edges are well polished although a portion of the hinge remains. The pendant is 5 cm in length with a greater width of 2 cm at the lower end. The upper portion, which slopes to a rounded point, has a shallow incised line cut at right angles, probably for attachment to a cord or fiber. The interior of the pendant shows little modification. Apparently artifacts of shell did not play an extensive part in the culture of the people who occupied Vy-1.

Vegetal Remains

Practically no vegetal remains were found. A few charred fragments of wood and grass were found in the basins. The pieces were so small that identification was impossible. Evidence of cultivated plants was entirely lacking.

Burials

The remains of an adolescent were found in the village material over Feature 2. The burial (Plate X-2) was semi-flexed with the bones articulated. The skeleton occurred at a depth of 36 inches with the head slightly higher than the feet. The burial was lying on its left side facing east. Village trash was well mixed with the bones and no evidence of a burial pit was discernible. The bones were well preserved and appeared to have been placed there in the flesh.

There was no definite association of grave goods, although village materials such as mussel shells, potsherds, animal bones, burnt earth and ash were mixed among the bones. The immature condition of the bones makes the determination of sex uncertain.

Tests for burials on the hills east of the site yielded only one grave. This contained the remains of an adult male individual in a burial pit measuring 41 inches north by south and 26 inches east by west. The remains were disarticulated and widely scattered from a depth of 20 inches to 46 inches. The long bones, with exception of the right humerus, were missing. The skull was upside down with the lower mandible and the teeth lacking. A few flecks of charcoal were mixed among the bones but no other burnt material was present. A chipped flint end-scraper and chipped knife lay immediately beneath the humerus.

There was no evidence of an artificial mound over the remains nor of any other burials in the immediate vicinity. The lack of associated cultural materials makes it impossible to identify the burial with the Vy-1 village site. It is possible that the remains are attributable to one of the numerous Upper Republican aspect sites which occur nearby in the valley. The remains were apparently either a secondary burial or one that had been badly disturbed.

Mammalian, Reptilian, Avian and Molluscan Remains

Bones of mammalian forms were the most common from Vy-1. These animals must have been used extensively for food, and in some cases the bones were utilized for making implements. Bison bones were most abundant. However, they were not as plentiful as they are in the late protohistoric and historic sites of the area, while bones of deer were more common than in later horizons. At the Lost Creek site, which is farther west than Valley County, Strong found bison

bones were most common, with Wapiti and deer bones almost equally numerous. A number of rodent bones were also found at the Lost Creek site, with the prairie dog being the most common.[17] Rodents such as the prairie dog, rabbits, pocket gophers, beaver and muskrats were quite common at Vy-1. However, many of the prairie dog and gopher remains are probably not contemporaneous with the site and may be comparatively recent. Carnivores included dog, skunk and badger. No evidence of wolf, coyote or wildcat remains were found, although they were undoubtedly present in the area. It is possible that many animals were used only for their skins, so that the skeletal and other remains were not brought into the village.

Several of the species whose remains were found at Vy-1 are found in the area today. These include the prairie dog, badger, skunk, muskrat, pocket gopher, cotton-tail rabbit and jack rabbit.

Mammalian List[18]

Jack Rabbit (*Lagomorpha lepus*)
Cotton-tail Rabbit (*Lagomorpha sylvilagus*)
American Beaver (*Castor canadensis*)
Prairie Dog (*Cynomys leudovicianus*)
Pocket Gopher (*Geomys* sp., two size groups)
Muskrat (*Ondatra zigethicus* ref. *cinnamomina*)
Dog (*Canis* ref. *familiarias*)
Northern Plains Skunk (*Mephitis*)
Badger (*Taxidea taxis*)
American Bison (*Bison* ref. *bison*)
White-tailed Deer (*Odocoileus virginianus*)

While bird bones were fairly common, we were unable to secure definite identification for them. Many of the bones are from large aquatic birds, probably including geese and ducks. Bird bones were occasionally used by the inhabitants of the site for making beads and ornaments. The only reptilian remains found were those of the common land turtle. These may have been used for food, as their remains were quite plentiful.

