



## Excavations at the Leary Indian Village and Burial Site, Richardson County, Nebraska

(Article begins on page 2 below.)

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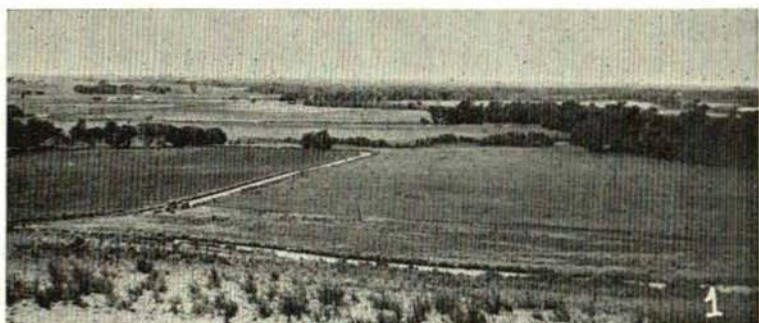
Article Summary: This article describes the 1935 excavation of one house at the Leary site. The authors discuss the environmental setting and previous observations at the site. They describe their findings, including caches, mounds, burials, ceramics and many types of artifacts and remains.

Note: Additional articles on 1935 excavations include "[The Schrader Site](#)," "[The Champe Site](#)," and "[Fremont I.](#)"

### Cataloging Information:

Photographs / Images: general view of Leary site, House 1, hillside southwest of House 1, topographical map showing Leary site and surroundings, ground plan of House 1, burials (3 views), pots (2 views), rim profiles, incised pottery designs, vessel cut in two, restored pot, rimsherds and handles, catlinite and stone objects, chipped stone objects, bone and stone objects, bone artifacts

Tables: I. Data on caches, Leary site; II. Burials; III. Summary and comparison of traits (Oneonta culture and Leary site)



#### PLATE I

1. General view of Leary site, looking west from burial hill. Nemaha River at right; Mission Creek crosses from left; House 1 to left and just below center.

2. House 1, showing caches and Burial 5; entrance to west; Cache 104 in background. Leary site.

3. View of hillside southwest of House 1, showing 15 cache pits. Leary site.

## EXCAVATIONS AT THE LEARY INDIAN VILLAGE AND BURIAL SITE, RICHARDSON COUNTY, NEBRASKA

*By* A. T. HILL AND WALDO R. WEDEL

### Archeological Explorations of 1935

Investigations into the prehistory of Nebraska have been carried on more or less intermittently by the State Historical Society for a number of years, but in 1933 and 1934, under direction of Mr. A. T. Hill, the Society undertook an archeological survey on a scale not previously attempted. The program included not only the locating and recording of village sites but also the collection of representative artifact series and more especially of data on house types, villages, burials, and other antiquities underground. The method followed, representing a sort of compromise between a surface reconnaissance and an intensive localized project, has been explained and some of its results to date indicated in papers already published by the Historical Society. The first two seasons were devoted to an examination of the Republican Valley and its tributaries in southern Nebraska, as well as a limited amount of comparative work in central and northern Kansas.<sup>1</sup> In the 1935 season, the survey was carried eastward in hopes of filling in certain broad gaps in our information regarding the antiquities of southeastern Nebraska, between the areas known to have been occupied by the Upper Republican and the Nebraska Cultures in western and eastern Nebraska, respectively, in prehistoric times.

Field work was begun on April 22, 1935, at a prehistoric village site on Salt Creek near Roca, about nine miles south of Lincoln. Three rectangular earthlodges, each with four center posts, were uncovered, as well as a number of caches; the artifacts in general suggest a culture hybrid between the Upper Republican and Nebraska aspects. On May 13, the party moved to a large village site on the west bank of the Big Blue River about a mile north of Blue Springs in Gage County, where three circular houses were cleared, one with five center posts, the others with eight. The pottery and other remains were of nineteenth century Pawnee type, and numerous pieces of iron and copper testified to intercourse with white men. This may have been the site of the Pawnee

<sup>1</sup>Wedel, 1934 and 1935.



village on the Blue reported by Maj. A. L. Green on the strength of Oto legends;<sup>2</sup> and it is interesting to note that Captain Clark in 1804, while visiting an abandoned Indian village on the lower Nemaha says that "This river [i. e., the Nemaha] heads near one of the villages of the Pania on the River Blue, a branch of the Kansas River"<sup>3</sup>.

From June 5 to 24, the scene of operations was the Leary site on the Nemaha River in Richardson County; a detailed report of this work forms the main part of the present paper. A week was next spent at the supposed historic Oto village site southeast of Yutan, Saunders County, on the west (right) bank of the Platte River, where a single forty-eight foot circular earthlodge with six center posts was excavated. If the site is correctly identified as to tribe, then the Oto were at this time in possession of a culture quite similar to that of the historic Pawnee, since the sherds and other artifacts found at Yutan differ very little from those on nineteenth century Pawnee villages. From July 4 to 18 the expedition excavated burial mounds and three rectangular earthlodges, each with four center posts (double in one house), about half a mile to a mile south of the Saunders site, investigated by Strong in 1931, on the left bank of the lower Elkhorn River in Douglas County. Results in the main verified and supplemented those from the earlier explorations, but seem to show quite convincing evidence that the characteristic form of house here was rectangular rather than ovoid.<sup>4</sup> The summer's campaign closed with a week's activity at the late historic Pawnee village on the bluffs west of the Platte River just north of Leshara, where three lodges were excavated. These were all circular in form, with six, eight, and ten center posts, respectively, and two contained small raised sills of baked clay across the inner end of the entrance passage. Owing to the recency of occupancy, however, almost no truly aboriginal artifacts were found, although iron skillets, butcher knives, glass bottles, earthenware jugs, stovepipes, and the like abounded. The investigations were greatly hampered during the early part of the summer by protracted rainy spells, but the results of the season's work as a whole were fully up to expectations. It is, however, not feasible at the present time to present fully and in the desired detail all of the findings, hence it was decided to confine the present paper to a study of remains from one site only. The Leary site on the lower Nemaha River in Richardson County was selected for this

<sup>2</sup>Connelly, 1918, p. 444.

<sup>3</sup>Original Journals, 1904, p. 75.

<sup>4</sup>Cf. Strong, 1935, p. 172.



treatment, partly because it showed a number of significant differences from any other sites so far examined in Nebraska and partly because it seemed to give unusual promise of illuminating certain phases of cultural development in the regions farther west and northwest, more particularly in the Pawnee area about the confluence of the Loup and Platte Rivers.

In 1935 the field party was under the immediate leadership of Mr. A. T. Hill, Director of Archeology for the Nebraska State Historical Society. The field records and catalogs were kept by Mr. G. F. Lamb of Hubbell, while Mr. and Mrs. E. C. Harte of Wray, Colorado, were in charge of camp details and cooking. Other members of the party were Marvin Kivett and Walter Rasmussen of Weeping Water, John Adams of Curtis, and Fulton Gantt of North Platte. The work was sponsored by the Society and its friends; among the latter, especial mention must be made of Mr. J. L. Champe of Lincoln.

It is desired to acknowledge at this time our indebtedness to the several persons, land-owners and others, whose interest and willingness to extend excavation privileges made it possible to carry on the program above outlined. No difficulty was encountered at any time in securing access to the various sites, and in general, a gratifying degree of cooperation was evinced by those concerned. We wish especially to express our deep appreciation to Mr. Ed F. Leary and Mr. James P. Kelly, who permitted the investigations on the lower Nemaha about to be described. Various additional courtesies were extended by these men, and all contacts with them were of the most cordial kind. To their further credit be it said, these men have closed their property to casual relic hunters and have taken steps to prevent despoliation of this very interesting and important site at the hands of irresponsible and unattached parties.

### **The Environmental Setting**

Richardson County is located in the extreme southeastern corner of Nebraska, with the Missouri River forming its eastern boundary; on the south it adjoins Kansas.<sup>5</sup> The upland surface, with an average elevation of 1100 feet above sea level, is rolling and hilly throughout the area, and becomes progressively more so as one approaches the Missouri, where abrupt bluffs, narrow ridges, and deep V-shaped valleys are characteristic. The lowest point in Nebraska, 850 feet above

<sup>5</sup>For additional details on local geography see Meyer, Stewart, and Watson, 1917, from which this section is summarized.

sea level, is in the Missouri bottoms in the southeast corner of the county. Drainage is provided by a number of small creeks flowing into the Great Nemaha, which in turn courses in a general southeasterly direction to empty into the Missouri about two miles southeast of Rulo. The highly dissected Missouri River bluff zone, seldom over two or three miles wide, for the most part drains directly east into the Missouri. The streams are winding and erratic and, having attained base level (bottom land elevation averages 860 feet), have only a moderate rate of flow. Along the Nemaha and the immediate lower portions of its tributary valleys are areas of first-bottom land subject to occasional over-flow; these vary in width from one-half to two miles. Springs are numerous. While the total woodland area is comparatively small, the watercourses are generally quite well wooded, as are the narrow canyons and hillsides along the Missouri; burr oak, ash, elm, hickory, black walnut, maple and box elder are the common trees, while wild grapes, chokecherries, and currants abound. Cottonwood and willow are characteristic of the immediate stream banks. Trees are replaced on the ridge summits by a grass cover; throughout most of the area the original prairie grasses have long since given way to corn, oats, wheat, and other cultivated crops.

From the standpoint of climate, Richardson County is one of the best favored corn-growing sections of Nebraska. It has the highest mean annual precipitation in the State—nearly thirty-three inches, with an absolute minimum of about twenty-four inches; approximately 75% of this falls during the growing season, from April to September. In summer, precipitation occurs mainly as thunder showers, one to six inches in single storms having been recorded; droughts occur but rarely. There is a frost-free growing season of 150 days or more, from about April 25 to October 7. The temperature ranges from a minimum of  $-31^{\circ}$  F., to a maximum of  $111^{\circ}$  F., with an annual mean of about  $53^{\circ}$  F., and a July average of  $77^{\circ}$ . Winds are prevailing from the south in summer and from the northwest in winter.

Richardson County lies within the Loess Region of Nebraska and its soils are mainly derived from weathered loess and glacial drift. The terrace on which the Leary site is located consists of Marshall silt loam, a well drained and easily worked loessial soil which ranks as some of the best upland corn soil in the eastern part of the State. The bottom land about the mouth of Roy's Creek and on the immediate banks of the Great Nemaha is Wabash silt loam, also an excellent corn-growing type which originally was covered with a heavy



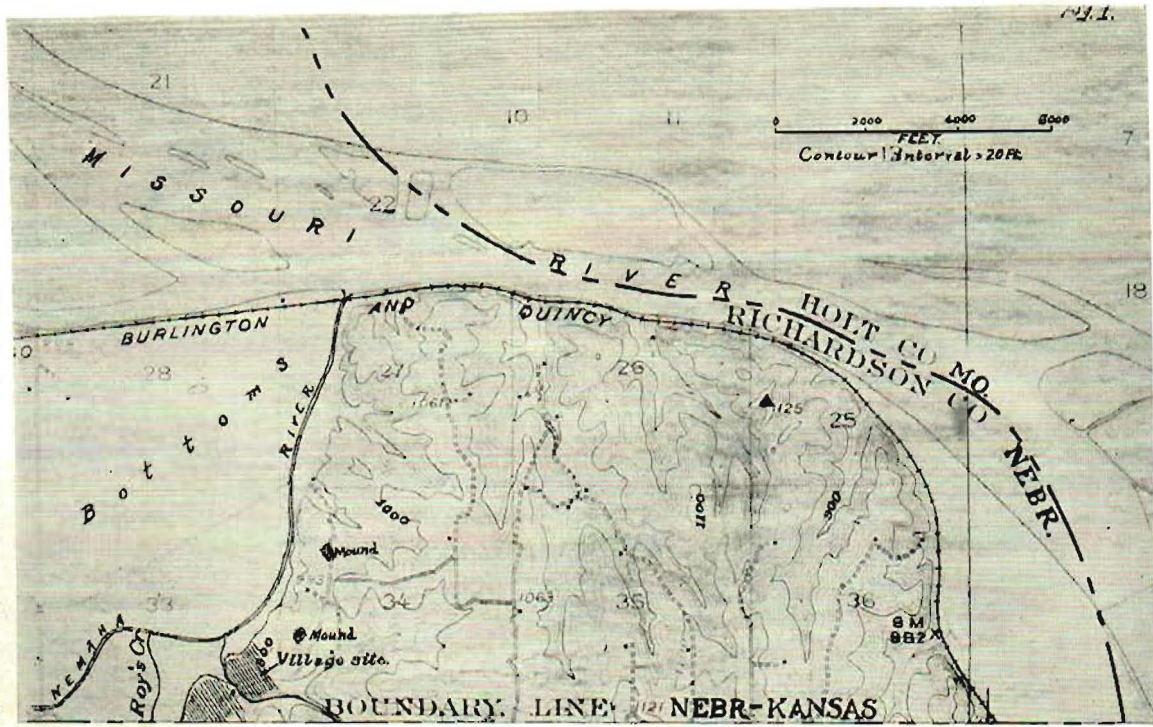


Figure 1. Portion of U. S. Geological Survey Topographical Map, Showing Leary Site and Surroundings.



growth of marsh grasses and, along the stream banks, hardwood forest.

The Leary village site lies on the right or southeast bank of the Great Nemaha River four miles southeast of Rulo and one and one-half miles south of the Missouri River, in the southeastern part of Richardson County. The land on which it lies was assigned to the Iowa Indians by the United States on September 17, 1836, and has been occupied by this tribe since 1837. The village remains occupy a broad terrace rising gradually toward the east, with an average elevation of approximately 875 feet above sea level. The Great Nemaha itself, which debouches into the Missouri less than one and one-half miles to the north, forms the northern limit of the site; across the river, poorly drained bottomlands extend north to the Missouri. On the west it is bounded by Roy's Creek, a small perennial stream heading in the rolling uplands of Brown County, Kansas, eight or ten miles south and emptying into the Great Nemaha just above the village. On the east the village terrace ends at the lower slope of a prominent hill, the first of a series of high ridges alternating with deep narrow wooded valleys to form a characteristic river bluffs terrain extending to the Missouri River some three or four miles to the east. Southward, the site ends in the vicinity of the Kansas state line, beyond which are broken upland hills bordering the Roy's Creek valley.

The terrace occupied by the site is divided into two approximately equal portions by Mission Creek, a streamlet fed by perennial springs in the "canyons" east of the village. In all save the very driest of summers, there is a fair supply of good water in this creek—undoubtedly an important factor in selection of this particular location for Indian occupancy. The bottoms along Roy's and Mission creeks furnished ample arable land for primitive horticultural pursuits with no great effort and with relatively sure results so far as soils and climate were concerned. The rough hilly country east and south of the site and to the north beyond the Great Nemaha bottoms without doubt provided a plentiful supply of game, both mammalian and avian, and the Missouri and Nemaha rivers supplied fish. Good drainage and proximity to wood, water, game, and cultivable land made the site an excellent one for aboriginal utilization.

### **Previous Observations at the Leary Site**

Earliest mention of the Leary village site appears in a passage in the original journals of the Lewis and Clark ex-

pedition. Under date of July 12th, 1804, Captain William Clark recorded the following observations:

"Concluded to Delay here today with a view of taking equal altitudes & makeing observations as well as refreshing our men who are much fatigued. after an early Brakfast I with five men in a Perogue assended the River *Ne-Ma-haw* about three (2) Miles to the Mouth of a Small creek [Roy's Creek?] on the Lower Side, here I got out of the Perogue, after going to Several Small Mounds in a leavel plain, I assended a hill on the Lower Side, on this hill Several Artificial Mounds were raised, from the top of the highest of those Mounds I had an extensive view of the Serounding Plains, which afforded one of the most pleasing prospect I ever beheld, under me a Butifull River of Clear Water of about 80 yards wide Meandering thro: a leavel and extensive meadow, as far as I could See, the prospect much enlivened by the fiew Trees & Srubs which is bordering the bank of the river, and the Creeks & runs falling into it, The bottom land is covered with Grass of about  $4\frac{1}{2}$  feet high, and appears as leavel as a smoth surface, the 2<sup>d</sup> bottom (*the upper land*) is also covered with Grass and rich weeds & flours, interspersed with copes of the Osage Plumb, on the rising lands, Small groves of trees are Seen, with a numbers of Grapes and a Wild Cherry resembling the common Wild Cherry, only larger and grows on a small bush on the tops of those hills in every direction, I observed artifical Mounds (or as I may more justly term graves) which to me is a strong evidence (*indication*) of this Country being once thickly Settled. (The Indians of the Missouri Still keep up the Custom of Burrying their dead on high ground) after a ramble of about two miles about I returned to the perogue and decended down the river, gath<sup>d</sup> Som grapes nearly ripe, on a Sandstone Bluff about  $\frac{1}{4}$  of a Mile from its mouth on the Lower Side I observed some Indian Marks, went to the rock which jucted over the water and marked my name & the day of the month & year. This river heads near one of the (see note) villages of the Pania (*Pawnee*) on the River Blue (*Blue River*), a branch of the *Kansas River*."<sup>6</sup>

The burial mounds noted by Clark on the hilltops are still to be seen but owing to the presence of recent Iowa Indian interments in and around them and consequent objections raised by the present Indian residents in the neighborhood,

<sup>6</sup>Lewis and Clark, 1904, p. 75.



no work was done in them by the 1935 expedition. The "Several Small Mounds in a level plain" refer evidently to mounds on the village site below the burial hills.

During the years 1912-1914 what is evidently the Leary site was included in the survey conducted by Dr. F. H. Sterns of the Peabody Museum of Harvard University. On the basis of a surface sherd collection he classed the "Nemaha camp site" as distinct from the Rectangular Earth Lodge (Nebraska) Culture of eastern Nebraska, called attention to its similarity to another large site at the mouth of Wolf Creek in Doniphan County, Kansas, and suggested that it was a Kansa site of almost historic date.<sup>6a</sup> In certain respects Sterns' conclusions are remarkably in line with those derived through the present excavations, as will be pointed out later.

In 1918 Mr. M. E. Zimmerman of White Cloud, Kansas, published a paper calling attention to archeological remains in northeastern Kansas and southeastern Nebraska, with passing comments on the Leary site.<sup>7</sup> Thus, he states that:

"On the south side of the Nemaha and about two miles above the mouth of the stream, in Richardson county, Nebraska, are ruins of one of the largest villages or cities of this region. It covers the greater part of 160 acres. Lodge sites cover the whole surface. Broken earthenware, artifacts of stone and bone, and skeletal material of men, animals, birds and fishes are mixed with the ashes and soil to a depth of two or three feet. North of Fanning and east of Wolf River, on the Corcoran farm, is another village site with the same characteristics.

"On both of these sites shell-tempered earthenware is found. As far as now known, these sites are the only ones in northeastern Kansas or southeastern Nebraska where the shell-tempered ware is found".

He also mentions excavations made in one of the mounds reported by Clark, apparently confirming their identification by the explorer as burial places, and further states that Sterns spent only two days "on the old Pani Village, near the mouth of the Nemaha river". He quotes from a letter by Fowke that:

"The Pani, who are thought to have been the Haraheys, made the shell-tempered pottery and the cist graves in Doniphan County, Kansas, and Richardson County, Nebraska".

<sup>6a</sup>From notes taken by W. D. Strong on Sterns' manuscript in Peabody Museum.

<sup>7</sup>Zimmerman, 1918, pp. 471, 475, 479, 486, 487.