Despite the proximity of the site to the Loup River and other streams, no fish bones were found. It is possible that these fragile remains have all been destroyed; on the other hand, fishing may have been practiced only sporadically or not at all.

Molluscan remains were present in abundance but not in great variety. In only one case was shell utilized for artifact making. The

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[17] Strong, W. D., 1935, pp. 100-101.
[18] Identifications by C. B. Schultz, T. M. Stout and Edson Fitcher, Nebraska State Museum, University of Nebraska, Lincoln, Nebraska.

fleshy portions of the mussels were probably used for food. Only three species of mussel were identified from the site.[19]

1. *Lampsilis siliquodea* (Barnes)
2. *Ligumia recta latissima* (Rafinesque)
3. *Lampsilis ventricosa* (Barnes)
4. Anodonta species (?)

Gastropods: *Campeloma* — probably species *decisum* (Say).

Lampsilis ventricosa and *Lampsilis siliquodea* were reported from the Leary site in southeastern Nebraska.[20] Strong has reported the first and second species from the Rock Bluffs village site in Cass County.[21] The same author has also reported *Ligumia recta latissima* (Rafinesque) from the Walker Gilmore site in eastern Cass County.[22]

Table 2

Woodland Pattern Trait Complex (as tentatively set up by W. C. McKern).	Vy-1 Trait Complex
Village Life Small impermanent camps the rule. Semi-sedentary habits. Houses of perishable materials (probably readily movable from place to place).	**Village Life** Semi-sedentary. Camps show extended and permanent occupation. Houses semi-subterranean, probably covered with skins, mats or other perishable materials.
Food Quest Hunting and fishing super-important over gardening.	**Food Quest** Hunting most important, with no evidence of horticulture.
Implements: Bow and arrow, chipped stone points predominating. Roughly shaped notched and stemmed projectile points. Bone gorge — double-point-	Implements: Probably bow and arrow, with small to medium-sized points most common. Majority of points are stemmed. Hunting spear of chipped

[19] Identified by Mr. Calvin Goodrich, Curator of Molluscs, University of Michigan — Letter of October 25, 1940.
[20] Wedel, W. R., NEBRASKA HISTORY MAGAZINE, 1936, p. 65.
[21] Strong, 1935, pp. 101, 138.
[22] Strong, W. D., ibid, p. 194.

ed bar. Hunting spear (?)—points larger but like arrow points. Fish spear — unilaterally multi-barbed bone points.

Skinning knives — chipped stone, plain ovoids or modified by basal notches or stems.

Horticulture

Simple gardening where present (not universal).

Implements:

Rare; semi-shaped flaked-stone hoes. (Probably digging stick.)

Warfare

Implements:

(like hunting)

War club (evidence on crania.)

Craftsmanship

Stone chipping:

Use of cores and heavy spauls for projectile points, knives, and scrapers; primary superimportant over secondary flaking; products tend to be heavy and crudely shaped.

Implements:

Unshaped maul; hammer stone; pecking stone (small); unshaped antler flaker.

Stone abrasion:

Grinding, or pecking and grinding, followed by from semi-smoothing to high polishing.

Implements: unshaped maul; hammer stone; unshaped flint present but not common.

Chipped flint knives oval to rectangular in shape, with no evidence of notches or stems.

Horticulture

No definite evidene of gardening.

Implements:

Some evidence of the scapula hoe. (May have had digging stick.)

Warfare

Implements:

(like hunting)

No evidence of war club.

Craftsmanship

Stone chipping:

Points are made of spauls, cores, and thick chips. Scrapers and knives from cores. Primary flaking superimportant over secondary flaking. Specimens vary from finely chipped to coarse, with a tendency toward coarsely flaked products.

Implements: unshaped hammer stones and pecking stones (rare).

Stone abrasion:

No polished stone; abraders show smoothing.

Implements: unshaped sandstone abraders quite com-

sandstone abrader; polishing stone.

Drilling:
Implements: small chipped-stone baseless drill; broad-based chipped-stone drill; trianguloid chipped-stone reamers.

Cutting, scraping and sawing bone and wood:
Implements: large to small generalized chipped-stone scrapers (elliptical, ovoid, irregular); serrated stone scraper or "saw."

Leather (and basketry?) preparation:
Implements: unmodified sharp animal bones. Beaming tool of deer metacarpal bone. Dressed-bone perforators. Generalized chipped-stone scrapers. Chipped-stone knives. Notched end-scrapers — "bunts" or "blunts".

Wood Cutting:
Firewood to wooden artifacts. Implements (all of abrader stone): grooved axe, variety of detailed shapes. Adze, grooved or ungrooved. Gorge, characteristically ungrooved. Chisel, ungrooved.

Personal Adornment
Use of gorgets of polished stone. Use of modified gastropod shells as beads.

Burial Procedure:
Disposal of the dead in mounds, in pits, or on scaffolds, with scanty or no unmon.

Drilling:
Implements: some evidence of small baseless drill.
No evidence of reamers.

Cutting, scraping and sawing bone and wood:
Implements: medium to small chipped stone scrapers (elliptical, ovoid, irregular).

Leather (and basketry?) preparation:
Implements: well-finished awls of several types, all single-pointed, Beaming tools made from split bison scapula. Chipped stone scrapers, chipped-stone knives. Serrated fleshers of deer metacarpal bones. No notched scrapers.

Wood Cutting:
Firewood to wooden artifacts.
Implements: no evidence of wood-cutting tools.

Personal Adornment
Pendants made of deer crania with base of antlers. Use of modified mussel shells for pendants.

Burial Procedure
Semi-flexed single burial in village accumulation with no unperishable grave goods.

perishable grave goods. Methods of disposal in order of relative importance: Primary — flexed in the flesh, predominantly one in a grave. Secondary — interment of bundled, disarticulated bones, from one to many individuals represented in one grave. Cremation of primary or secondary remains.

Some evidence of disarticulated burials in pits, but lacks positive affiliation with village.

Smoking

Implements: short-stemmed elbow pipe, characteristically of pottery. Short, straight or curved tubular pipe, characteristically of pottery. Stone-bowled pipe with separate perishable stem, pebble or ovoid bowls to "Micmac" shapes.

Smoking

Implements: no evidence of pipes.

Production and Use of Pottery

Technique:

Paddle and anvil (possibly with coiling or coursing). Cord-wrapped paddle most characteristic; fingers often employed in place of anvil.

Production and Use of Pottery

Technique:

Cord-wrapped paddle with cord marks applied vertically most characteristic; fingers often employed in place of an anvil; occasionally a cord-wrapped paddle used on interior.

Ware:

Granular texture; grit temper (including limestone); rough, grit-studded surface characteristic when undecorated.

Ware:

Granular texture; sand temper most common with some grit and limestone; grit-studded surface often present.

Shape:

Amphoral (conoidal base) jar with wide mouth and low, slightly flaring to contracting rim characteristic; variety in shape practically limited to proportion, rim-

Shape:

Conoidal base present in all restorable vessels, vertically elongated body with simple rim. Rim form varied from constricted to slightly flaring, with slightly flaring

lip treatment, and instances of truncated base.

Decoration:
Areas decorated: narrow inner rim, lip, outer rim, upper shoulder.

Techniques:
Variety of impressed treatments producing cord or cord-wrapped tool impressions; point indentures; rocked tool indentures; natural-tool stamps; comb stamps; punched bosses; perforations; line incisions; and brush scratches.

Patterns:
Simple to complex straight-line effects predominating, representing from crude to refined concepts.

characteristic; majority of lips flattened but rounding lips present.

Decoration:
Narrow inner rim, lip, outer rim, upper shoulder. Outer rim decorated in majority of cases.

Techniques:
Cord or cord-wrapped tool impressions; indentations; punched bosses; and incisions with various combinations of these decorations.