One further passage is of interest because it bears directly on the problem of identifying the Indians who inhabited the Leary site. It follows:

"The Iowas living near the old Pani village site in Brown County, Kansas, and Richardson County, Nebraska, near the mouth of the Nemaha river, have a tradition that the Iowas and Otoes were the Indians who exterminated the Pani at this place. Mrs. Roy was an Iowa woman who married a white trader named Roy, for whom Roy's Creek was named. Mr. Edward Leary, a white man, married her granddaughter. Mr. Leary says: 'Grandmother Roy was an eyewitness to the battle of extermination, and said that the dead, after the battle of extermination, lay thick all over the Nemaha bottoms.' Ashes, charcoal, artifacts, fragments of broken pottery, human and animal bones are mixed with the soil. On the floor of the groundhouses are the bones of the fallen Pani".

A large but rather unsatisfactorily catalogued collection of remains from this site was purchased in 1926 by the Nebraska State Historical Society from Zimmerman and Mr. George J. Remsburg, and is now in the Society's Museum at Lincoln.

Fowke, in 1922, describing archeological investigations near the mouth of the Nemaha River, again identifies the Leary site as Pawnee and has the following to say on the matter:

"...the Pawnee village was located near the mouth of the [Roy's or Mission?] creek, on the lower side [i. e., down the Nemaha]. The ground where this village stood is covered over a space of several acres with the ordinary debris of an Indian settlement; and it is significant that all the relics found are so similar to those which are called "ancient" when found in the lodge sites, that no one could determine from inspection which kind came from which place. Unless it may exist in the markings in the pottery, no distinction can be made between these specimens and similar ones from other localities.

"The Pawnees lived here until 1837, when the Iowas and Otoes made a sortie upon the unsuspecting inhabitants and killed all of them they could overcome. Two women of the Iowa tribe who were living on the reservation in 1914 remember seeing dead bodies lying around wherever the invaders could find and kill a resident".<sup>8</sup>

While more detailed consideration of the above remarks will be forthcoming later in this paper, it seems appropriate

<sup>8</sup>Fowke, 1922, p. 153.

to make a few comments at this point. Fowke apparently saw no marked differences between the Leary remains and those of the earthlodge-using peoples and denies categorically the possibility of distinguishing between the two. Since the Pawnee are said to have lived here as late as 1837, it is assumed that they left these remains and it is further implied that the earthlodge antiquities are indistinguishable from the alleged "Pawnee" and therefore not "ancient". The authors are inclined to feel that had Fowke taken the trouble to compare the various antiquities with more care he might have found them significantly different, as Sterns did some years previously. To anyone at all acquainted with the characteristics of the earthlodge-dwellers of eastern Nebraska and northeastern Kansas, even a surface examination of the Leary site shows certain striking differences—enough differences, at least, to warrant a more carefully weighed judgment than that returned by Fowke. As regards the Pawnee authorship of the Leary site, Fowke was apparently basing his claims on Iowa tradition rather than upon documentary evidence, a point to which we shall return again.

In the spring of 1926, Mr. E. E. Blackman of the Nebraska State Historical Society spent three weeks in an examination of the Leary village site, excavating cache pits, testing a mound on the hill east of the village, and obtaining a considerable quantity of potsherds and other remains. He regarded the village as pre-Caucasian, and on the basis of certain stone artifact types suggested a relationship to the Ohio mound builders and a possible Cherokee provenience for the culture represented. Knife and spear forms, "a certain peculiar individuality of chipping", and the use of crushed shell for tempering pottery were said to be similar to like items from Osage sites in Missouri. Finally, Blackman questioned earlier assertions that earthlodges were present and concluded that "the tipis must have been on the surface when it [i. e., the village] was occupied."<sup>9</sup>

The latest published comments on the Leary site are by Strong, who did not visit the site itself but saw material taken from it. Basing his interpretation upon evidence accumulated in Iowa since the previous investigations by Blackman, Sterns, and others, he suggests "the possibility that the true Oneota culture is represented in the shell-tempered and roughly incised pottery of the Rulo site in extreme southeastern Nebras-

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<sup>9</sup>E. E. Blackman, unpublished manuscript in Nebraska State Historical Society collections.



ka...",<sup>10</sup> a judgment the accuracy of which will become apparent in the following pages.

The foregoing covers, so far as the present writers have been able to learn, the purposeful and published observations made on this village site prior to 1935. The great abundance of surface remains in the past has attracted numerous persons for years, but with the exception of the parties above mentioned, the great bulk of the work has been sporadic, unsystematic, and prompted by a desire to find "relics" rather than by any scientific spirit. Sherds, arrowpoints, scrapers, and nicely-chipped knives from the site have found their way into many private collections within as well as without the State. It was this thoughtless vandalism with its threat of loss of important scientific information, plus the distinctive character of the remains as compared to the better known cultures of the State, that prompted the detailed investigations which form the basis of the present report.

### The Leary Village Site

The remains which comprise the Leary village site cover an area about 1100 yards long by 500 yards wide, with the long axis running northeast to southwest, and totalling approximately 120 acres. The burial mounds mentioned by Clark in 1804 are on the summit of the ridge immediately east of, and approximately 100 feet above the village, and additional tumuli occur 300 or 400 yards farther north. An excellent panorama of the site and its surroundings may be gained from the ridge (Plate I. 1). The eastern portion of the site has been subject to wash from the higher hills and the cultural remains in some spots are consequently covered to a greater depth; farther away, the terrace becomes slightly undulating, and the detritus occurs mainly on the better drained spots. Cultivation over a period of many years has obliterated all traces of houses or other special features, save for the presence of low inconspicuous elevations, evidently refuse mounds, scattered here and there over the surface. After spring plowing and washing rain, however, quantities of potsherds, broken flint and bone, bits of clamshell, and similar vestigia litter the entire area. The middens appear to be rather more obvious on the terrace west of Mission Creek. Save for an occasional drift sherd, the bottom lands about the village terrace show no signs of occupancy; their use was solely for the growing and gathering of plant foods.

<sup>10</sup>Strong, 1935, p. 288.



At present, the entire site, including the burial hill, is under cultivation and erosion is steadily destroying the remains. According to Blackman, writing in 1925:

"...In 1854 this ruin was covered by large trees, many of them two feet through. In one of the caches is still growing the root of a walnut tree which the owner informed me was cut thirty years ago, and the tree was over two feet in diameter..."<sup>11</sup>

To what extent this growth of large trees actually covered the site is uncertain, since Lewis and Clark speak of the second bottom, apparently the village site, as grown over with grass, weeds, and plums, while the "rising lands" or hills bore small groves of trees. It is difficult to see how a walnut forest with trees of any great size could have developed between 1804 and 1854, although there is a good likelihood that trees from the immediate stream valleys were beginning to spread onto the adjacent parts of the terrace.

A graded dirt road traverses the village site and runs along the foot of the burial hill, exposing clusters of cache pits here and there along its course; these are especially evident in the road on the lower hillside immediately west of the Roy Cemetery, burial ground for the recent Iowa residents of the district.

### Nature and Extent of Excavations

Due to the limited number of men in the party, it was decided to restrict activities to that portion of the Leary site which lay north of Mission Creek at the foot of the hills. Surface collections were made in the west part of the village as well as minor tests sufficient to indicate that all remains on the entire site were of essentially the same general type. Excavations in the eastern part were begun to discover and clear house remains. For this purpose, areas which on the basis of previous experience might be regarded as likely situations for aboriginal habitations were selected and tested by means of short trenches and pits. These "house tests", as they were called, covered spots varying from twenty to seventy-five feet in diameter; the test pits were scattered over each such area so as to cause as little damage as possible to growing crops and at the same time to cover it as thoroughly as possible. Pits averaged about three feet in width, varied in length according to the size of the area being tested, and were

<sup>11</sup>E. E. Blackman Ms in Nebraska State Historical Society collections.

carried down into clean undisturbed subsoil. In a typical earthlodge village, this method would result in discovery of the semi-subterranean house pits now covered by a few inches to three feet or more of accumulated soil; it has been used successfully by the authors and the Nebraska State Historical Society for a number of years. Excavations were made along the edge of the terrace overlooking Mission Creek, at the foot and on the lower slopes of the hill immediately to the east, and at several places on the terrace which were more remote from the creek and river banks and from the hill. In addition to the larger house tests, thirteen in number, innumerable smaller pits and holes were dug in all parts of the eastern village terrace, but always with the same results. The topsoil was found to be more or less permeated with potsherds, flints, animal bones, and such village refuse to a depth of ten to fifteen inches, sometimes deeper; where the soil had been moved or disturbed in any way by human activity other than the plow, this disturbance was in the form either of cache pits or of graves, only one house site being found. Eleven of the thirteen house tests revealed caches, in one case as many as twenty pits occurring in an area about seventy-five feet across (House Test 7). Test 6, consisting of 174 feet of trenches, disclosed a total of eleven caches. The latter excavation was on the terrace edge on the right bank of Mission Creek north of the Ed Leary residence; the former was near the slope of the burial hill about seventy yards south of House 1. They afforded a fair notion of the abundance of these storage pits at the site. A more detailed consideration of each of the features found in these tests—caches, graves, and house site, follows.

### HOUSE 1.

House 1 lay on the lower slope of the burial hill 110 yards west of Roy Cemetery and approximately 35 yards north of the graded dirt road previously mentioned, with the Great Nemaha River 170 yards to the northwest and Mission Creek about 280 yards to the south. The floor lay at a depth of 14 inches on the east or uphill side; at the west, due to erosion, it had been cut in places by the plow. In shape the house was nearly square, with rounding corners; it measured 20 by 21 feet, with the long axis extended north to south (Plate I, 2). The entrance passage was to the west, downhill, and consisted of four pairs of postholes with an extra hole, possibly for a wind break, just beyond the outermost pair and slightly north of the midline of the passage. The doorway was 15 feet long by about 4 feet wide. In the center of the floor was the fireplace, 36 inches in diameter, containing 5 inches of white wood ashes and

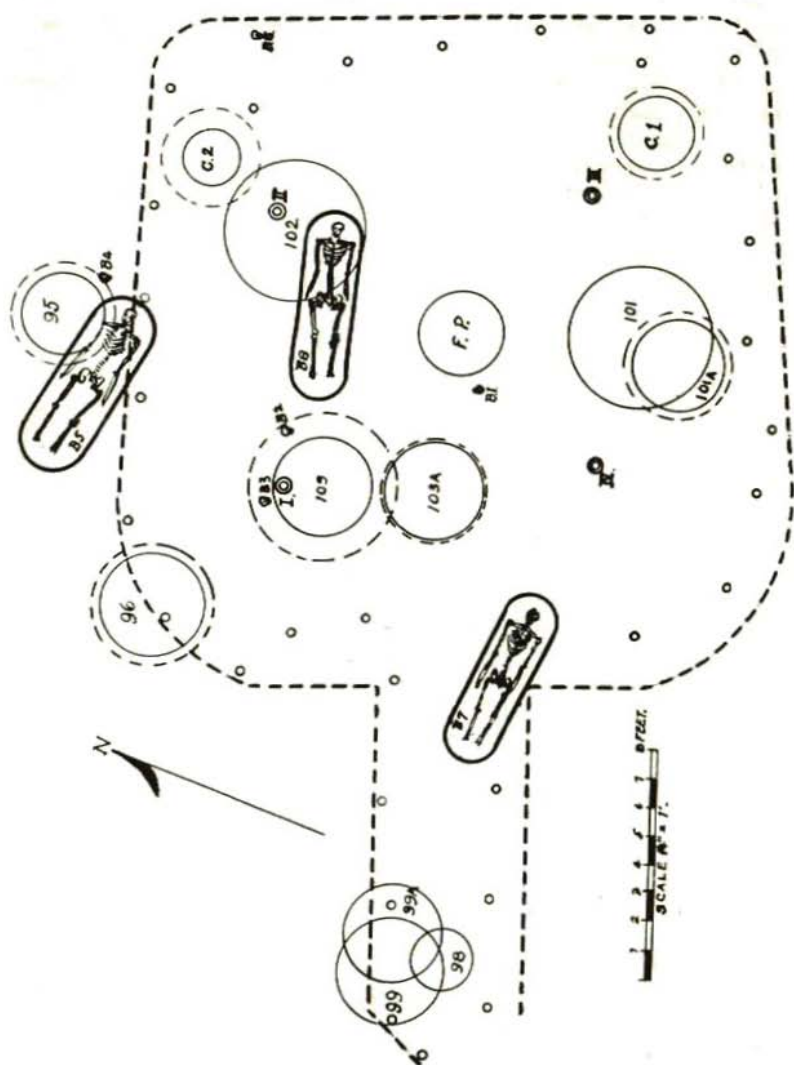


Figure 2. Ground Plan of House 1, Leary Site. ----, edge of house-pit; o, outer postholes; double circles I-IV, center postholes; F. P., firepit; B1-B8, burials; C1, C2, inclusive caches; 96, 98, 99, 99A, 101, 101A, 102, 103, 103A, pre-house caches.



underlain by 1 to 2 inches of red baked earth. There were four central roof supports at radii of  $6\frac{1}{2}$  to 8 feet from the fireplace, forming a rectangle  $9\frac{1}{2}$  by 11 feet, the long axis north-south; the hearth lay south of the exact center of this rectangle. Twenty-three postholes, spaced at intervals of 30-48 inches, formed the outer series. The four central postholes averaged 16-17 inches in depth and about 6 inches in diameter; those in the outer series were about 16 inches deep by 4-6 inches in diameter. The floor, was fairly distinct in the east half of the house and was underlain by unmixed soil save where cache pits had been dug before, during, or after its occupancy; burned roofing, clay with grass impressions, broken pottery (both shell and grit tempered), arrowpoints, end scrapers, bones, stones, and a grooved maul littered the floor where the plow had not reached the living surface. Six inches southwest of the fireplace on the floor lay a male cranium inside which was a triangular arrowpoint; a few scattered bones were nearby. At the north edge of the house was a second cranium and other skeletal fragments, evidently deposited after abandonment of the dwelling, and mostly destroyed in the excavation of Cache 95. The east wall of the house pit was baked to a reddish color, possibly by burning of brush thereon before construction of the dwelling proper.

Eleven subfloor caches were found during and after excavation of the floor, but only two of these appear to have been directly associated with the lodge. Cache 1, in the southeast corner, was 30 inches deep, with a diameter at the top of 30 and at bottom of 35 inches; from it were taken a deer mandible and some charred matting or grass with which the pit had apparently been lined. Cache 2 in the northeast corner, measured 22 inches across the top, 41 inches across the bottom, and 26 inches deep; it contained no artifacts. The scarcity of cultural remains in these two pits was somewhat disappointing, since their contents lay well below any possibility of disturbance by agricultural operations and might have afforded valuable data concerning the identity of the people who made and used them. However, sufficient material was recovered from the floor in the east part of the house, several inches to a foot below the depth reached by tillage, to indicate quite convincingly that the inhabitants of the lodge were essentially the same people as those who left their traces scattered so profusely over the site generally.

During the final stages of work in House 1 it became increasingly evident that much of the underlying soil had been disturbed for some purpose not directly, if at all, related to original excavation of the house. For example, the northeast and northwest central postholes, identified as such by rings of charred wood, seemed unnecessarily large when dug out, and no very sharp color or texture

line set them off from the surrounding material. Again, when the innermost posthole on the south side of the entrance was cleaned out, fragments of human bone were noted in the sides at a depth of 12-14 inches, although the floor around the hole showed no sign of disturbance. Accordingly, after the house had been plotted and photographed, the entire floor was scraped down three or four inches by means of a flat shovel, at which level it was expected, normally, to find clean unmoved soil. Instead there were noted in various parts of the sub-floor area, a number of distinct spots of mixed soil, each of which was thoroughly examined. Nine of these, including three at the outer end of the entrance, proved to be caches; others were found to be graves. Aside from the fact that their presence was virtually, and in several cases wholly, unsuspected prior to removal of the floor layer, there was additional proof at hand for their pre-dating the house. Thus, Caches 101 and 102 could not possibly have been open while the house stood, since this would have caused two of the four central roof supports to give way and would thereby have demolished the structure. Obviously, also, had they been dug subsequent to abandonment of the lodge, all traces of charred posts or of postholes would inevitably have been destroyed, which was not the case; moreover, there would in all probability have been clear evidence of the presence of the caches above the floor level. Similarly, since two burials (5, 7) had clearly been penetrated by postholes and a third (8) was found only because it was intrusive to one of the pre-house caches (102), it seems a certainty that these also antedated the building of the earthlodge.

In view of the fact that extensive test pits and trenches in all parts of the village consistently failed to reveal any other house ruins, the possibility suggested itself that House 1 may have belonged to an earlier community which occupied the terrace prior to its utilization by the people who made the shell-tempered pottery, hence every effort was made to note the exact relationship of House 1 to all nearby and underlying caches and burials. As already stated, nine caches (96, 98, 99, 99a, 101, 101a, 102, 103, 103a) were definitely older, i. e., earlier than the house, and had fallen into disuse when the latter was inhabited. Comparatively little cultural material was obtained from most of these pits, but from Caches 96, 101, and 103a came a total of fifty-eight rim and body sherds which, together with chipped flints and other stone artifacts, were identical in type with those found in other excavations throughout the village. From Cache 96, moreover, came the only piece of metal, a conical copper bangle, dug up on the site. In other words, House 1 was constructed over older occupational remains of similar authorship as those in the village site in general. Moreover, the material found on the floor, with the exception of a few grit-tempered sherds, also fits into the general cultural complex. It seems fairly clear, there-



fore, that this house, at least, was occupied by the same people who inhabited the village in general.

Attention should be called again to the universally negative results, with the single exception just described, of three weeks persistent search for house remains on this site. The authors feel that additional earthlodges may very well be present, particularly on the terrace at the foot of the burial hill, west of and below House 1. Tests here revealed cultural detritus at depths of three feet and over, suggesting that alluvium from the hills may have covered the original village level to a much greater depth than usual. The methods employed during the investigations have been successfully used for many years in Nebraska archeology, and it seems unlikely that they would break down so completely at this locality if earthlodges were a characteristic feature of the site. There is not the slightest evidence to indicate that the low detrital elevations were earthlodge remains, despite assertions to this effect by Iowa Indians now residing in the vicinity. Furthermore, over most of the site, soil erosion has not advanced sufficiently to warrant the belief that semi-subterranean earthlodges may once have been present but have since been removed by weathering. In the light of our investigations, Blackman's statement that "No 'fire-places', with the burned earth below are in evidence now, but the owner said he saw them when the land was first broken, so the tipis must have been on the surface..." seems a promising hint. As will become evident in the following pages, the cultural manifestation at the Leary site appears to have very strong easterly affiliations, differing markedly from other remains generally regarded as typical of southern, central, and southeastern Nebraska. House 1 at the Leary site was, to all appearances, inhabited synchronously with the village in general; and much more extended excavation may, conceivably, show this type to be the characteristic dwelling form. The authors, however, venture the suggestion that the typical structure may have been of more perishable nature, possibly a bark-covered lodge on a framework of poles, erected on or only a few inches below the ground surface, and subsequently destroyed by the plow. This interpretation, here tentatively advanced, would be in harmony with the observations made by Blackman.

### CACHES

In striking contrast to the general scantiness of house traces is the great abundance of cache pits. These, indeed, are one of the most characteristic features of the site and seemed to occur in no planned or systematic order almost everywhere so long as a reasonably satisfactory drainage existed. In many portions of the site it is almost impossible to clear an area of a few square feet without striking one or more pits. House Test 6, on the right (north) bank of Mission Creek about 100 yards north by west of the E. F.

Leary residence, consisted of 174 feet of trenches  $3\frac{1}{2}$  feet wide by 21 inches deep, and disclosed eleven cache pits. Further east, all along the edge of the terrace overlooking Mission Creek no less than eighty more were opened, to say nothing of a score of others which were located but not dug out. Immediately east and south of House 1, and within fifty yards thereof, fully sixty-six pits were opened, in addition to those in and under the lodge site (Plate I, 3). Several dozen others were seen, but for obvious reasons could not be excavated, in the road west of Roy Cemetery. While the great majority of those opened were located either along the terrace edges or on the lower slope of the burial hill where the most favorable drainage conditions existed, there is ample proof that hundreds of others are to be found all over the village terrace, west of Mission Creek as well as to the east.

While the ceramic and other cultural remains from the various pits are remarkably homogeneous in type, there is evidence in their disposal and interrelationship of a disparity in their relative time of usage. In at least fourteen instances, a second pit had been dug so as to overlap partially an earlier; five had two subsequent caches, and three, on the lower slope of the burial hill, were each overlain, in part, by three later pits. Some of these, it may be suggested, might have been contemporary caches originally dug close together or adjoining, by the original owner; but in a number of cases, differences in the relative hardness and texture of the soil and the general conformation were such as to very strongly suggest temporal differences in the time of construction. The use of the subterranean storage pit was undeniably an integral part of the cultural complex and since the site was clearly inhabited throughout a period of some duration, witness the refuse mounds and the already mentioned case of superposition of House 1 over a group of caches, there is nothing amiss in the view that later residents might select the same situation for caches as did their predecessors, particularly where these were the better drained spots. Several instances were recorded in which the caches were only 8 to 12 inches deep, the upper portions having evidently been eroded away, while subsequent intrusive pits went down to depths of 4 or 5 feet, or more. The writers, one of whom has had nearly twenty years experience in excavating Indian village sites in Nebraska, have been more or less intimately associated in this field since 1930, and have yet to find a site in which cache pits are as numerous and as difficult to avoid in the task of seeking house ruins as in the present case.

Caches excavated at the Leary site totalled 153; in size, form, and depth they presented considerable variation. For many of them accurate and complete measurements were unobtainable, due to their partial destruction by erosional or human agencies. During the earlier phases of excavation especially, inexperience on the



TABLE I.—DATA ON CACHES, LEARY SITE

Diameter of Orifice (in inches) No.	Diameter of Bottom (in inches) No.	Depth (in inches) No.
30 or less— 6	36 or less— 2	18 or less— 7
31-36— 8	37-42— 3	19-24— 17
37-42— 28	43-48— 10	25-30— 27
43-48— 27	49-54— 19	31-36— 16
49-54— 7	55-60— 31	37-42— 10
55-60— 4	61-66— 16	43-48— 5
over 60— 7	67-72— 1	49-54— 7
—	over 72— 7	over 54— 3
Maximum 84	Maximum 92	Maximum 82
Total 87	Total 99	Total 92

part of some of the workers resulted in some loss of information on cache form, though this deficiency was remedied before the work had proceeded far. The great majority of the pits are, to all appearances, of essentially the same type as those which are associated with horticultural villages throughout the Central Plains region generally. Broadly speaking, such a pit would average approximately 42 inches across the aperture, 30 to 48 inches in depth, and 60 to 65 inches across the bottom; in cross section, it would appear more or less "bell-shaped", with the upper portion definitely constricted and the bottom either flat or slightly concave. Table I summarizes the measurements on approximately ninety or more of the caches cleared at the Leary site. All cylindrical or vertical-walled examples have been omitted from the table due to uncertainty regarding their true original aperture form; in some examples this was possibly due to faulty technique, in others it was clearly a result of cultivation and extensive erosion. Also, those whose depth was recorded as 15 inches or less are discounted since most of these had been subjected to especially severe or long continued erosion and therefore had lost their true form. Bottom diameter is the most complete measurement obtainable since this feature is nearly always last to be destroyed by weathering; depth tends to be rather less accurate because of the indeterminate amount of erosion affecting the ground surface; and top diameter, for reasons already given, is least reliable. However, with these facts in mind, it is felt that the table may be helpful in conveying some intelligible idea of size and form.

In most cases, caches were filled only with refuse—broken pottery, fragmentary knives, scrapers, arrowpoints, bone implements, large quantities of animal bones, and various smaller and more or less complete objects which had apparently been overlooked by the natives when they departed. Customarily, these pits were used for the disposal of garbage when not needed for food storage;



only in extremely rare instances is the investigator fortunate enough to find anything save trash in them. Occasionally, only dark soil unmixed with detritus fills the holes, but usually the fill is ashy and contains charcoal and other occupational debris. Traces of charred grass, apparently remains of a pit lining were observed on the floors of three caches (1, 62, and House 1, Cache 1). In Cache 6, at depth of 18 inches, was encountered a 6-inch layer of clean unmixed soil, apparently a false bottom, beneath which were 4 inches of dark refuse-filled dirt and a restorable pottery vessel. Vegetal remains—corn and other types, came out of Caches 39a and 64. The presence of copper in Cache 99 beneath House 1 has already been mentioned. A tiny fragment of twisted brown cordage, which may have been bison-hair, was taken from Cache 9. Most of the artifact material to be discussed in subsequent pages was gotten from the caches and need not be gone into at this time.

So far as our observations are concerned, none of the caches were utilized for purposes of burial. However, instances were noted of burials intrusive to caches and, conversely, also of caches dug through human graves. Bundle Burials 2 and 3, for example, under House 1, were evidently intrusive to Cache 103; Burial 4, save for the cranium and a few broken scraps of clavicle and ribs, had been largely destroyed by excavation of Cache 95, as had the right arm of Burial 5; Burial 8 lay partially over Cache 102; the hands, pelvic girdle, and lower limbs of Burial 9 and the left lower leg and right foot of Burial 10 had been entirely removed when Cache 30 was made. In no instances, however, were caches coterminous with graves or vice versa, and all indications point to the lack of intentional association between the two.

### MOUNDS

Comparatively little time was devoted to examination of the low elevations which are scattered over the village terrace, particularly west of Mission Creek. For the most part, many years of cultivation have so reduced them from what must have been their original size that little or no hope remains of securing any stratification or even any save the most general data on the manner of their accumulation. Their dimensions vary from ten to twenty-five yards in diameter and from a few inches to nearly a foot in height. They appear to consist principally of fairly loose soil with a high proportion of ashes, charcoal, broken pottery, animal bones, and the usual debris found on and about an Indian village. In places, where the plow has not yet penetrated, the ashes sometimes occur in lenses, pockets, and streaks, but never underlaid with burned clay to indicate a hearth. Scattered human bones occasionally appear, but it is not certain whether these represent disturbed burials intruded into the midden, whether they were merely thrown there

with refuse after excavation, perhaps, of a cache through an earlier grave elsewhere nearby, or whether they arrived in some other more or less indirect manner. On one point, however, our results tally with those of Blackman, viz., the mounds do not represent fallen earthlodges;<sup>12</sup> there are no signs of house floors, fireplaces, postholes, or other structural features under them, save for the ever-present caches. The soil under the mounds, where not manifestly disturbed by cache pits, is clean and unmixed like that underlying the village generally, and fails utterly to convey any impression of having been the site of a habitation. Unless further work shows evidence to the contrary, therefore, it can be assumed that the mounds represent nothing more than refuse heaps built up over a period of years by persons whose domestic activities were carried on elsewhere on the site.

Aside from the middens just described and the hilltop burial mounds to be discussed later, there were no traces of earthworks of any sort, such as fortifications, palisaded walls, or ceremonial or other enclosures or tumuli.

### BURIALS

Disposal of the dead appears to have been made in various ways at the Leary site, but owing to certain unforeseen factors, a less complete record was obtained of this phase of culture than was at first anticipated. Plans for a systematic study of the hilltop burial mounds seen by Clark in 1804 were discarded at the request of the local Indian population. The Iowa who have resided in this region since establishment of their reservation in 1837, have made use freely of the ridge as well as of the Roy Cemetery on its western slope just below the summit for interment of their deceased, hence viewed with disfavor any suggestions of digging on the hill. The disappointment of the investigators was made keener by the fact that fragmentary human skeletal remains were to be picked up here and there on the hill after every rain, convincing evidence that numerous graves of widely varying antiquity were present. Glass beads and metal, as well as sherds and other aboriginal traces, were also scattered over the hillside. Regrettably enough, most of the work done on this spot in past decades, has apparently been in the nature of surreptitious and unsystematic looting, mostly worse than useless from a scientific standpoint. When local opposition to excavation has been overcome, it is to be sincerely hoped that the work falls into trained and experienced hands so that the apparent void in our knowledge of burial customs at the Leary site may be accurately filled.

No definite cemetery, in the sense of an area reserved for interment of the dead, was found during the present explorations,

<sup>12</sup>Cf. Zimmerman, 1918, p. 474.





# PLATE II

1. Burials 2 and 3; secondary or bundle type. Leary site.
2. Burial 5; primary type of interment. Leary site.
3. Burials 9 and 10; missing parts removed in excavation of Cache 30. Leary site.



but more or less complete remains of fifteen burials were found on the village terrace in the course of work on House 1 and several of the caches. Associated artifacts were rare, and pottery was not found, hence a question might be raised concerning the actual connection between the burials found and other antiquities on the site. There is clear evidence that the village was inhabited both before and after some, at least, of the burials were made, since caches with intrusive and therefore later graves yielded the same types of artifacts as did others which had been dug through and so were later than certain of the interments. We are inclined to believe that the skeletal remains presently to be discussed were those of persons who resided in the village, rather than stray burials by other peoples who chanced to be camped in the vicinity at some later time. What relationship, if any, exists between the hilltop burial mounds and the village we are unable to say, for reasons already enumerated.

The data at hand, which are summarized in Table II, indicate that at least two distinct modes of sepulture were followed. The more common type, represented by Burials 5, 7, 8, 9, 10, 12, 13 and 15, was interment in the flesh, with the body supine, and the arms in position at either side (Plate II, 2). Little attention was paid to orientation of the corpse: the head was to the north in three cases, to the east in three others, while in two it was toward the south. Depth of burial varied from nine to fifty inches. No traces of mortuary wrappings on the skeletons or of a bark, grass, or other grave lining were noted. Associated artifacts were as follows: Two triangular straight base arrowpoints, one in the eleventh or twelfth dorsal vertebra of Burial 5, the other beside the spine of Burial 9; two flint knives, one between the ankles of Burial 13, the other to the right of the skull of Burial 7, which individual also had a quantity of hematite beside the right hand; and a bison scapula hoe lying across the right foot of Burial 12.

Seven of the eight supine skeletons had been more or less mutilated by later aboriginal activities. Thus, in digging Caches 95, 30, 49, and 154, parts of Burials 5, 9 and 10 (Plate II, 3), 13, and 15, respectively, had been removed. Burial 7, lying just under the inner end of the entrance passage of House 1, had a posthole through the skull and another through the pelvic girdle, indicating that it antedated construction of the lodge. Burial 8, a few inches below the house floor, had itself escaped injury, but the upper portion of the grave had been removed in digging the house pit. This burial, incidentally, while obviously older than House 1, lay partially superimposed across Cache 102, which must therefore have preceded it. The eighth interment of this type, Burial 12, lay intrusively across Cache 49.

Burial 14, overlying Cache 58, was but six inches under ground, and had been partially demolished by the plow. The head was toward the east and the body lay evidently in an extended position, but whether supine or prone is not certain. Generally speaking, this burial therefore may be classed as of the same type as those just described.

The second method of treating the dead is indicated by Burials 2 and 3, deposited together (Plate II, 1). All of the skeletal parts were badly broken, with no signs of articulated members or of orderly arrangement of bones. The remains lay in a shallow but defined pit approximately 40 inches long by 20 inches wide at a depth of 6 inches below the floor of House 1, the long axis extending east-west. A broken skull lay near each end of the pit, with the other bones piled between. Though apparently antedating the house, it appears that these vestiges are intrusive to Cache 103. There is a possibility in this case that the bones were originally those of orderly burials made in the flesh and, like so many others, were disturbed in the digging of a cache, later being salvaged and placed in a new grave. It is even possible that they were formerly buried in the spot occupied by Cache 103, although in such a case it seems highly improbable that they would be reinterred in the neck of a pit intended for the storage of foodstuffs and other property. In general, the evidence gathered elsewhere on the site does not indicate any special regard for such human bones as were by chance encountered in the making of caches, and they may have been thrown away with surplus dirt taken from such digging. Our own view is that the material under consideration represents a secondary or bundle burial, the corpses having been exposed on scaffolds until the softer tissues weathered away and the skeletal fragments then being gathered up and placed in a dug grave. Secondary burials in small pits, suggestive of the present type, have been found on several occasions in various prehistoric sites in southern and central Nebraska,<sup>13</sup> and the similarity seems to point toward a like interpretation in the present case. There were no artifacts in association.

The remaining burials, some of which scarcely merit such a designation, were mostly too fragmentary to yield much information. Burial 1 comprised an adult male cranium and a few bones scattered over the floor of House 1 immediately southwest of the fire-place; it may or may not have been a true interment, subsequently disturbed, but as found it certainly was no older than the house. Burial 4 included little more than a cranium; the rest of the skeleton, if it had ever been associated in death, had evidently been removed in the digging of Cache 95. Burial 6 was a detached cranium just outside the east wall of House 1, and Burial 11, also

<sup>13</sup>Wedel, 1935, pp. 174-179; Strong, 1935, pp. 116-122.



an unassociated skull seemed to be the remnants of an interment, most of which was destroyed to make room for Cache 37. For the most part, these crania, like the skeletal remains in general, were in poor state of preservation, a condition that, combined with inclement weather, inadequate facilities, and acquisitive spectators, caused the loss of most of the bones save a few of the skulls.

If the results of excavations by the Nebraska State Historical Society are a fair sample, it would appear that graves are scattered about over the village site in some numbers. Most of those encountered were along the lower slope of the hill and at the west end of the village terrace and possibly represent overflow from the higher cemetery. Yet the discovery of skeletons along the north edge of the terrace overlooking Mission Creek, as well as within 100 yards of the Great Nemaha on the north side, suggests that the village dwellers may have placed their deceased at random in temporarily unoccupied spots almost anywhere on the site. During the course of time, the exact situation of the graves would be forgotten, and as new locations were sought for caches, these latter might and evidently often were dug through earlier burials. The same well drained portions of the site which were best suited for storage pits, perhaps because of a slight natural eminence or possibly because they were somewhat aside from the dwellings, as along the terrace edges, were chosen seemingly for the final resting places of the departed. It is not at all improbable that dozens and possibly scores of graves occur on the terrace, and it is abundantly evident that caches are present by the hundred. Under these circumstances it is not at all surprising that occasionally a burial would be superimposed upon a cache or that the latter should be cut through a skeleton. There need not have been any attitude of disrespect for the dead in the apparent desecration of graves above noted; the situation probably is a result, at least in part, of long continued residence plus a more or less restricted choice of burying grounds.

It may not be amiss to call attention at this point to a few extremely fragmentary bits of information obtained by earlier excavators on the hill above the village. Zimmerman states that

"During the month of October, 1914, Mr. William Barada, an Iowa Indian, made an excavation in the side of the mound on which Captain Clark stood in 1804. One whole pot, parts of two others, a part of some wooden implement, and a bracelet made of material similar to rawhide were discovered, and human skeletal material [was] exhumed."<sup>14</sup>

Eleven years later, Blackman, apparently alluding to this same mound, observed that

<sup>14</sup>Zimmerman, 1918, p. 475.



"The most prominent mound overlooking the village site was cross sectioned. It is 50 feet [wide] and 70 feet long. It has eroded quite three feet in the thirty years of cultivation, but the bottom of the moved earth is still three feet below the surface of the mound. Bodies were placed in a sitting position as evinced by the narrow, cup-shaped grave forms [sic.]. A peculiar flint knife and a triangular arrowpoint which may have caused the death of the man buried there, were found in the cross section. A few bits of shell-tempered pottery were also found".<sup>15</sup>

Finding of a "wooden implement" and of "material similar to rawhide" as mentioned by Zimmerman, suggests, though it by no means proves, a recency not wholly compatible with the evidence gotten from the village. Such perishable materials, with the single exception of a fragment of partially carbonized bison-hair (?) cordage, were nowhere encountered in any of the caches, nor does it seem likely that they would survive much more than a century or a century and a half unless partially carbonized or else present in considerable quantity. The specimens mentioned by Zimmerman may, of course, have been intrusive and therefore have no bearing on the age or original purpose of the mound. Obviously, too, the mound need not necessarily have been erected by the residents of the village below, although Blackman's note on the occurrence of shell-tempered ware, if this was actually inclusive in the mound, seems a cogent argument for contemporaneity of mound and village. Unfortunately, Zimmerman fails to describe further or to illustrate the pottery found by Barada, which might throw additional light on this important point. Blackman's mention of a triangular arrowpoint is also of interest, since over 90% of the projectile points found in the village were triangular and unnotched; but too much emphasis should not of course be laid on a single artifact. The writers feel that the evidence on which Blackman based his determination of mode of burial, viz., "narrow cup-shaped grave forms" is insufficient, inasmuch as no traces of skeletons seem to have been found. Additional work is urgently needed to verify, supplement, or perchance to correct his conclusions; in the meantime, final judgment must be held in abeyance. So far as the writers are aware, Blackman appears to have been the first, if not indeed the only person, to investigate the mound with a definite view to determining its internal structure and composition, and he evidently was convinced of its artificial nature. As previously pointed out, local feeling prevented a detailed examination of this feature during the 1935 season, and we are unable to offer any first-hand information as to the extent, if any, to which it is man-made. The presence of graves alone is, of course, no real proof, since in the

<sup>15</sup>Blackman, Ms in Nebraska State Historical Society collections.

No.	Location	Depth	Type	Orientation Head	Face	Age	Sex	Artifacts	Remarks
1	6" SW of FP House No. 1	9"	Cranium only			Ad		Nba point in skull	Scattered bones nearby inclus.
2	Near NW center post	15"	Bundle			Ad			Burial intrus. to Cache 103 but pre-house.
3	Near NW center post	15"	Bundle			Ad			Assoc. with No. 2 and mass of broken bones.
4	N side of H1 near Cache 22	12"	Cranium			Ad			Rest of burial destroyed by LK Cache 95.
5	Outside N wall of H1	11"	Supine	East	Sw	Ad		Nba point in 12th dorsal vertebra	Rt. arm destroyed in dig- ging Cache 95.
6	Outside NE wall of H1	12"	Cranium only						
7	Below inner end of entrance	15"	Supine	East		S-ad		Flint knife right of skull; hematite by right hand	Posthole thru skull, another thru pelvis; house intrusive.
8	4 ft. north of FP	16"	Supine	East	South	Ad			Burial intrusive to Cache 29, and pre-house.
9	260 yds. S by W of H1	42"	Supine	North	East	Ad		Nba point beside spine	Hands, innom., & legs re- moved in digging Cache 30.
10	"	38"	Supine	North	West	Ad		None	Left lower leg and rt. ft. de- stroyed by Cache 30; buried with No. 9.
11	S of Cache 37	9"	Cranium			Ad		None	Burial prob. dist. by C. 37.
12	Above Cache 49	9"	Supine	North	West	Ad		Scapula hoe on rt. foot	Intrusive to Cache 49.
13	41" below Burial No. 12	50"	Supine	South		Ad		Flint knife between the ankles	Torso destroyed in digging Cache 49; legs only left.
14	N and above C58	6"	Prone ?	East		Ad			Partly destroyed by plow.
15	150 yds. W by N of H1	36"	Supine	South		Ad			Torso above lumbar verteb. destroyed by cache; femurs 20" long.