Patterns:
Lateral lines of bosses, punctates, or perforations about rim. Horizontal lines of single impressed cord.

Summary and Discussion

The archeological remains at Vy-1, as described in the foregoing pages, have thrown considerable light on an archeological horizon which up to the present has received comparatively little attention in the central Great Plains. There seems to be no reasonable doubt that the site should be assigned to the Woodland pattern, though it is not yet clear in how far it is representative of this pattern in Nebraska. In any case, Vy-1 appears to have been a small compact site which was occupied for a sufficiently extended period so that an occupational level of 16 to 40 inches of debris accumulated. Occupation of the site appeared to have been permanent rather than seasonal. A simple type of semi-subterranean house with a central fireplace was in common use. It is likely that the structures were covered with skins or mats which were probably supported by light poles and props.

Subsistence was apparently chiefly by hunting. The lack of scapula hoes (otherwise typical of Plains horticultural horizons) was especially noticeable at Vy-1. Charred vegetal remains, with the exception of grass and wood, were also absent and probably indicate a non-horticultural site. An artifact inventory from Vy-1 suggests a

moderately rich culture, as compared with other Plains horizons. The greatest emphasis seems to have been on the making of pottery, although artifacts of bone are also fairly well represented. Polished stone objects were practically absent.

Very little information was secured in regard to burial customs. The remains of one individual, found in the occupational level, suggest that interment may have been made in the flesh in a flexed or semi-flexed position with few imperishable grave goods. A disarticulated burial was found in a pit near the village, but definite affiliations with Vy-1 were lacking.

There was no evidence of metal or any other European materials at the site. Therefore the site has been classed as prehistoric. On the basis of present evidence the site cannot be identified with any tribal or linguistic stock.

The published material dealing with remains assigned to the Woodland horizon in Nebraska is extremely limited. Other than the Walker Gilmore site there are, in fact, few stations where excavation has been undertaken. At the Walker Gilmore site in Cass County, Nebraska, Strong (1935, pp. 175-198) found a culture stratum occurring in a deep narrow gully formed by Sterns Creek, an intermittent stream. Cultural materials occur at depths of 6 to 27 feet in the vertical walls of the stream. Ash lens and hearths were scattered along the old valley level at irregular levels. Post molds and charred materials apparently indicate an undetermined type of house. Although traces of squash and gourds were found, maize and beans seem to be absent. A few storage pits occur, most of which are filled with refuse and broken artifacts.

The ceramic remains are homogenous and quite distinctive from those from Vy-1. The ware which occurred throughout the ash layers was somewhat darker than the Vy-1 ware. The rim sherds usually have a delicate thumbnail scallop. There were no embossed nodes or punctates such as were common at Vy-1. The restored vessels from Sterns Creek, like those from Vy-1, show the absence of any sharp angle between neck and shoulder and a conoidal base. The surfaces of the Sterns Creek vessels are usually smooth, but sometimes have a rough exterior which may have been the result of applying a straw- or reed-wrapped paddle. Nearly all the sherds from Vy-1 were cord-roughened, coarsely textured, and more crudely made than the Sterns Creek sherds. Few artifacts are known from the Sterns Creek culture, and they are much more crudely made than those from Vy-1. Two projectile points which have been recovered are of a triangular type while the majority from Vy-1 are of a stemmed type. It appears that the principal resemblance between the two sites lies in the shape of the vessels, which otherwise are quite different. Ad-

ditional work must be done at the Sterns Creek site before any detailed comparisons can be made.

Materials which seem closely to resemble those from Vy-1 were excavated by the survey in Garden County, Nebraska. These materials occurred at the lowest level of three pottery-bearing horizons in a cave at Ash Hollow canyon. The pottery sherds are of the thick, heavily corded type. Both notched triangular and stemmed points occurred as at Vy-1. Bone implements were not well represented but were suggestive of those at Vy-1. It was particularly interesting to find this material at the lowest of the three pottery-bearing horizons.