Supine 8

Prone 1

Bundle 2

Crania 4



Missouri River bluff zone and elsewhere throughout the Plains, hilltops furnish a favorite spot for burying the dead. We are inclined, however, to believe that Clark's observations, made in 1804 before breaking of the ground by the plow and subsequent erosion, are probably valid and his conclusions correct. Sterns also accepted the view that the mound was artificial.<sup>16</sup>

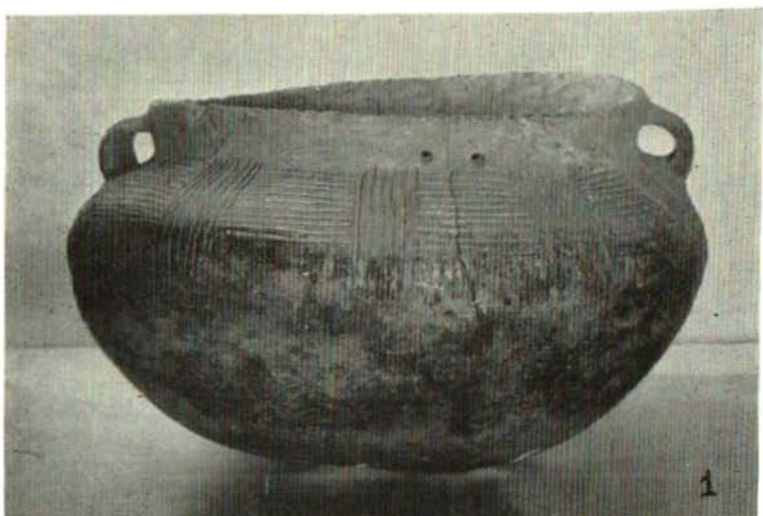
To summarize. Two, and possibly three, forms of burial have been found at the Leary site. The most common, so far as our own experience shows, is extended interment in the flesh in single dug graves, with the bodies usually supine but seemingly without special regard for their orientation. There is no evidence of grave linings or of mortuary wrappings though these may long since have rotted away, and associated artifacts are few in number; in none of those excavated was there any pottery. The graves do not show on the surface. Another form, represented by two burials in a common grave, was secondary, following exposure of the corpse to the elements until the softer tissues had disappeared, with the bones afterward gathered up and interred in a small pit; there were no accompanying artifacts. Both of these types were observed on the village terrace under circumstances which lead to the belief that they were practiced by the peoples who occupied the site. There is evidence of more or less prolonged occupancy in that some of the burials were intrusive to caches but preceded House 1, while others were cut through by later caches.

A third type of burial which it was not possible to investigate at the present time appears to have been sepulture in or below mounds on the hilltop east of the village. Whether this was primary or secondary is not certain, nor are data at hand regarding artifact associations. There is some reason for believing that the mound (or mounds) is contemporaneous with the village, since shell-tempered sherds, known to be characteristic of ceramic remains from the village, have been found in the tumulus. Direct and positive proof of the mound-village association, as well as details regarding the precise character of the mound and its contained burials is, however, lacking.

### CERAMICS

Pottery was very abundant in all parts of the Leary site, on the surface as well as in the caches and other excavations. Aside from its profusion, the complex is of great interest because of its marked dissimilarity to the other known pottery traditions in Nebraska and for its remarkably homogeneous character. The collections on which the present discussion is based include the following: Complete pots, one; restored pots, eight; total number of sherds, 3417 (rim and handle 586, body 2831).

<sup>16</sup>Strong, 1935, p. 207.



### PLATE III

1. Oval pot from House Test 3, Leary site. Height 8 inches; length 13 inches; width  $10\frac{1}{2}$  inches.

2. Restored pot from Cache 32, Leary site. Height 9 inches; diameter 13 inches.



The ware is characterized by a fine, even gray paste, the gray color remaining as a core even in those sherds which have been fired to a brown or orange on the surface. Some sherds show a tendency to flakiness, but the broken edges are mostly clean and granular and do not crumble or flake readily. As a rule, the sherds bubble but slightly when immersed in water, and soften very little under such treatment. The color is somewhat variable due to irregularities in firing, but in general is a light to dark slate gray; occasional sherds are brownish gray or buff and a few are bright orange-brown, contrasting strikingly with the more common shades. Owing to the very generous use of crushed shell in tempering, many of the pieces have a "salt-and-pepper" appearance. Surfaces are smoothed but not polished or slipped; in many cases they are pitted due to dissolving of the shell used in tempering. Hardness ranges from about 2 (gypsum) to nearly 5 (apatite), but comparatively few of the sherds can be rated much over 3 (calcite); in general, they appear to average somewhat softer than the grit-tempered Upper Republican wares. With the exception of eleven grit-tempered sherds (.3%), shell tempering is universal; no bone was noted in any of the ceramic remains. This extremely high proportion of sherds containing shell (99.7%) is, so far as present knowledge of Nebraska goes, unique to the Leary site, and at once serves to set the ware here apart from any of the other known Nebraska patterns.

Variation in thickness of sherds is comparatively limited, ranging from 1/16 to 6/16 of an inch; greater thickness occurs only near points of attachment for lugs or handles. In general, there was a tendency for vessel walls to thicken somewhat from shoulder to neck, strengthening thus the zone of greatest strain and decoration, while bottoms were seldom as heavy as the neck angle. The largest restorable jar recovered averages only about 1/8 inch in thickness, with spots as thin as 1/16 inch. A series of 400 sherds taken at random gave the following thicknesses:

	No. of sherds	Per cent of sherds
Under 1/8 inch (3mm)	35	8.5
1/8-1/4 inch (3-6mm)	324	81
5/16-3/8 inch (7-9mm)	39	10
Over 3/8 inch (9mm)	2	.5
	<hr/> 400	<hr/> 100

Large vessels with hemispherical underbody, rounded shoulder, flattish upperbody, constricted neck, and flaring or recurved rim appear to have been the characteristic form. The restored specimens range in maximum diameter from 10 to 18 inches, and to judge from the degree of curvature exhibited by many of the sherds, diameters up to 22 or 24 inches must have been not un-

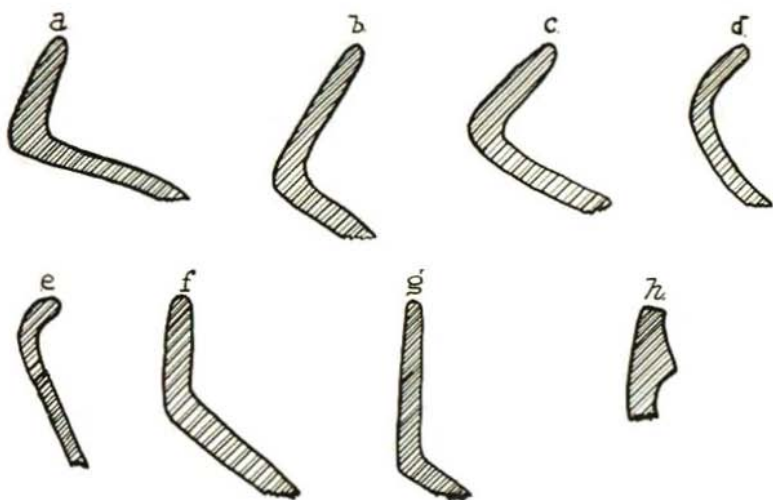


Figure 3. Rim Profiles, Leary Site. a, b, c, flaring; d, e, recurved; f, g, vertical; h, collared. Inside surface of rim is to left.

common. Small vessels, 4 to 6 inches in diameter, are also indicated, but their exact form is uncertain. One or two sherds suggest bowls, but there is no good evidence of platters, ladles, mugs, vases, canteens or bottle forms.

Vessel rims may be divided on the basis of profile into four groups, although it must be admitted that the line between the first two groups is not always sharply drawn. Most numerous by far are the flaring rims, which slant outward and upward from the neck without any curvature above the junction of rim and body (Fig. 3, a, b, c); viewed from above they present a sort of funnel-like appearance. The angle at which they rise varies considerably, but seems to be mostly between  $50^{\circ}$  and  $75^{\circ}$  from the horizontal, with the widest and heaviest rims tending to approach most nearly the perpendicular. In width or height as measured on the external surface between neck and lip the rims themselves are from  $1\frac{1}{4}$  to nearly 3 inches across. This group includes a total of 368 specimens, or about 63% of the rims. The second type is perhaps a modification of the preceding, from which it is distinguished by the fact that the rims are recurved, i. e., show an even curvature outward and upward from the neck to the lip (Fig. 3, d, e). Such rims are usually under  $1\frac{1}{4}$  inches in width; wider specimens are not very easily set apart from Group I. Sixty-seven specimens, a little over 11%, are assigned to Group II. Group III includes



vertical rims, i. e., those which rise perpendicularly from the neck with no outward inclination whatsoever. They are from  $\frac{3}{4}$  to nearly 2 inches high, and number twenty-seven or slightly over 4% (Fig. 3, f, g). Group IV includes but a single specimen; it is of the collared, thickened, or "braced" type so characteristic of many western and central Nebraska sites assigned to the Upper Republican culture (Fig. 3, h). It differs not only in form but also in tempering (grit) from all other rims, and may be purely accidental in our series. The remaining 130 specimens (22%) are too small or else so badly broken that exact classification is not feasible.

With the single exception of the collared rim of Group IV, decoration is absent from the external surface of the rims. It is, however, an extremely characteristic feature of the lip; only thirty-three (5+%) rims certainly bear no lip ornamentation and twenty-eight (4+%) are so broken as to be indeterminate. The remaining 525 specimens may be grouped, according to lip treatment, as follows:

Incisions diagonally across lip	38
Incisions straight across lip	2
Incisions on outer side of lip	12
Punch marks on lip	18
Notched or crenate lip	289
Crimped or "pie-crust" lip	37
Festoons or horizontal chevrons inside and below lip	24
Vertical punctate incisions inside lip	90
Diagonal punctate incisions inside lip	15
	<hr/> 525

About half the total number of rims (49+%) are thus characterized by a lip which, viewed from the side, is more or less deeply notched or crenate. Second in order of abundance is the application of bold punctate incisions vertically or diagonally down the inside of the rim just below the lip; this occurs in 105 (18%) of the rimsherds. The several other methods of treatment given above each include less than 7% of the total. Use of incisions or punch marks on the lip has been noted on Upper Republican rims; "pie crust" decoration has been reported from eastern Nebraska<sup>17</sup> but there it seems to lack the very bold and decisive character evinced at the Leary site. In the light of present knowledge, it may be pointed out that the extended use of a rather finely notched lip, of punctate incisions down the inside of the rim, and perhaps the presence of festoons or pendant concentric chevrons inside the rim, appear to be more or less unique at the Leary site, and the two last-named traits, along with certain others to be mentioned presently,

<sup>17</sup>Strong, 1935, p. 188.

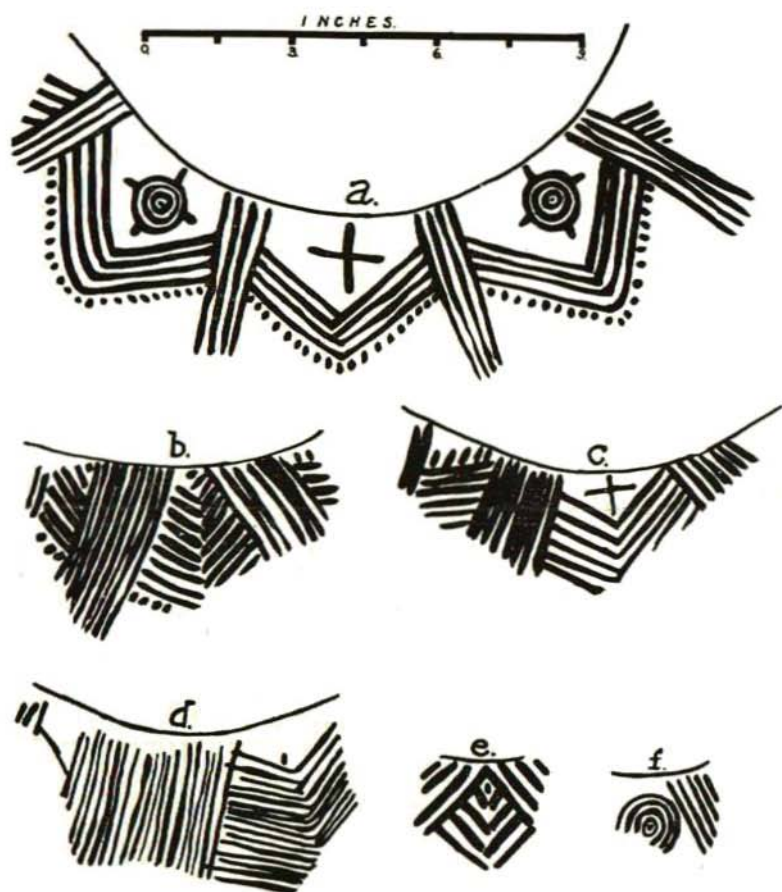


Figure 4. Incised Pottery Designs, Leary Site.

may prove to be valuable criteria for identification of the ceramic tradition here represented.

Grouped according to surface decorative treatment, the sherds yield the following figures:

Plain 2077 (body 1897; rim with body fragment 180)

Intaglio 1333 (body 927; rim with body fragment 406)

Relief 4 (body 1; rim with body fragment 3)

Grooved paddle 3 (all body)

Cord-wrapped paddle 3 (all body)

As has already been stated, rims are not decorated save on the lip; the decorations listed above as occurring on rimsherds actually occur on the upperbody of the pot, fragments of which





#### PLATE IV

1. Half of large vessel which has been cut in two. From Cache 36. Height 11 inches; diameter 16 inches. Leary site.
2. Restored pot from Cache 6. Height  $12\frac{3}{4}$  inches; diameter  $18\frac{1}{8}$  inches. Leary site.

in these cases remain attached to the rims. Invariably, the zone of ornamentation appears to lie below the rim between the neck and shoulder on the flattened upperbody, the most conspicuous portion of the vessel. The decoration consists mainly of grouped parallel lines in several different combinations, often associated with round punch marks or short punctate incisions. The characteristic type of decoration is illustrated in Plates III, 2, and IV, 1, 2, and in Figure 4. It consists of groups of parallel incised or trailed lines, four to twelve in number, running vertically across the upperbody from neck to shoulder, and separated by alternating groups of horizontal chevrons, festoons, diagonals or horizontal lines, three to twelve in number, with small round or elongate punch marks or short punctate incisions below and/or above each of the latter series. Occasionally the punch marks are omitted; or they are retained as a sort of pendant series on the lower side of the motif and replaced on the upper by a single short vertical stroke in the angle of the chevron. This particular design, with some minor variations, occurs on six of the nine complete and restored pots, as well as on 211 sherds, or about one-sixth of all incised fragments. It is very probable that a great many of the other incised body sherds bore similar decoration, but they are too fragmentary to reveal clearly their original design. Rather less common but still quite characteristic are groups of triangles filled with parallel incised lines and alternating with similarly shaped figures carrying numerous small punch marks or short incisions<sup>18</sup>. The lines composing these figures vary in width from about 1/16 inch, deeply scored, to nearly 1/4 inch, averaging about 1/8 inch. They are in most cases actually pressed rather than cut into the damp clay, evidently with some blunt or round-ended stylus, and in many cases the effects of the pressure can be seen in the form of raised ridges on the inner surface. The round or slightly elongate punch marks were similarly made by pressure, though a few have the appearance of being gouged out. The narrower lines are nearly all deeply incised, though a few are so faint as to indicate application by trailing or lightly drawing the marking tool across the surface. Fifteen sherds and one restored pot bear broad shallow vertical marks apparently made by drawing the fingers over the green clay so as to give an effect somewhat reminiscent of a squash or pumpkin. Six of these include also portions of the rim, and all of these, as well as the pot, have heavily crimped rims made by pressing or pinching out the lip with the thumb. Whether this finger-impressed ware represents merely individual or other minor variations or is due to some other cause with wider implications, we do not know. Concentric circles appear on three sherds; in two others, which have the characteristic vertical groups of lines sep-

<sup>18</sup>Cf. Will and Spinden, 1906, Plate 38, f-h.



arated by horizontal chevrons, the spaces above the chevrons are occupied by simple crosses alternating with concentric circles each of which has four short projecting arms, two horizontal and two vertical. The cross occurs on three sherds.

Handles are another very characteristic feature of the ware from the Leary site. They appear on 149 out of 586 rim sherds and on five restored pots. To judge from the latter, two handles vertically placed on opposite sides of the pot were the rule, although in a very few instances, there may have been four; there is no evidence of any horizontal placement. For the most part, they seem to have been simply stuck onto the vessel, with one end at or just below the lip and the other on the body; no instances have been noted where their ends were stuck into holes in the pot and then pressed out<sup>19</sup>. A considerable variation exists in the form of the handles, but most of them were evidently more or less flat in cross section.

On the basis of form, size, and decoration, the following types of handles may be recognized, although in some cases the line between successive groups is not very clearly defined.

- (a) Heavy strap handles, rim to body; fluted or scored; up to 1½ inches wide by nearly 3 inches long; flat section (10).
- (b) Same, but plain; somewhat wider in proportion to height (10).
- (c) Same, but extend from lip to upperbody; mostly about 1 inch wide and up to 1½ inches high (8).
- (d) Same as (b) in form and size, but with punctate or indented ornamentation (3).
- (e) Small strap handles from lip or rim to body; mostly too small to admit the finger, ¾ to 1½ inches wide; minute punctate units in 2 to 5 horizontal rows (19).
- (f) Same, but thicker and more bulging, with 3 to 11 incised or trailed vertical lines (24).
- (g) Same but undecorated (17).
- (h) Narrow strap handles, height greater than width; in cross section appear flanged (6).
- (i) Loop handles; rim or lip to body; circular or subovate cross section; notched (5); plain (2).
- (j) Loop or strap handle, with rib or crest running vertically down the handle and onto the vessel body below; rib notched (11).
- (k) Small vertical lugs in angle of rim and bowl, perforate; notched or plain (16).
- (l) Same, but imperforate (12).
- (m) Indeterminate (6).

Of interest in the ceramic remains from the Leary site is the presence of some thirty or more sherds which have been cut on one or more edges. Twenty of these are plain; the remainder bear simple incised lines of the type which characterize the decorated sherds in general. They show no further attempts at modification

<sup>19</sup>Cf. Udden, 1900, p. 27 and Wedel, 1935, pp. 242-243.

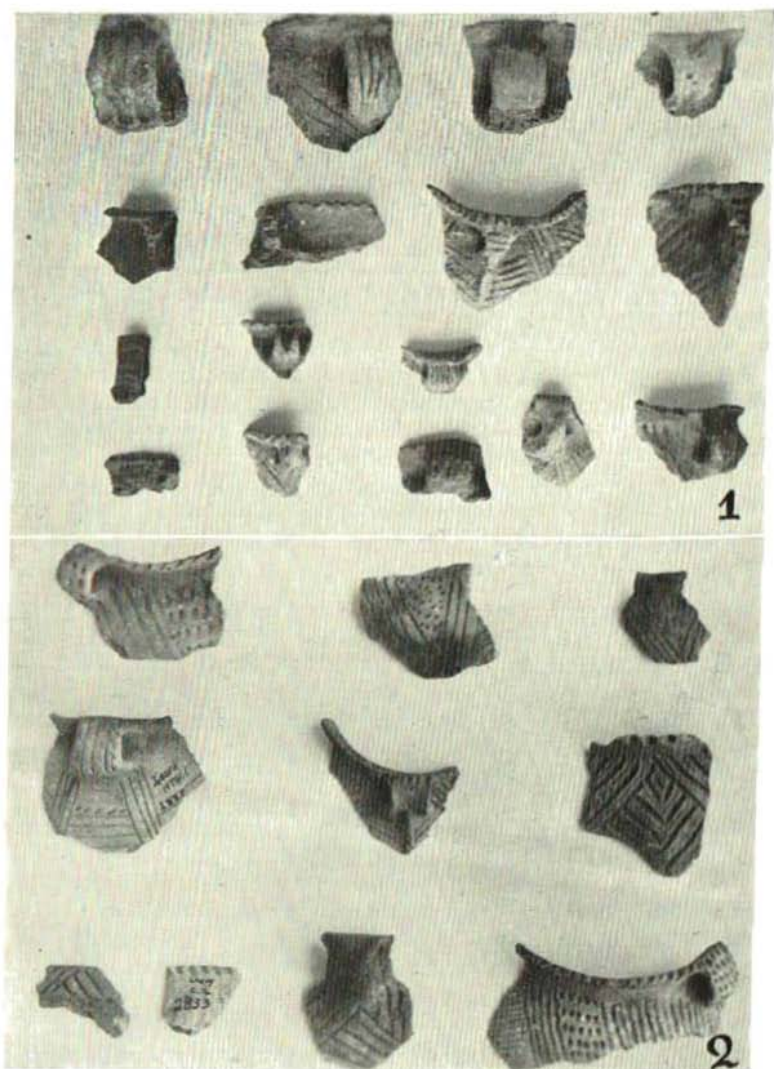


PLATE V

1, 2. Rimsherds and handles, Leary site.



or alteration, which might be expected if it was desired to make ornaments or tools of the sherds. The cutting was accomplished apparently by sawing part way through the piece and then breaking it off; cuts are wide and V-shaped as though made by a fairly thick cutting instrument, such as a flint knife. A large pot has been similarly cut in half vertically (Plate IV, 1), and there are one or two other very large body sherds which appear to have been portions of other vessels which were treated likewise. It is possible that the cut sherds found were actually remnants of still other pots which had been thus bisected. We are at a loss to explain the purpose behind this procedure, unless it was a means for re-adapting partially damaged vessels to further use as receptacles. Thus, the large half-jar shown in Plate IV, 1, could still serve as a bowl; the cut edge would be much more convenient in handling than a jagged edge resulting from accidental breakage. We have not encountered this trait in the Upper Republican villages of southern and central Nebraska, nor in the protohistoric and historic Pawnee sites of the lower Loup-Platte region, nor so far as we are aware, has it been reported for any of the other known cultures of Nebraska or Kansas. There are also a few sherds—perhaps twelve or fifteen, which have conical perforations apparently designed to facilitate the repair of broken or cracked vessels.

To summarize. Ceramic remains at the Leary village site are very plentiful, generally of good quality, and in a number of respects are markedly dissimilar to all other ceramic traditions so far reported from Nebraska and Kansas. The ware is unique in that 99.7% of all sherds are shell-tempered whereas in other Central Plains cultures grit or sand is the prevalent material. Large vessels seem to have been the rule; they frequently had two handles on opposite sides and bore a characteristic type of incised or trailed decoration. Sherds bearing this same ornamentation have recently been uncovered by the field party of the Nebraska State Historical Society in protohistoric Pawnee sites on the Loup River near Genoa, which fact along with other findings seems to indicate some intercourse between the two cultures represented. They have also been noted in surface collections from sites in the Elkhorn Valley in Antelope County, and have been picked up by the authors on a large site of uncertain age near Lynch in Boyd County<sup>20</sup>. To the south, in Kansas, sherds with evident relationships to the remains at the Leary site have been found on White Rock Creek in Jewell County, at Glen Elder in Mitchell County, and on the Republican River seven miles below Concordia. The exact relationship of these sites to each other and to others farther east is not now clear.

<sup>20</sup>Excavations have since been carried on at this very interesting site by Dr. E. H. Bell for the University of Nebraska; the results have not yet been published.

To return to the Leary site: Decoration of vessel exteriors does not include the use of a cord-wrapped paddle, so characteristic of the prehistoric Upper Republican wares, nor of the grooved paddle or "tooled" technique typical of protohistoric and historic Pawnee wares. The few sherds found at the Leary site bearing impressions of a cord-wrapped paddle and the equally few with grooved paddle or tool marks are probably intrusive or else the result of trade contacts with alien peoples. In general, the ware from the Leary site presents not only a remarkably homogeneous aspect, but also one which quite definitely sets it apart from any other so far reported in the Nebraska-Kansas region. Its closest analogue, indeed, lies east of the Missouri River, in the Big Sioux and Upper Iowa River valleys of northern Iowa. The pottery from the late prehistoric and protohistoric Oneota sites of Iowa is virtually indistinguishable from that at the Leary site, and this along with other parallels to be brought out presently, serves to identify the latter remains with easterly peoples rather than westerly tribes.<sup>21</sup>

### WORK IN GROUND STONE

Next to ceramic remains, artifacts of stone were the most numerous of all the objects found on the Leary site, presenting as well a somewhat greater variety of forms than have most sites of southern and central Nebraska. Whether stone implements actually formed a more important portion of the material culture than did those of bone is uncertain, but in our collections at least they are far more abundant.

Very characteristic on the site, both on the surface and in the caches, are shaped mealing or grinding stones. These vary in diameter from 6½ to 12 inches, and are roughly circular or squarish in outline; the thickness averages 2½ to 3 inches. The upper surface is usually flat or very slightly concave, and shows signs of abrasion; the bottom is more or less convex so that in cross section the pieces show a somewhat flattened hemispherical form. The sides are generally perpendicular to the upper or working surface, and show scars where large flakes have been struck off to produce the desired shape. Most of the specimens seen are of pink Sioux quartzite, though occasionally some other tough crystalline rock was used. In size, general appearance, and doubtless in use these objects are virtually identical with the "anvil stones" found on

<sup>21</sup>Bell's assertion (*American Antiquity*, v. 1, no. 3, p. 241; 1936) that "the pottery [from the Leary site] bears as close a resemblance to historic Pawnee" as does that from the protohistoric Pawnee villages on the Loup is in no way borne out by the evidence at hand. There are several basic similarities (tempering, surface treatment, etc.) and a number of specific resemblances (rim types, decorations, etc.) between protohistoric and historic Pawnee wares that definitely distinguish these two as a group from the Leary site remains.



most protohistoric and historic Pawnee village sites, where they are, however, less plentiful.<sup>22</sup> Similar specimens, but much better finished, in the Nebraska State Historical Society Museum are from the Dakota Indians, and were used as "anvils" for pounding up cherries, berries, and meat, the pounding being done in this case by means of grooved mauls lashed to wooden handles. Probably the archeological specimens were used in the same manner for a similar purpose. The type appears to be the same as that reported by Keyes from Oneota sites in northeastern Iowa<sup>23</sup>. They have not been found in Upper Republican sites in southern and central Nebraska, so far as we are aware; nor were they found by us at the protohistoric Paint Creek site near Lindsborg, or at the prehistoric Minneapolis site on the lower Solomon River, in Kansas,<sup>24</sup> where flat well-shaped metates were apparently the rule.

Fragments of several smaller and more deeply cupped specimens of the same general type were also found; they may have been intended for some specialized duty.

Grooved mauls or "pemmican pounders" are another common form, though less abundant than the "anvil stones". Seven complete and fragmentary specimens were obtained. All are of tough crystalline rock, such as Sioux quartzite, granite, or diorite, and show evidence of much hard usage. They range from 3½ to 8 inches in length and up to about five pounds in weight; the faces are oval or subcircular in outline, and there is a well defined unflanged groove about the middle. One specimen has a flat face while the other end tapers somewhat. For the most part, the mauls in our series are rather poor specimens, but they seem to indicate that the implement was well known and quite extensively used, perhaps, as already suggested, in conjunction with the so-called "anvil stones".

A detailed discussion of the grooved maul in the Central Plains and adjacent regions would lead us too far afield and is outside the province of this paper, but the authors feel that a few remarks regarding its known occurrence would not be amiss. Specimens have been found on the surface in practically every part of Nebraska, doubtless because it was a very typical feature in the material culture of the historic bison-hunting plains tribes. Archeologically, however, it has a much more limited distribution. Examples have been found in several nineteenth century Pawnee villages, as well as in at least five protohistoric Pawnee sites on the lower Loup and Platte Rivers.<sup>25</sup> We have yet to find or learn

<sup>22</sup>Cf. Wedel, 1936, p. 75.

<sup>23</sup>Keyes, 1927, p. 223.

<sup>24</sup>Wedel, 1935, pp. 229, 246; Udden, 1900, pp. 50-53.

<sup>25</sup>Personal field notes of the authors, 1931 and 1936; Wedel, 1936, p. 77, and Strong, 1935, pp. 60 and 66.

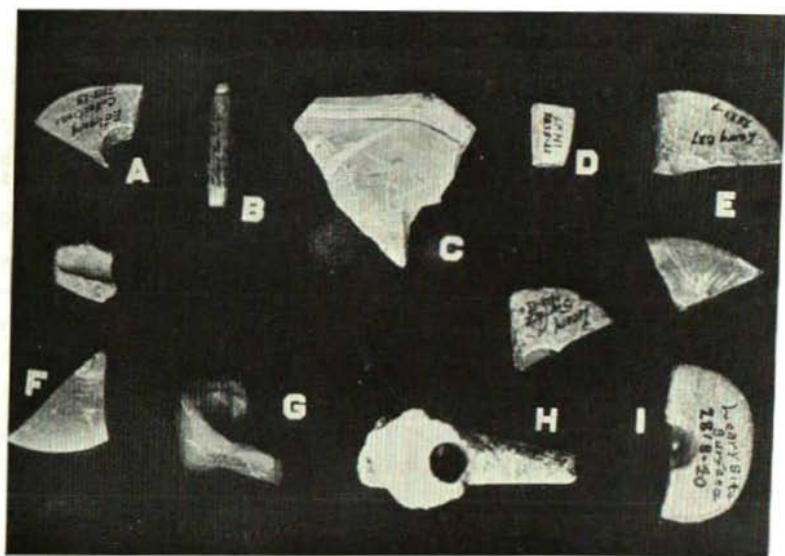
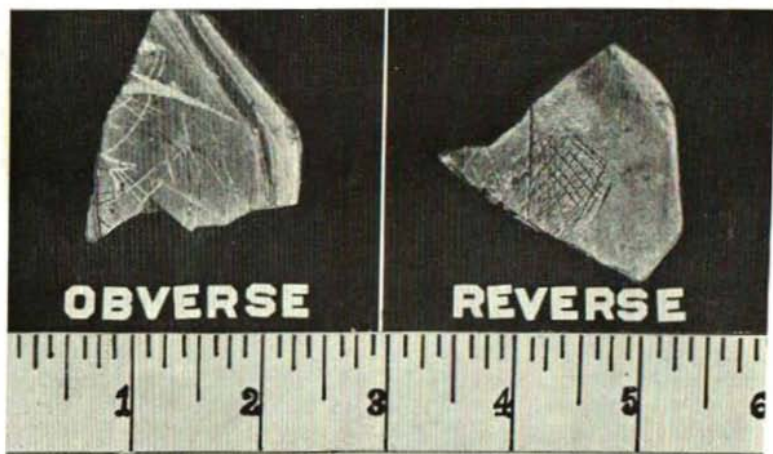


PLATE VI

Catlinite and stone objects, Leary site. Top; two views of catlinite tablet showing engraving. Bottom; a, e, f, fragments of disc pipes; b, catlinite pendant; c, catlinite tablet shown above; g, broken elbow pipe; h, sandstone platform pipe; i, one half of disc from sandstone platform pipe.



of one in the Upper Republican Culture of the Republican and Loup River drainages, and to all appearances they are either extremely scarce or else absent from the Nebraska culture. The authors have found specimens at the walled site on Ponca Creek, recorded by Dorsey as an "Old Ponca Fort",<sup>26</sup> along with copper arrowpoints and other vestiges of trade with white men. Will and Spinden report them from the historic Mandan sites,<sup>27</sup> while to the south, in Kansas, they have been recorded at Paint Creek (Salina 1)<sup>28</sup> and at Scott County pueblo,<sup>29</sup> both of which are of post-Columbian age. Excavations by us and others on the lower Solomon drainage failed to disclose their presence in the prehistoric sites examined. Keyes considers them a diagnostic for the Oneota culture of Iowa, which is apparently of late prehistoric or early protohistoric date,<sup>30</sup> and to go still further afield, it may be pointed out that Kidder noted the presence in post-Columbian horizons of two specimens at Pecos<sup>31</sup> and Sayles found them at several localities in Texas.<sup>32</sup> Unless otherwise indicated, all of the occurrences just listed as "archeological" refer to specimens obtained underground through actual excavation rather than to chance specimens from the surface. Our data are admittedly incomplete as yet, but it is a curious fact that none of the major prehistoric patterns in the Central Plains appear to have possessed the grooved maul, whereas the cultures post-dating the European contact more or less consistently show its presence. Without attempting to lay down a hard and fast rule, we venture the guess that additional work may verify a persistent suspicion raised by the data at hand, viz., that the grooved maul is a comparatively late prehistoric or even very early protohistoric arrival in the Central Plains region of Nebraska and immediately adjacent areas, and that its use here not only lacks historic depth but is also concomitant with the appearance of certain other items generally regarded as typical of the bison-hunting plains tribes.

Celts and grooved axes both occurred at the Leary site. Ground celts ranged in length from  $4\frac{1}{2}$  to  $6\frac{3}{4}$  inches and in width from 2 to  $2\frac{1}{2}$  inches. All were made of gray or greenish crystalline material, apparently diorite. Of four complete specimens found in 1935, three have an oval cross section while the fourth is circular; in two cases the butt is rounding, one is square, and the last is indeterminate due to breakage. All of the complete specimens are well made and nicely polished. Grooved axes, on the other hand, are represented by three rather inferior specimens which are per-

<sup>26</sup>1884, pp. 313-314 and Figure 30.

<sup>27</sup>1906, p. 163 and Plate 32, b.

<sup>28</sup>Udden, 1900, pp. 59-64.

<sup>29</sup>Martin, 1909, Plate 9, Fig. 79.

<sup>30</sup>Keyes, 1929, p. 141 and letter of Sept. 20, 1935.

<sup>31</sup>Kidder, 1932, p. 55 and Figure 31c.

<sup>32</sup>Sayles, 1935.

haps more accurately described as notched. All are crudely fashioned out of poor material and tend to be laterally compressed with notches on upper and lower edges rather than an encircling groove. From the standpoint of workmanship or of serviceability none of the specimens rank very high.<sup>33</sup>

An interesting group of objects is represented in Plate VII. These are circular in outline, flat and smooth on one face while the other is convex, so that in cross section they are of flattened hemispherical shape. The flat side commonly has a small pit in the center, while the convex face is plain. Six very symmetrical and well finished specimens average  $3\frac{1}{2}$  to  $4\frac{1}{2}$  inches in diameter by  $1\frac{1}{2}$  to  $2\frac{1}{2}$  inches thick; others are more carelessly made, of sub-circular or subovate form and lacking in symmetry. All are of tough stone, either quartzitic or very hard sandstone. Some of the larger and rougher specimens perhaps are utilitarian, intended for use as hammerstones, but at least seventeen appear too well made to have been designed for purely utilitarian ends and may represent gaming stones. Their shape makes it impossible to roll them along the ground, since they invariably follow a curving course. Possibly they were intended to be thrown through the air at a stake or hole, in some game like quoits, with the flat pitted side down. Pieces somewhat reminiscent of those from the Leary site, but cruder, are figured and described by Culin for the Pima, with the statement that they were used in a quoits-like game called *cuatro*.<sup>34</sup> Whether the flat circular "hammerstones" occasionally found on protohistoric and historic Pawnee sites, with one or both surfaces pitted,<sup>35</sup> represented an analogous type we are not certain, but it is at least a distinct possibility. It may be noted that one piece from the Leary site is of this last type.

Hammerstones are mainly irregularly shaped stream pebbles which show no attempts at shaping, finishing, or other modification, although the ends are usually much battered and bruised from heavy usage. They are generally smaller than the gaming stones just described, but show great variation in size and form.

Abrading stones are of two general types. Most common are the boat-shaped shaft smoothers of "nail-buffer" type, made of dark reddish-brown Dakota sandstone. No perfect or complete specimens were found, but eighteen fragments are large enough to furnish good evidence as to their original form.

They are of the same widespread type found in other prehistoric and historic sites in the Central Plains,<sup>36</sup> with a single

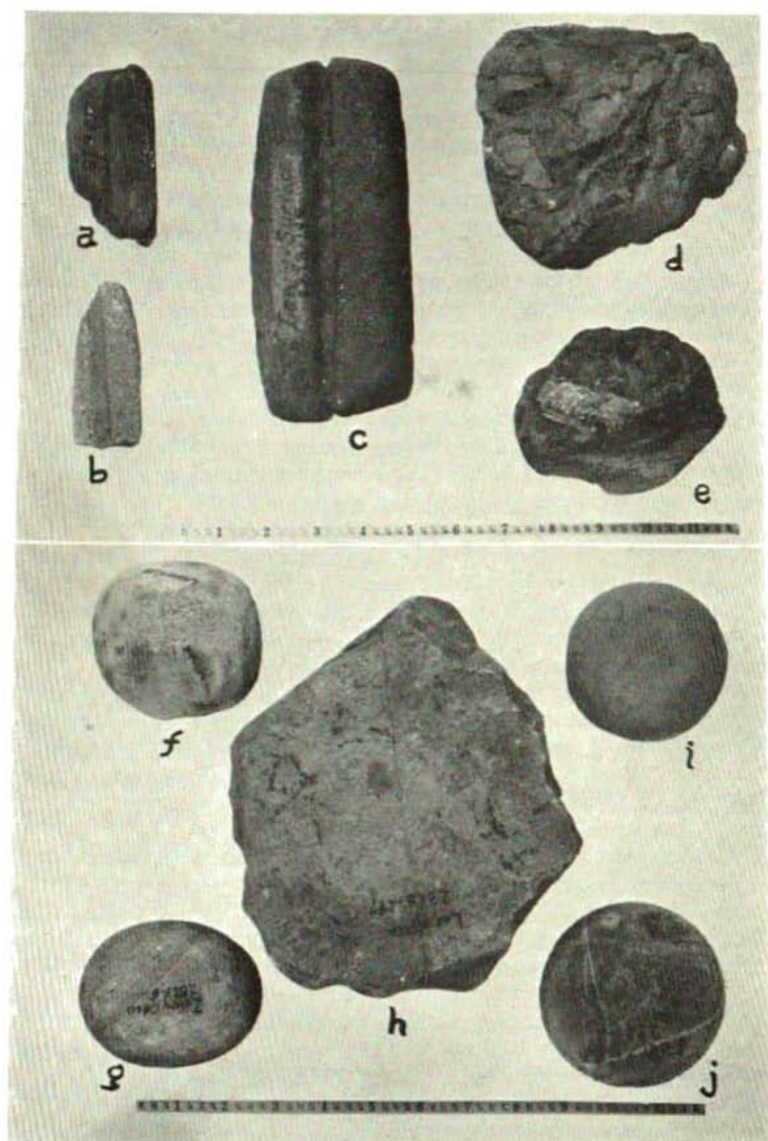
<sup>33</sup>Keyes, speaking of Oneota remains in Allamakee County, northeastern Iowa, mentions "rather crude all-around grooved axes"—*Wisc. Arch.*, v. 8, no. 4, p. 141.

<sup>34</sup>Culin, 1907, p. 724.

<sup>35</sup>Wedel, 1936, p. 76.

<sup>36</sup>Strong, 1935, Plate 17, Fig. 1, c-h; Wedel, 1935, Plate 12, m, n.





### PLATE VII

Stone objects, Leary site. a-b, Dakota sandstone shaft smoothers or awl sharpeners; c, grooved sandstone abrader; d, e, volcanic lava; f, g, pebble pecking stones; h, pink quartzite mealing stone; i, j, round gaming stones (?).



longitudinal groove intended to be used in pairs.<sup>37</sup> Twenty-one other fragments are of more or less irregular shape, with small grooves on two, three, or four sides and represent, in our opinion, broken shaft smoothers of the usual type modified after breakage by secondary use for sharpening awls, needles, and other small implements.

Three specimens, only one of which is complete, were found showing the process of manufacture of these smoothers. A rectangular sandstone block 6 to 8 inches long, 4 or 5 inches wide, and  $1\frac{1}{2}$  to 2 inches thick was carefully shaped with all corners and angles rounded off. A deep groove was next cut about the middle of the block lengthwise, after which it was readily broken into two identical halves with a well directed blow along the line of the groove. All that was further necessary was to grind down the fractured edge of each long piece so that the two surfaces fitted snugly. The one complete example in our collections, which has been grooved but not yet split, is  $6\frac{1}{2}$  inches long, and the finished buffers, would have been about  $1\frac{3}{4}$  inches wide by  $1\frac{1}{4}$  inches thick, with more or less squared ends. To judge from the larger fragments found on the site, this would appear to represent about an average-sized pair of smoothers.