In Lane County, Kansas, Wedel (1939, pp. 83-86) found pottery similar to that from Vy-1, in the lower of two pottery-bearing horizons. Here, as at Ash Hollow cave and elsewhere, the Woodland remains appear to underlie all other known pottery complexes.

Mr. W. C. McKern, of the Milwaukee Public Museum, has been kind enough to furnish a list of Woodland traits for the upper Mississippi Valley. In Table 2 this list has been compared with the Vy-1 materials. The latter constitute a much shorter list, but it will be noted that almost without exception the elements found here are also a part of McKern's general list. Many of the absences are such as might be expected if we regard Vy-1 as, in a sense, a marginal manifestation. There are many specific differences which one might expect in a comparison of a general trait list with a specific site. Other differences may be environmental. Moreover, excavation at additional sites might lengthen the list for Nebraska Woodland.

Woodland manifestations in Iowa (Keyes, 1929, p. 138) appear to be somewhat richer than Vy-1. However, the pottery seems to be more similar to that from Vy-1 than to the Sterns Creek ware. Apparently, there is a greater variety of body treatment with stamping, punching, roulette impressions, and some incising being present. With the exception of a very limited amount of incising, no impressions other than cording were used at Vy-1. The stone work is also more highly developed than at Vy-1. Copper, which occurs occasionally in the Iowa sites, may have been present at Vy-1.

Wedel (1940, p. 305) has reported potsherds from Holt County, Missouri, which were similar to those from the Sterns Creek culture. He has also reported Woodland remains as being especially plentiful throughout the northern half of Missouri. These remains seem to be more closely related to the Vy-1 materials with the heavily cord-roughened surface. A mixture of other types of pottery seems to occur with the cord-roughened sherds. Wedel (1938, pp. 99-106) has also reported pottery similar to the Vy-1 ware from a group of village sites lying within a radius of 25 or 30 miles of Kansas City, Missouri. Along with these sherds was a type of ware and associated traits which are strongly reminiscent of the widespread Hopewellian

remains. Berry (1940, pp. 1-33) has reported Woodland material from Wayne County, in southeastern Missouri. The potsherds are usually cord- or brush-marked, with evidence of considerable influence from the Middle Mississippi culture of the area to the southeast. A few sherds are suggestive of the Vy-1 potsherds, but the remainder of the complex seems quite different.

Wilford (1941, pp. 235-247) has reported manifestations of the Woodland Pattern in all parts of Minnesota. Woodland manifestations in the area have all been classed in the Lake Michigan phase. The Mille Lacs aspect, which extends across central Minnesota from east to west, seems to show the greatest similarity to the Vy-1 material. Body treatment on the Mille Lacs aspect vessels is similar in the type of cord marks but dissimilar in the presence of the roulette impressions on the Minnesota ware. The rim decorations of indentations and bosses on the rim or neck are very suggestive of the Vy-1 decorations. The pointed or semi-pointed bases are common to both Vy-1 and the Mille Lacs aspect. Objects of chipped stone which are found at Vy-1 and in the Mille Lacs aspect include triangular and stemmed points, leaf or triangular knives, end scrapers of both the thumbnail and elongated types, side scrapers, and a few drills. Polished stone specimens were less plentiful from Vy-1, while greater emphasis seemed to have been placed on bone objects. The metatarsal or metacarpal bone hide-fleshers occurred in both, although specific differences may exist in the particular type of specimen. Some copper gorges were reported from the Mille Lacs aspect. No copper was found at Vy-1, although a small bone fragment was stained green so that a very limited amount of copper is suggested.

Conclusions

One of the major problems awaiting solution in the Nebraska area is a clear definition of the several Woodland variants thought to exist here. Until additional sites have been investigated, and other comparable trait lists thus made available, it is impossible to assign definite status to the Vy-1 complex. Tentatively, however, we suggest that it may represent the Valley focus of an unnamed western aspect, Lake Michigan phase, of the Woodland pattern.

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