Much less abundant and apparently never as definitely shaped as the foregoing, were several pieces of reddish pumice showing evidence of use as abrasants or polishers. None are grooved as are those of sandstone, but the material can be used very effectively in smoothing bone, and may have been so employed by the aborigines. Its ultimate source is unknown to us, but it may have been obtained by the natives as flitage on the Missouri two miles or so distant from the village.

Pipes are represented in our collections by fragmentary examples only. One of these, made of gray calcareous sandstone, has part of a disk bowl, about  $2\frac{1}{4}$  inches of stem, and a projecting prow beyond the bowl. Another is of compact dark reddish-brown sandstone, and includes about half of the disk bowl and a small part of the attached stem; it is too fragmentary to offer any measurements. There is also an incomplete elbow pipe of modified "Siouan" type with a short projecting prow; it appears to have been quite small. There were no traces of clay pipes of either native Indian or white trade origin.

Catlinite, though not very abundant, was evidently a familiar material to the residents of the Leary site; it was used for pipes, ornaments, and other small objects. There are three fragments of disks which were evidently parts of platform pipes; they indicate

<sup>37</sup>La Flesche, 1924, p. 113 describes the method of use.

a disk of less than 2 inches diameter. Five other pieces show a similar curve on one edge but lack conclusive proof of having been pipe disks, though in size and thickness they are virtually identical with the preceding. Five hollow pieces, with square or circular cross section, appear to have been parts of pipes or of some other tubular objects. Two pieces have been cut into rectangles about  $\frac{5}{8}$  inch long, but without any marking, and their use is unknown. Six other bits have been variously cut on one or more edges and are polished, but they show no definite shape and possibly represent merely initial stages in the manufacture of small ornaments or other objects. There is also a small pendant about  $1\frac{1}{4}$  inches long by  $\frac{1}{4}$  inch wide, with oval cross section, squared at one end and provided with a deep encircling groove at the other. Of especial interest is the finding of a broken tablet or slab  $\frac{3}{4}$  inch thick, and measuring in maximum dimension  $1\frac{3}{4}$  inches. Both surfaces are polished and the edge, where not broken, is rounded. One side bears a deeply incised groove  $\frac{1}{4}$  inch from the edge, suggesting a frame or border, and there are a few scratches which may or may not have been purposefully applied. The other side has no bordering groove, but shows part of an incised reticulate pattern as well as a triangular motif; unfortunately, most of the tablet and decoration have been lost. The specimen is somewhat reminiscent of the Oneota tablets mentioned by Keyes<sup>38</sup> and Orr,<sup>39</sup> as well as of the incised slabs or stone "molds" found on historic Pawnee village sites.<sup>40</sup>

Several bits of hematite showing one or more ground faces were evidently used to obtain pigment, but there were no artifacts made of the material. There were also lumps of soft yellow substance, apparently limonite, probably similarly used. Steatite was not found.

### WORK IN CHIPPED STONE

Work in chipped stone includes projectile points, end and side scrapers, gravers, drills, knives, and celts. Arrowpoints are made of gray, white, pink and brown flint, but none of obsidian were noted. Characteristically, they are small; of 105 complete points 87% are 1 inch or less in length, the smallest being about a half inch, while the longest is  $1\frac{1}{2}$  inches. Ninety points, it should be noted, came from the surface of the site, comparatively few being uncovered in the excavations. With regard to form they may be classed as follows:

<sup>38</sup>Keyes, 1929, p. 141 and letter of Nov. 14, 1935.

<sup>39</sup>Orr, 1922.

<sup>40</sup>Strong, 1935, p. 60; Wedel, 1936, pp. 78-79 and Figures 9 and 10.

Triangular, unnotched, straight base (NBa)	64
Triangular, unnotched, concave base (NBb)	29
Triangular, unnotched, convex base (NBc)	8
Triangular, notched, straight base (NBa1)	3
Expanding stem, shouldered, straight base (SCa2)	2
Indeterminate	10
	<hr/> 116

Out of a total of 106 complete specimens, therefore, 101 (95%) may be collectively designated as small triangular unnotched points, a proportion far exceeding that from prehistoric Upper Republican or Nebraska Culture sites,<sup>41</sup> but reminiscent of nearly identical conditions in the protohistoric Pawnee villages on the Loup<sup>42</sup> and at Salina 1, the protohistoric site on Paint Creek in central Kansas.<sup>43</sup>

Far more numerous than arrowpoints were the "plano-convex" or "thumb-nail" end scrapers, a common type on most prehistoric and protohistoric villages in the Central Plains. In size and shape they present some variety, but the plane or slightly curved ventral surface, keeled back and "snub" nose are common to all. They are made of gray, whitish, or brown flint, and occurred plentifully in the caches, in House 1, and on the surface, outnumbering all other specimens save pot sherds. On the basis of size, they may be grouped as follows:

Under 1 inch (2.54) cm)—	53	12%
1-1½ inches (2.54-3 cm)—	138	31%
1½-1¾ inches (3-4 cm)—	155	35+%
1¾-2 inches (4-5 cm)—	60	14%
Over 2 inches (5 cm)—	31	7%
	<hr/> 437	<hr/> 99+%
Indeterminate (broken)	28	

While the actual range in size is from ⅝ inch to 3¼ inches, 293 specimens (66%) are between 1 and 1½ inches long, and 353 (80%) measure between 1 and 2 inches. The width of the broader or "snub" end is generally 40% to 75% of the length. Whether these were set into or lashed to bone or wood handles and used as hide scrapers or whether they were intended for some other duty, we do not know, but their great abundance at the Leary site and small size may call for some other more satisfactory explanation.

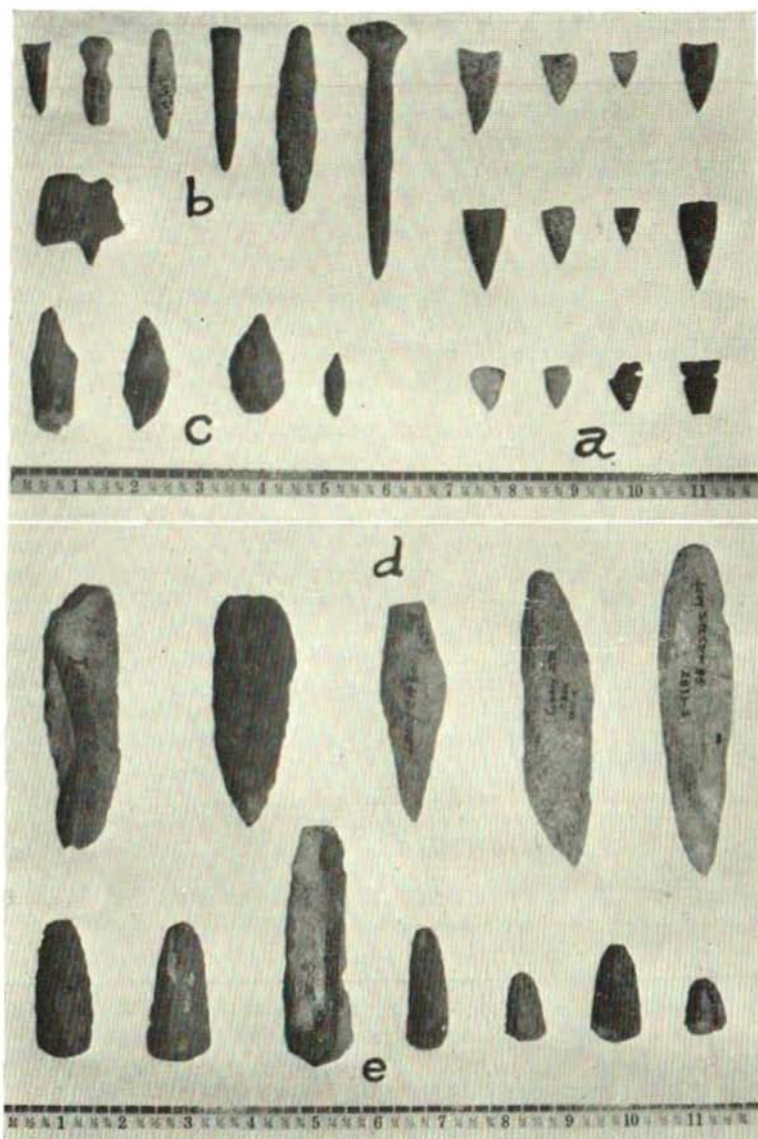
The term "gravers" is given to a group of small peculiarly shaped flint objects whose exact use is not known, and which are

<sup>41</sup>Strong, 1935, Table 3; Wedel, 1935, pp. 195-198.

<sup>42</sup>Wedel, 1936, p. 75.

<sup>43</sup>Wedel, 1935, p. 247; Udden, 1900 p. 40.





# PLATE VIII

Chipped stone objects, Leary site. a, triangular and notched arrow points; b, drills; c, gravers; d, beveled knives; e, end scrapers.

not commonly found in Nebraska sites. In appearance they are somewhat suggestive of the end scrapers just described, with one plane and one convex or moderately keeled surface. One or both ends have been chipped into a heavy point, in such a way that one side still shows traces of the plane face of the original flake. In length they average about  $1\frac{1}{2}$  to 2 inches. They may have been used as drills, although others of more conventional form are fairly common, as will be brought out presently. It seems equally plausible to regard them as instruments for incising and marking objects of bone, horn, or catlinite, perhaps also for decorating pottery.

Drills are mostly straight and simple in form, with oval or diamond shaped cross section, and with one or both ends pointed. They are from  $1\frac{1}{8}$  to 3 inches long, with occasional longer and heavier specimens which are commonly termed "pipe drills". One roughly triangular flake, chipped to shape, has a sharpened corner which may have been used as a perforator. This is the only example of drill with expanded base found during the present investigations, although locally it was reported that T-shaped and expanding base specimens have been picked up. In the Zimmerman-Remsburg collection in the Museum of the Nebraska State Historical Society are a number of drills supposedly from the Leary site, but information is too meagre to make their provenience certain. Well made T-shaped drills up to 4 inches long have been reported, and there is one of this type in the Museum.

Knives may be divided, with some forcing, into four main types. Type I is the diamond-shaped or "Harahey" knife, which is characterized by four edges with two acute and two obtuse angles. Adjoining edges are characteristically bevelled in opposite directions. Most of the specimens of this type at the Leary site are of more or less tenuous diamond shape, but show the four bevelled edges quite distinctly. There are five complete knives, in addition to seventeen fragments which are probably to be assigned to this group. They are 4 or 5 inches long,  $1\frac{1}{2}$  inches or less in width, and about  $\frac{1}{4}$  inch thick. Type II is of variable form, with the three whole specimens of general lanceolate outline, about  $5\frac{1}{2}$  inches long by 2 inches wide. They have a flat under and slightly convex upper surface, with either one or two bevelled edges. In general, they tend to be somewhat wider in proportion to length than do those of the first class. Knives of Type III present a thin lenticular cross section, with both surfaces retouched about equally but not bevelled along the edges; in outline they appear to have been more or less ovate or lanceolate. The largest complete specimen is  $5\frac{1}{2}$  inches long by 2 inches wide and  $\frac{1}{4}$  inch thick, but shorter and heavier forms also occur. Fragments of this type are more numerous than those of all others combined, including sixty-five or more specimens. Type IV may

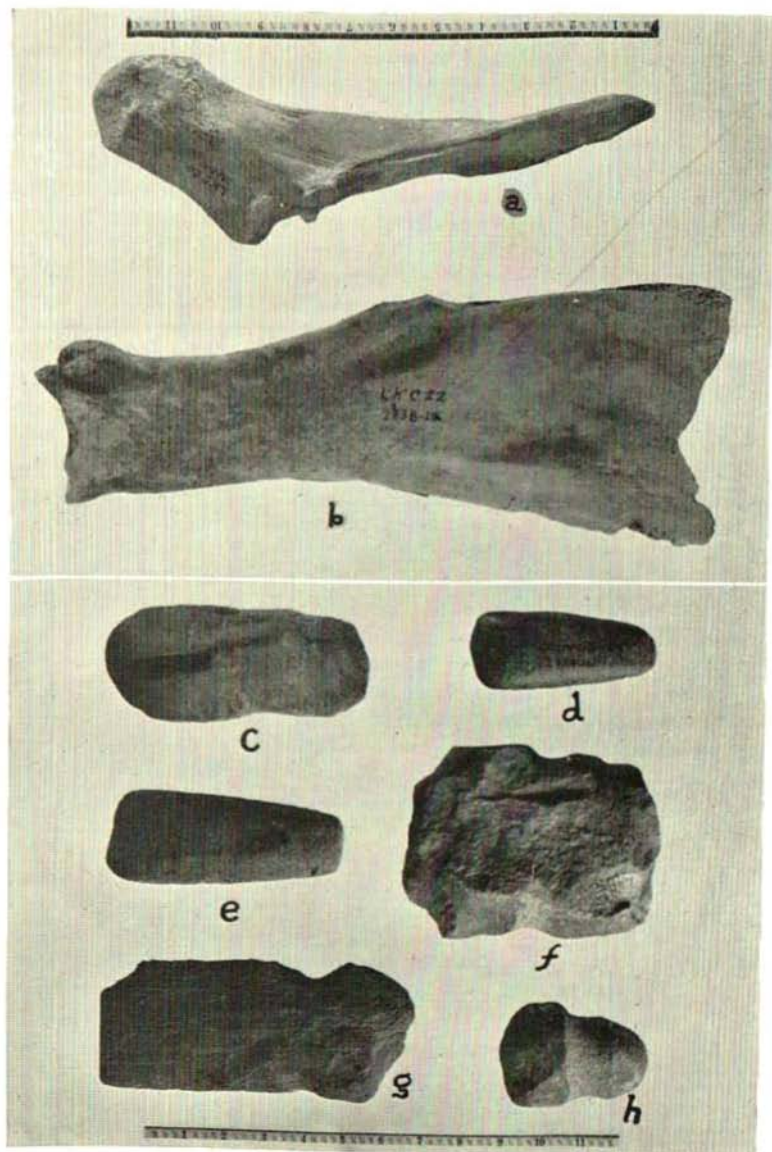
be called "flake" knives, since one side has not been retouched and shows the original surface left by the primary flaking. The other side shows coarse flake scars, and has the edges slightly retouched. In cross section they are planoconvex; in outline, they vary according to the size and form of the original flake, ranging up to 5 inches long and about 2 inches wide. As a type, these are the most characterless of the four, and the line between them and side scrapers is exceedingly tenuous.

Chipped celts are apparently less common at the Leary site than in many Upper Republican villages. One small almond-shaped specimen is  $3\frac{1}{4}$  inches long by  $1\frac{1}{4}$  inches wide and  $\frac{1}{2}$  inch thick, made of gray and white mottled chert. There are also a few crudely fashioned subrectangular objects of unknown use; they may have been used as hoes, axes, celts, or for some other purpose. In general, however, heavy flint work seems to have been not very abundant.

### WORK IN BONE

Artifacts of bone appear to have been only moderately abundant at the Leary site, in comparison with prehistoric villages of the upper Republican valley in southern Nebraska. Most numerous by far were hoes or spades made of bison scapulae, more or less fragmentary specimens of which occurred in most of the caches. All were of the same fundamental type, made by cutting away the scapular spine and trimming the angles and borders until the desired shape and size was attained. Usually, the superior angle appears to have been cut away from 7 to 10 inches from the head, and the inferior from 9 to 12 inches. The cancellous tissue at the vertebral border was removed and the edge more or less bevelled, after which wear gave it a smooth and often highly polished working surface. The finished hoe blade seems to have been from 12 to 15 inches long and about 6 or 7 inches in maximum width. The head was not detached, but a shallow notch about 1 to  $1\frac{1}{2}$  inches wide by  $\frac{1}{4}$  inch deep was cut into the anterior surface of the neck and glenoid cavity, presumably to permit attachment to a handle. Thirty of thirty-six broken and complete specimens preserved by the 1935 party show this notch; four are broken in such fashion that presence or absence of the notch cannot be determined. One shows an unusual degree of polish where the cut normally occurs, and only one shows no modification of any sort in this part. All cutting and trimming of the scapulae is roughly done, suggesting use of stone knives; the spine seems usually to have been partially cut and then broken off, leaving an uneven scar. No perforated or mended hoes were found, though in many the blade has been worn through long usage to a deeply concave form. Twenty of our hoes were made from the right scapula and sixteen from the left.





# PLATE IX

Bone and stone objects, Leary site. a, bison ulna pick (?); b, bison scapula implement; c, ground stone celt showing slight groove; d, e, ground stone celts; f, pink quartzite axe or hammer; g, grooved celt or axe; h, grooved hammer.

The exact method used to secure the bone blade to its handle is uncertain. The notch at the side of the head, in our opinion, indicates a device unlike that figured by Wissler for the Hidatsa, where the neck of the scapula is lashed at right angles between two prongs of a forked or split stick.<sup>44</sup> We suggest, instead, that the blade was fixed with its anterior or ventral surface against the shorter arm of an L-shaped stick and the head against a short projection of the longer arm beyond the angle of the L. By cutting a notch in the head of the scapula, the bone could be made to fit snugly into the angle provided by the handle, and rigidity would be further insured by use of green rawhide lashings which would contract on drying. In actual hoeing, the ventral surface of the scapula would be toward the user if it were fastened in the angle to the further side of the shorter arm, as described; and from the relative degree of polish exhibited on the two surfaces, this supposition appears to be a valid one.<sup>45</sup>

Hoes made of bison scapulae are a very characteristic feature of most permanent or semi-permanent village sites throughout the Plains, in those of prehistoric age as well as in the historic. Archeological evidence on this point is well nigh incontrovertible, furnishing clear proof that the bone hoe is not a post-Columbian development from the introduced iron hoe of colonial time.

Awls, while numbering but six whole and broken specimens, are of at least four types, with possibly a fifth represented by an unfinished but suggestive piece of bone. Specimens of the first type include two whole pieces and the tip of a third; they are made from the ulna of some cervid, with the olecranon process forming the butt, and have short stout points well suited to heavy skin work. The complete specimens are each just under  $4\frac{1}{2}$  inches long. A second type appears to have been made by splitting the anterior margin off the spinous process of a bison vertebra, with the distal end of the sliver ground to a point and the proximal portion slightly rounded for more convenient holding; in length this piece is  $6\frac{3}{4}$  inches. The cut edges are rough and irregular and no effort has been made to grind away the cancellous tissue. The third type is shown in a thin slender implement, flat in cross section, which has been so far ground down that identification of the bone has not been possible. The butt was evidently the articulating end of some small mammal bone, and shows little polish. It measures  $3\frac{3}{4}$  inches long. Type IV is of split bird wing bone,  $2\frac{1}{2}$  inches long, with the butt end roughly broken and a very slender point showing much wear. Half of a deer metapodial split lengthwise and broken at one end during excavation, may have been intended for manufacture into an awl, as pieces of this sort in various stages

<sup>44</sup>Wissler, 1922, Fig. 5.

<sup>45</sup>Cf. Strong, 1935, p. 94.



of completion have come to light on occasion elsewhere in the Plains area. There are a few other bits of worked or polished bone which may have been parts of awls, but their condition is too fragmentary to allow definite conclusions.

From Cache 99 came two incomplete fish spines with highly polished tips; another fragment was found in Cache 5. All seem to have been used as perforators. Two other very slender polished and pointed bones, no larger than toothpicks, came out of Caches 5 and 39a; their appearance suggests more or less purposeful modification for utilitarian aims. In view of their thinness they could not have been intended for any but the very lightest and most delicate work, whatever that might have been. Another slender piece of bone, with a rounded point at one end and broken at the other, is  $3\frac{1}{4}$  inches long,  $\frac{1}{8}$  inch wide, and under  $\frac{1}{16}$  inch thick; it appears to have been definitely shaped and finished. Possibly it served as a sort of stylus for applying some of the narrow incised and broader trailed lines so characteristic of the sherds from this site. Also of unknown function is a longitudinally split bird bone  $3\frac{1}{2}$  inches long, one end of which is notched to a depth of nearly  $\frac{1}{2}$  inch as though by carefully guided strokes of a flint flake. At either side of this notch, which shows no signs of wear in its lower half, is a delicate well-worn point, the two tending to converge. The terminal notch appears to have been made for the purpose of producing the paired points, though we have not the slightest idea for what these were used. A bird leg bone, with one end plainly worn to flattened triangular tip, may have been for marking pottery; in soft clay it produces lines strikingly reminiscent of those on the Leary site sherds.

Two eyed needles were found in Caches 84 and 89, southeast of House 1. One is slightly curved,  $5\frac{1}{4}$  inches long,  $\frac{1}{4}$  inch wide, and  $\frac{1}{16}$  inch thick, with a gently tapering point. About half the eye, which seems to have been approximately  $\frac{1}{16}$  inch in diameter, and the butt, are missing. The second specimen, of which an indeterminate mid section is absent, measures probably 6 inches or more, shows almost no curvature, and in finish is rather better made than the preceding. The eye is slot-like,  $3/17$  inch long and about half as wide, and part of a second round perforation still remains at the broken end; the whole piece may formerly have been a half inch or more longer than the measured figure given above.

From House Test 8 came two pieces of worked rib. One was a  $4\frac{1}{2}$  inch section, apparently from a bison; one end plainly shows evidence of having been cut and rounded by abrasion, while the other was broken off. A  $\frac{1}{16}$  inch hole, showing much wear on its lower side (when the rib is held vertically), has been partially carried away by the fracture. Along one edge are forty-six tiny



notches beginning at the broken end beside the hole and running  $2\frac{1}{4}$  inches down the side. This doubtless was an arrowshaft straightener or "wrench", analogous to those reported for the Omaha,<sup>46</sup> although of different material, and the break which caused its final rejection may have occurred during actual use. The second piece is apparently of deer rib, 3 inches long, and is broken at both ends. Near one end, on the concave surface, are three transverse incisions  $\frac{1}{8}$  inch apart, and on one edge next to these grooves, are three notches. Another series of three notches occurs about  $\frac{5}{8}$  inches away on the same edge, and there is a third group on the opposite edge in staggered arrangement, i. e., between the first two groups. The purpose of the piece is unknown; conceivably, it may have been a counter or gaming device of some sort, though this is purely conjectural.

A thinly scraped tube without perforations or markings of any sort but definitely cut at either end was found in Cache 9. It is smoothed but not very well polished and impresses one as being unfinished. The length is  $2\frac{1}{4}$  inches, the diameter  $\frac{5}{8}$  inch. There is a possibility that this was intended to be made into a plume-holder for use with the roach spreader and accompanying headdress, but this appears unlikely. It may have been part of an ornament or article of dress, possibly even a sucking tube.

Two other artifacts, neither of which has been satisfactorily identified or named, remain to be described. One is a piece of thinly scraped bone 6 inches long which has been bent into a semi-circle  $3\frac{1}{4}$  inches in diameter. It is about  $\frac{1}{4}$  inch wide by  $\frac{1}{8}$  inch thick, with one extremity cut square, the other tapered; both ends are perforated. A few scratches on it appear to be accidental; there is no evidence of a definite decorative attempt. In general appearance and technique, it closely resembles the eyed needles already described, but the acute curvature and presence of a perforation at either end perhaps for insertion of a tie-string, to us suggests some aesthetic rather than a strictly utilitarian objective. Possibly it was worn as a bracelet, wristlet, or in some other way as a personal ornament. The second piece differs in being nearly straight; it is 4 inches long,  $\frac{1}{4}$  inch wide, and  $\frac{3}{8}$  inch thick, and the cross section is oval with one side somewhat flattened. One end is cut square, and is pierced by a  $1/12$  inch conical hole. The other end is pointed as though not finished off after the piece was severed from its former attachment. The object appears rather too heavy to have served as a bodkin or perforator, and is much too blunt for satisfactory service in the latter capacity. It, too, may have been some sort of ornament; if unfinished, any guesses as to its ultimate purpose are futile.

<sup>46</sup>La Flesche, 1924, p. 113.

One large specimen of bison ulna has evidently been split off, and shows a moderate degree of polish from use. The distal end is worn and bruised, and has apparently been subjected to hard usage. Its use is not definitely known, but the type has been found quite commonly in sites of all periods in southern and central Nebraska. In the absence of anything more satisfactory, the authors feel that the term "pick" is perhaps as plausible a tentative identification as any. If grasped by the broad proximal portion of the bone and drawn downward and slightly toward the operator, a reasonably effective tool for excavating caches, house pits, and the like may be had. For breaking hard ground it would certainly have been more efficient than a scapula hoe or spade.

### WORK IN ANTLER

From a roadside cache was taken a large cylindrical "tapping" tool, made from the unsmoothed curving basal portion of a deer antler. It measures nearly 6 inches in length, about an inch in diameter, and both ends are fairly well rounded off. The upper end bears numerous nicks and cuts, apparently resulting from use rather than from the original process of manufacture. There is no concavity at either end which might have served as a socket for knife or scraper, and such a use seems improbable in the present example. Implements of this general type, but of variable size, have been found in a number of prehistoric villages in southern, central, and eastern Nebraska, as well as on the lower Solomon River in northern Kansas.<sup>47</sup> It has been suggested that they were used to detach flakes from flint cores in the initial stage of arrowpoint manufacture, and the scratches on the present specimen rather appear to indicate some such service.

The object figured in Plate X, b is  $4\frac{3}{4}$  inches long and averages  $\frac{7}{8}$  inches wide. The upper end appears to have been cut and finished, so that it represents a completed tool of some sort; the other end tapers to a somewhat rounded flat chisel-like edge. The back, which shows the roughened surface of the antler from which it was cut, is straight and flat; the curving front shows the cancellous tissue. In appearance and size it suggests a wedge or chisel, possibly used in the manufacture of wooden vessels or some other objects.<sup>48</sup>

Perhaps the most interesting objects of antler from the Leary site are the socketed projectile points, of which two complete examples were found. The better specimen is  $2\frac{1}{4}$  inches long, highly polished and very evenly tapered; it is circular in cross section and has a conical socket at the base  $\frac{1}{8}$  inch deep. The second specimen is cruder, and measures just under  $\frac{7}{8}$  inch long;

<sup>47</sup>Wedel, 1935, pp. 201, 232; Strong, 1935, pp. 61, 98, 164, 192, 234, 241, 249, 261.

<sup>48</sup>See Strong, 1935, p. 99 and Plate 6, Fig. 1, a.



it, too, has a basal socket. Seven other antler tips apparently were intended to be made into similar points. Four of these range in length from  $1\frac{1}{4}$  to  $2\frac{1}{2}$  inches and are unmodified save insofar as they exhibit the scars made in cutting the tips off the antler; all show the natural curve of the horn. Three others also have been partially cut through and then broken off, but very clumsily; there seems no reason to doubt that they were intended for projectile points. It would appear, therefore, that this type is a very definite feature of the artifact complex at the site.

So far as the present writers have been able to determine, there is no previous record of socketed antler or bone projectile points from Nebraska. They have not been found in the prehistoric Upper Republican Culture of southern and central Nebraska, nor do we know of any from the Nebraska Culture of the eastern end of the State. The toggle-head harpoon, of antler, found by Gilder in the latter area<sup>49</sup> is of wholly different type. The limited excavations made to date in northern and central Kansas<sup>50</sup> have not revealed its presence there, nor have we noted it in any of the collections made locally in that State. As this paper is being written, however, the Archeological Survey field party of the Nebraska State Historical Society is carrying on intensive excavations at the Wright site, a protohistoric Pawnee village on Beaver Creek one mile west of Genoa. Bone projectile points of two types are reported. One type has a socketed base, differing however from those found at the Leary site in that the base is square instead of round. The second type of point has a constricted butt, about  $\frac{1}{2}$  inch long, evidently a stem intended to be set into a hollow shaft. As will be pointed out elsewhere, there is evidence that the protohistoric Pawnee were in direct contact with peoples of essentially the same culture as that found at the Leary site, and it seems not improbable that the common presence of antler or bone points is indicative of commercial intercourse between the two cultural groups. In the light of our present knowledge, it would appear that this form is a relatively late arrival in Nebraska, probably of late prehistoric or early protohistoric occurrence, but additional work may yet reveal its presence in other and perhaps earlier cultures in the region. Outside the State it appears to have a very wide distribution, mainly in eastern and southeastern United States. Archeologically, it has been reported from several Ft. Ancient Culture sites,<sup>51</sup> as well as on Onondaga,<sup>52</sup>

<sup>49</sup>Strong, 1935, p. 261 and Plate 9, Fig. 2, e.

<sup>50</sup>Wedel, 1935, pp. 210-250; Udden, 1900.

<sup>51</sup>Mills, 1904, p. 165, 1906, pp. 90-93, 1917, p. 246; Smith, 1911, p. 185 and Plate 21, 1-5.

<sup>52</sup>Skinner, 1921, pp. 128-129, Plate 23, f-h.



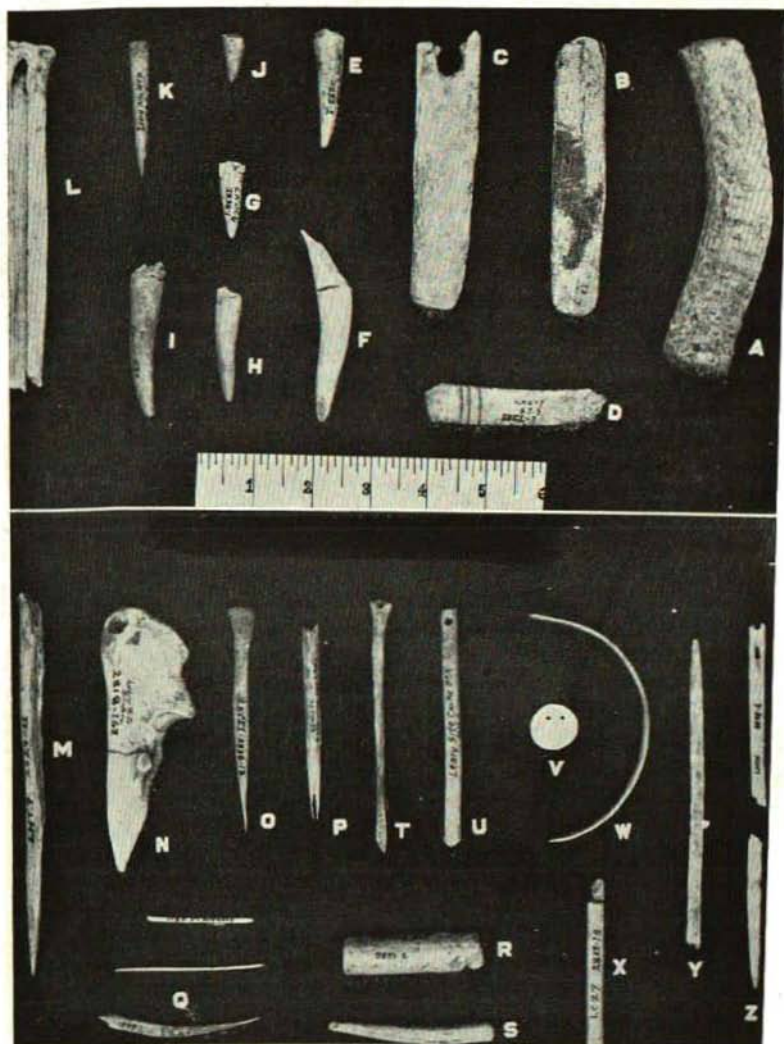


PLATE X

Bone artifacts, Leary Site. a, antler tapping tool; b, antler chisel (?); c, broken bison rib shaft straightener; d, incised deer rib fragment; e-i, cut off antler tips; j, k, socketed antler arrow points; l, grooved split animal bone; m, bone awl; n, animal ulna bone graver; o, split bone awl; p, split bird bone with two converging points; q, fine bone perforators or awls; r, tubular bone bead or plume holder (?); s, bone object; t, bird bone graving tool (?); u, perforated bone object (use unknown); v, shell ornament; w, semi-circular bone object with perforations in each end; x, bone, grooved at end; y, z, thin flat eyeleted needles, broken.

Erie,<sup>53</sup> and Cherokee<sup>54</sup> villages. According to Hooton and Willoughby, it has "wide distribution . . . over . . . central and eastern United States . . . [specimens] from the Ohio burial mounds, and also on very old historic arrows from the southeastern Indians"<sup>55</sup>. Willoughby also pointed out that examples in Peabody Museum at Harvard University and in the American Museum of Natural History in New York were "all from the Algonquian area or the region immediately bordering it" . . . He further figured points from the Maine shellheaps, Staten Island, Madisonville (Ohio), and mounds in Poinsett and Cass Counties, Arkansas.<sup>56</sup> Ethnologically, Skinner says they were used by the Menomini "for the chase alone"<sup>57</sup> and Wissler says of the Blackfoot that "preceding the introduction of iron, points of bone and of deer horn were used . . . [and] some were made from buffalo horns".<sup>58</sup> In Nebraska, therefore, their presence would appear to indicate some sort of direct relationship with more easterly groups.

Three remaining objects made of antler are of unknown use. One is a well-polished piece  $2\frac{1}{2}$  inches long and about  $\frac{1}{4}$  inch thick, with a slightly flattened cross section. One end is rounded off and nicely finished; at the other the workman failed to cut deeply enough and in breaking it off, carried along a small extra piece of bone. One surface bears a short scratch or groove, which appears to be accidental. Another specimen is  $2\frac{7}{8}$  inches long, with a rounded butt  $\frac{1}{8}$  inch in diameter, and tapers to a point from which the tip has been broken off; it is slightly curved and the surface has a somewhat weathered appearance. It does not appear to have been intended as a projectile point, but there is a possibility that it may have been a pottery decorator; this, however, is merely a guess. The third piece is nearly straight,  $3\frac{3}{8}$  inches long, and about  $\frac{1}{4}$  inch wide, suggesting a strip cut out of an antler and left unfinished; its purpose is wholly unknown.

Several tips of deer antler were found which show no workmanship at all, and it is impossible to say with assurance whether or not some of them may have been laid aside for the manufacture of projectile points or whether they were merely reject or refuse material.

#### WORK IN SHELL

In striking contrast to the abundance of pottery and stone artifacts, worked shell was extremely scarce. A single specimen came from Cache 5. This was a thin disk  $\frac{3}{4}$  inch in diameter, with

<sup>53</sup>Parker, 1907, p. 545 and Plate 35, Figure 8.

<sup>54</sup>Harrington, 1922, p. 209 and Fig. 35.

<sup>55</sup>Hooton and Willoughby, 1920, p. 51 and Plate 7, e, f, i.

<sup>56</sup>Willoughby, 1901, p. 434.

<sup>57</sup>Skinner, 1921 a, p. 322.

<sup>58</sup>Wissler, 1910, p. 157.



two small perforations set  $\frac{1}{4}$  inch apart within  $\frac{1}{4}$  inch of the edge. It bore no markings or decoration of any sort, and may have been suspended as part of a necklace or other personal ornament. Whole and broken but unworked clamshells were found in considerable numbers throughout the site, as will be pointed out in a subsequent section.

### TEXTILES

A single tiny fragment of native textile was found in Cache 5 in the form of twisted string. The material is a very dark brown or black in color and quite fine, and was preserved by partial carbonization. Specific identification is lacking, but the fibres are very strongly suggestive of bison-hair when viewed through a hand lens. The string consists of two elements, each in turn composed of a number of fine fibres twisted together. The twist is to the right, i. e., clockwise. It is much finer in appearance than bison-hair cordage and textiles found in nineteenth century Pawnee sites. There are from the Leary site no examples of true weaving or of basketry of any sort.

### METAL

A small crudely twisted copper cone, evidently used as a jingle on clothing, was found in Cache 99a underlying House 1. This was about an inch in length, and was of the same type as those used so commonly on the costumes of the later Plains Indians. It was found near the top of the cache, but under the house floor, and some uncertainty exists regarding its relation to the site in general. There was some evidence of disturbance of the ground here, and it is possible that the metal was carried in through a rodent burrow or in some other way; in other words, it may be intrusive. Efforts to determine its origin by analysis of the metal have been unavailing. The Iowa who have inhabited the site and adjacent ground for nearly a century may have lost the specimen, so that no significant relationship need exist between the copper and the other antiquities. The exact identification of this piece is a matter of some importance, since if it is of white provenience, as is possible, and is inclusive, it would throw much light on the age of the culture here represented and the comparative lateness of the rectangular earthlodge in the Plains. The total absence of any other metal, of glass, or other contact material in the excavations in general, makes it seem rather likely, however, that the piece may have been actually intrusive.

### VEGETAL REMAINS

The great abundance of bone hoes and storage pits is evidence that the inhabitants of the Leary site practised agriculture on an extensive as well as intensive scale. Their garden plots for the

cultivation of maize, beans and pumpkins were probably situated on the well watered and ample bottom lands across the Great Nemaha River and along Roy's and Mission Creeks, all within comparatively easy reach of the site, or wherever loose mellow soil could be found at the mouths of small washes descending from the bluffs east of the village. As has already been pointed out, the caches were usually emptied of their contents and filled with refuse prior to abandonment, so that in comparatively few instances is it possible to recover any amount of either their cultivated plant foods or of the wild species which they used.

Four vegetal species were represented in our collections from the Leary site, though several which were doubtless utilized have not been found. Names of those present, with relevant comments, are as follows:<sup>59</sup>

Corn (*Zea mays*). "These are all of flour corn type, are of typical form and average size (about 9-10 mm. long and 6-7 mm. deep). Flour corn was the type most commonly grown and used by the village Indians of this region....Fragments of charred corn cobs [are] about 15 mm. in diameter, [and] have had ten and twelve rows of kernels. In size, row number, and general appearance these suggest flour corn type and very likely were of this type...."

Squash (*Cucurbita pepo*). "Charred seeds and fragments of shells....These seeds resemble closely those of a squash collected by Dr. Gilmore from a Santee woman at Santee, Nebraska, in 1924. It is described as being 'small, oval, green and white striped'."

Yellow Lotus, Water Chinquapin (*Nelumbo lutea*). "The seeds and roots of this plant were commonly used for food by Indians of the northeastern, Great Lakes, and eastern prairie region....Although the seeds are reported to have been widely used by Indians, this is the first archeological specimen which has come to our attention."

According to information supplied by Mr. Ed. Leary, who has lived in this immediate vicinity for some fifty years, the ponds in the bottoms along the Great Nemaha formerly contained quantities of this "water chinquapin", whose tubers the Iowa used to gather for food. Gilmore states that the "hard, nut-like seeds were cracked and freed of their shells and used with meat for making soup."

A few pits of the wild plum (*Prunus americana*) were found, but no beans.

<sup>59</sup>For the specific identifications and remarks here given we are indebted to V. H. Jones, Assistant in the Ethnobotanical Laboratory, University of Michigan.—Letter of April 15, 1936.



## MAMMALIAN, AVIAN, AND MOLLUSCAN REMAINS

Bones of a number of mammalian and avian species were recovered from the various caches. Most common were those of deer (both black-tailed and white-tailed), bison, and elk, at least the first and last forms undoubtedly having been abundant and easy to obtain in the broken timbered terrain in the vicinity of the village site. Bison bones were much more numerous than they are in the village sites, probably earlier, of the Nebraska Culture in the immediate Missouri Valley to the north and south of Richardson County,<sup>60</sup> but appeared to be less plentiful than in the protohistoric and historic Pawnee sites of the lower Loup-Platte area or in the prehistoric Upper Republican villages of southern and central Nebraska. Both Upper Republican and the Pawnee peoples of the eighteenth and nineteenth centuries were, of course, situated much nearer the range of the great bison herds, which undoubtedly accounts in part at least for the relative abundance of bones of the species in their villages. Whether the peoples who inhabited the Leary site were more prone to make hunting forays westward to the bison country than were the earlier residents of the Missouri River bluffs, or whether the bison were for some reason ranging farther east at the time than in earlier days is an interesting problem, but one for which we have at present no positive answer. It should be noted, however, that the prong-horn antelope does not appear in our faunal list from the Leary site, though the species is quite common in both pre-contact and contact sites farther west, and seems next in order of abundance to the bison in protohistoric villages in central Kansas. Of carnivores, wolf, coyote, and dog remains were fairly plentiful at the Leary site, but wildcat and puma do not appear. The only rodents represented, curiously enough, were pocket gopher and beaver; there were no rabbits or squirrels, though these must have been eaten, too. Such forms as badger, otter, mink, and lynx, all of which are usually met with in Nebraska sites, are absent from the series collected by us at the Leary site.

The mammalian faunal list follows:<sup>61</sup>

- American Beaver (*Castor canadensis*) (Kuhl)
- Pocket Gopher (*Geomys*, sp. indet.)
- Gray or Timber Wolf (*Canis nubilus*) (Say)
- Northern Coyote (*Canis latrans*) (Say)
- Dog (*Canis familiaris*) (Linnaeus)
- Raccoon (*Procyon lotor*) (Linnaeus)
- Northern Plains Skunk (*Mephitis hudsonica*) (Richardson)
- White-tailed Deer (*Odocoileus virginianus*) (Boddaert)

<sup>60</sup>Cf. Strong, 1935, pp. 137, 262.

<sup>61</sup>Identifications by C. B. Schultz and T. M. Stout, Nebraska State Museum, University of Nebraska, Lincoln.

Black-tailed Deer (*Odocoileus hemionus*) (Rafinesque)

Elk, or Wapiti (*Cervus canadensis*) (Erxleben)

American Bison (*Bison bison*) (Linnaeus)

Also fairly numerous, although because of their smaller bulk much less conspicuous than mammalian remains, were bird bones. Most of those seen were broken and incomplete and were, therefore, not saved, but a few whole or unusually large specimens were retained. The present writers are unaware of any published list of avifauna from other archeological sites in Nebraska, hence no comparisons with regions elsewhere in or around the State can be made. Curiously enough, no ducks or geese and but a single gallinaceous species are represented, though this is probably due to the inadequate sample obtained rather than to a true absence of the forms. Prairie chicken bones, tentatively identified from several prehistoric sites on the upper Republican in Franklin County, were not noted at the Leary site. In this series, turkey remains are most numerous, being in fact the only species represented by more than one or two bones. Turkeys were no doubt plentiful in aboriginal days in the thick woods about the site, and may have formed an important article of food; whether or not use was also made of their feathers we do not know. Waders and shore birds, with which the marshy bottoms along the Nemaha must have teemed, are second in abundance, being represented by three species. Birds of prey include one and possibly two species of eagle, taken perhaps for their feathers. It is to be regretted that a much larger sample could not be secured, since, aside from their relation to the human element, a fuller knowledge of the avifauna at this locality during occupancy of the site would be of much interest also in a reconstruction of the contemporary environment and for a comparison with the present day species in southeastern Nebraska.

The list of avian species whose remains were represented in our collections is as follows:<sup>62</sup>

Turkey (*Meleagris gallopavo*)

Pied-billed Grebe (*Podilymbus podiceps*)

American Bittern (*Botaurus lentiginosus*)

Long-billed Curlew (*Numenius americanus*)

Crow (*Corvus brachyrhynchos*)

Bald Eagle (*Haliaeetus leucocephalus*)

Eagle (Sp. indet.)

Fishbones were fairly common, but we have been unable to obtain specific identification. Probably they are of such species as catfish, carp, and sturgeon, all of which are abundant in the

<sup>62</sup>For specific identification of bird remains from the Leary site we here acknowledge our debt to Dr. A. Wetmore, United States National Museum, Smithsonian Institution, Washington, D. C.—Letter of July 16, 1936.



Great Nemaha and in the nearby Missouri River. Just how they were taken is not directly indicated in our data, since no bone fish-hooks, harpoon heads, or other appliances clearly designed for this purpose were found.

Molluscan remains were present in sufficient numbers to indicate that shellfish were quite extensively utilized in domestic economy. The fleshy parts were in all probability eaten, while the shells were crushed for use in tempering pottery. Seven species have been identified from the site, as follows:<sup>63</sup>

*Amblema costata* (Raf)

*Lampsilis ventricosa* (Barnes)

*Lampsilis siliquoidea* (Barnes)

*Quadrula pustulosa prasina* (Conrad)

*Cyclonaias tuberculata* (Barnes)

*Alasmidonta complanata* (Barnes)

*Fusconaia flava* (Raf)

Of these seven, the first two, with their comparatively heavy shells, and the third, appear to be most abundant. Baker states that "These mussels now live in parts of Nebraska and do not differ in any way from the living representatives. None appeared to have been worked for artifacts and they were probably used as food, in the same way as our Illinois Indians, who used these mussels in large quantities for food purposes". The fourth species in the list has been reported by Strong from the Dooley site (Upper Republican Culture), on Lost Creek in Franklin County, while the same investigator found the first and third species at the Rock Bluffs village site in Cass County;<sup>64</sup> otherwise, his lists and ours show no points of similarity.

## SUMMARY AND CONCLUSIONS

The archeological remains at the Leary village and burial site, as has been pointed out from time to time during the foregoing discussions, present a number of features found but rarely or not at all in other cultures previously examined in Nebraska. Limitations of time and space unfortunately forbid a detailed trait by trait comparison with Upper Republican, Nebraska, Pawnee, and other patterns, but since each of these has been treated in more or less detail elsewhere and its characteristics made available for study, it need only be pointed out here that the resemblances of the Leary site to any of these are far overshadowed by its similarity to certain widespread cultural manifestations east of the Missouri River. So far as the Leary site is concerned, the problem of identifying its inhabitants as to tribal or probable linguistic affiliation is

<sup>63</sup>Identified by Dr. F. C. Baker, University of Illinois.—Letter of April 20, 1936.

<sup>64</sup>Strong, 1935, pp. 101, 138.

primarily an archeological one, since there is no historical record of an occupied Indian village at this point. According to Villiers, Bourgmont camped at the mouth of the Nemaha River on June 4, 1714, but he makes no mention of an Indian camp or village in the vicinity,<sup>65</sup> as he certainly would have, had the site been inhabited at the time. Lewis and Clark in 1804, so far as we know, were the first to note these remains, then already abandoned. The absence of European trade objects, with one doubtful exception, makes it fairly certain that the people who made the shell-tempered pottery, dug the innumerable cache pits, and perhaps erected the nearby burial mounds were gone before Bourgmont's time. The identification of the site as Pawnee by Zimmerman and Fowke<sup>66</sup> rests apparently on Iowa Indian traditions alone, and neither archeology nor history afford any verification whatsoever for such a conclusion. The antiquities on the Leary village site are quite readily distinguished from those of the nineteenth century Pawnee<sup>67</sup>, and what similarities obtain between it and protohistoric Pawnee are probably due to trade and intercourse between two different but approximately contemporaneous cultural groups. The movements of the Pawnee after 1800 are fairly well documented,<sup>68</sup> and there is, to the best of our knowledge, not one single shred of evidence that this tribe was resident on the lower Nemaha in 1837, when they were supposed to have been victims of an Iowa attack. Colonel Dodge and a party of dragoons crossed the Nemaha but a short distance west of the Leary site in 1835, but reported no Indian settlement until they reached the Oto village on the Platte at Yutan and no Pawnee until they arrived at the Clarks site eighty miles or more above the Oto<sup>69</sup>. Both before and after his trip the Pawnee were expressly stated by explorers to be living in settled earth-lodge villages on the lower Loup and Platte,<sup>70</sup> venturing southward only on occasional hunting trips. If the Iowa actually fought the Pawnee on the lower Nemaha in 1837 as claimed in their traditions, the latter must have been present as a hunting or war party; we see no reason whatsoever for regarding the Leary site and its remains, as above described, as of Pawnee origin, and are convinced that archeological and historical evidences are completely at variance with such an identification.

In Table III we have summarized the archeological features of the Leary site and have compared them, item for item so far as possible, with the characteristics given for the Oneota culture of Iowa. In the absence of a detailed report on that pattern, a pre-

<sup>65</sup>Villiers, 1925, p. 57.

<sup>66</sup>Zimmerman, 1918, p. 486; Fowke, 1922, p. 153.

<sup>67</sup>Cf. Wedel, 1936, pp. 23-94.

<sup>68</sup>*Ibid.*, pp. 9-23.

<sup>69</sup>Wedel, 1936, p. 19.

<sup>70</sup>*Ibid.*, pp. 18-20.



cise and full comparison with the Leary site cannot be made at this time. A glance at the table will show, however, that in the main the two lists are practically identical; where discrepancies occur, as in regard to mound burials, these are usually in matters of detail and may well be due to inadequate data in one or the other of the two series. It may be added that a series of representative sherds and other artifacts from the Leary site has been examined by Keyes, with whom we have further discussed in some detail the cultural manifestation here represented, and it is his expressed conviction that the site may be safely assigned to the Oneota culture.<sup>71</sup> This, together with the consistent agreement between the two trait lists in Table III furnishes, we believe, adequate grounds for regarding the Leary village and burial site as Oneota.

The Oneota culture, which is as yet not definitely identified as to tribal affiliation, is quite widely spread in Iowa, taking its designation from the Siouan name for the Upper Iowa River in the northeastern corner of that State where it has been most extensively studied. It has been found on the Upper Iowa River in Allamakee County, on the Little Sioux in Dickinson, Clay, and Woodbury counties, on the Big Sioux in Lyon County, and on the Mississippi River bluffs in Louisa County. Keyes points out that "in a general way this strange distribution corresponds to what we know of the wanderings of the Ioway"<sup>72</sup> but in a recent letter has suggested that, in view of the wide distribution of certain elements regarded as typically Oneota, "possibly these traits may be, in part at least, Dhegihan as well as Chiweran."<sup>73</sup> Sherds markedly similar in tempering, decoration, and rim type to those of the Leary site have been sent to the Nebraska State Historical Society Museum<sup>74</sup> from a village site five miles southwest of Miami, Saline County, Missouri; and Fowke<sup>75</sup> figures a small pot and describes remains reminiscent of Oneota type found apparently at this same spot. It has already been stated in the discussion on ceramics that certain elements which occur frequently at the Leary site have been found by us at Lynch on Ponca Creek and on the Elkhorn in Antelope County, Nebraska; and in more or less attenuated but still recognizable form they are known to occur in Kansas on White Rock Creek in Jewell County, on the Solomon River at Glen Elder in Mitchell County, on Paint Creek in McPherson County, and at Augusta on the Walnut River in Butler County. We feel that Oneota influences will eventually be recognized in the Arkansas Valley in central Kansas, although as yet almost nothing is known

<sup>71</sup>Personal communication, August, 1935.

<sup>72</sup>Keyes, 1929, pp. 140-141.

<sup>73</sup>Letter of November 14, 1935.

<sup>74</sup>Through the courtesy of Mr. Clyde R. Amsler, Marshall, Mo.

<sup>75</sup>1910, pp. 82-92 and Fig. 19.

of this area beyond surface finds and a few excavated but unpublished remains. Winchell in Minnesota, recorded pottery from sites on Spring Creek near Red Wing and from Cambria,<sup>76</sup> the pot and sherds in both instances matching very closely those from the Leary and other Oneota sites. It may be said, too, that the Oneota-like traits exhibited in sherds from the localities mentioned above are in addition to similarities in type of projectile points, presence of catlinite (in some instances, as at White Rock Creek, Kansas, in the form of disk pipes), and other traits. It would appear probable, also, that the protohistoric Pawnee borrowed a number of items from the Oneota, including the platform disk pipe, incised catlinite tablets, antler and bone projectile points, possibly the use of small unnotched triangular arrowpoints to the virtual exclusion of all other types, and certain elements in the field of ceramics. A detailed discussion of the interrelationship between Oneota, Pawnee, and the protohistoric villages of central Kansas cannot be presented here, but a number of extremely fascinating problems are emerging with acquisition of new data on each of these patterns. We hazard the guess that when the Oneota culture has been more extensively investigated in its western manifestations, a flood of light will be thrown on the still more or less perplexing problem of culture growth and change in the Central Plains area in very early historic times. If the Oneota proves to be a Siouan pattern, as Keyes has aptly suggested, then a number of the problems in this area may further resolve themselves into questions of the interplay of cultures which were borne respectively by peoples of Siouan, Caddoan, and probably one or two other linguistic stocks.

The age of the Leary site, i. e., the time of its occupancy, can be inferred only from its relationships to other cultures in Iowa and Nebraska. With the single exception of a copper cone found under somewhat uncertain circumstances, nothing was dug up which would indicate trade relations with Europeans. Glass beads and metal occurred on the surface, but since the Iowa have been resident on and about the site for nearly a century and have buried their dead on the adjoining hills, such finds on the surface are of no value in dating the subsurface remains. So far as direct evidence goes, then, the Leary site would appear to be pre-contact. As has been shown, however, it is obviously very closely related to the Oneota culture of northeastern and northwestern Iowa, where in at least three sites, Keyes has discovered copper, brass, glass beads, and traces of iron<sup>77</sup> in undoubted association with the aboriginal remains. In view of the virtual identity, culturally, of Leary and the Iowa Oneota remains it seems improbable that there was any very great difference in them; the more easterly villages,

<sup>76</sup>Winchell, 1911, pp. 453, 742, and Plates VI and VII.

<sup>77</sup>Letter of September 20, 1935.



lying nearer the French trading posts would logically be the first to receive trade articles, but there is no reason to believe that the Nebraska peoples would lag by more than a few decades. We are uncertain of the earliest date at which traders reached this area, but it seems unlikely that any considerable amount of trade goods was entering the Iowa region very long before 1650. The comparative lateness of the culture is further indicated by the fact that it seems to have had negligible effects or none at all on the major prehistoric patterns of Nebraska such as the Upper Republican, but did noticeably influence the large and apparently more or less contemporaneous protohistoric Pawnee villages on the lower Loup where limited amounts of copper and glass beads but very little iron have been found. Likewise, Oneota-like traits do not seem to appear in Kansas until protohistoric, or at the earliest, very late prehistoric times. In short, to us it would appear from the foregoing facts that the Oneota culture is a late prehistoric and protohistoric manifestation; it seems unlikely moreover that the Leary site is much, if any, more than four or five centuries old, and it may be, conceivably, more recent than that.

If the estimate just given proves reasonably accurate in the light of future investigations, an interesting problem arises in connection with the development of house types in Nebraska. It has already been demonstrated that the square earthlodge found at the Leary site undoubtedly was used by the Oneota inhabitants and could not very well have been intrusive. This implies the survival into virtual protohistoric or post-Columbian times of a dwelling type heretofore found only in strictly prehistoric and undated cultures, which was superseded in historic times by the well-known and abundantly documented circular earthlodge of the upper Missouri village tribes<sup>78</sup>. Sherds of Upper Republican type, such as might reasonably be expected in association with this type of habitation, were indeed dug up in this house as well as elsewhere on the Leary site but in such small quantity that were it not for the questions raised by the unexpected finding of a rectangular earthlodge, these aberrant sherds might be readily explained away as intrusive, left by earlier residents on the site. Pawnee culture has been traced back with reasonable accuracy to about 1650 or 1700, i. e., to about the beginnings of actual trade relations with Europeans, and here the habitations are uniformly circular in floor plan. If the earthlodge uncovered at the Leary site was a borrowing by the Oneota peoples from the Pawnee or their hypothetical ancestors or predecessors, the Upper Republican peoples, then it is to be expected that further work in central Nebraska in the Pawnee area should furnish enlightenment on the exchange of cul-

<sup>78</sup>Cf. Strong, 1935, p. 276; also Wedel, 1935, pp. 172-174 and 1936, pp. 98-99.

ture between the two groups concerned. Additional work in identified Pawnee sites of very late prehistoric and early protohistoric times, especially those falling between 1500 and 1650, is urgently called for, and this, perhaps one of the most critical and important periods in the history of the sedentary plains peoples, is precisely the one where accurate information is today lacking. Until more detailed and extended knowledge has been gathered on the earliest post-Columbian phases of Pawnee history and additional work done on the Oneota culture on its western peripheries, the relationship of these two important patterns to each other, their respective roles in the unfolding of Central Plains culture, and many other fascinating and significant problems must remain unanswered.

TABLE III

## SUMMARY AND COMPARISON OF TRAITS

ONEOTA CULTURE	LEARY SITE
<b>Sites:</b> Cover 10-100 acres, on open river terraces or prairie bluffs	125 acres or more on river terrace
<b>Houses:</b> no information; boulder circles on Blood Run site	Earthlodge rare; probably perishable pole and bark structures
<b>Caches:</b> no data	Abundant
<b>Mounds:</b> burial; geometrical, enclosures, etc.	Middens in village; burial (?) mounds on bluffs possibly associated with village; no enclosures, etc.
<b>Burials:</b> in mounds and cemeteries, primary, usually extended; accompanied by pottery, etc.	Primary, extended, supine, few artifacts, no pottery; in open; possibly also in mounds; secondary bundle burial.
<b>Pottery:</b> abundant; shell-tempered, unpolished, generally light brown in color; plain decorations of trailed or punctate designs; finger-imprinted rims either vertical or recurved; 2 or 4 handles set in the angle between rim and bowl	Abundant; 99.7% shell tempered; unpolished; gray or light brown color; incised, trailed and punctate decoration; rims vertical, recurved, or flaring; lips finger imprinted, notched, etc.; large vessels with 2 or 4 vertically placed handles
Mealing stones small, of granite	Granite mealing or "anvil" stones
Grooved hammers and mauls abundant	Grooved mauls present



TABLE III (Continued)

ONEOTA CULTURE	LEARY SITE
Polished celts numerous	Present
Grooved axes crude	Grooved notched crude axes
Gaming stones: no data	Common
Hammerstones (hand mullers)	Common
Abradants: no data	Arrowshaft smoothers of brown Dakota sandstone, paired
	Pumice lumps
<b>Pipes:</b> diminutive Siouan and disk-stem forms	"Siouan" and disk stem, of catlinite, sandstone, etc.
Catlinite tablets, incised	Present
Arrowheads, small, triangular	Small triangular unnotched (95%)
<b>End scrapers:</b> no data	End scrapers abundant
<b>Chipped stonework:</b> no data	"Gravers", drills, knives of various types, celts
Bone implements plentiful, awls, etc.	Awls, scapula hoes, ulna "picks", pottery decorator (?), flat eyed needles, arrowshaft straightener, polished tubes, and miscellaneous unidentified pieces—moderately plentiful
<b>Work in antler:</b> no data	Cylindrical "tapping" tools (?) chisel (?); projectile points with socketed base; unidentified miscellaneous
<b>Work in shell:</b> no data	Very rare; one bi-perforate clamshell disk
<b>Native textiles and cordage:</b> no data	Bison-hair (?) cordage
<b>Objects of metal:</b> Tubular copper beads, coiled brass wire ear ornaments, rolled brass bracelets and spangles, Venetian (?) blue glass beads	Crude copper cone; possibly intrusive

**Editor's Note:** In the Pawnee mythology (Dorsey, p. 19) "The Four Gods in the West" says "When the people were first put on earth they were placed near what is now Nemaha, Nebraska." A.E.S.

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