The Clarkson site (13WA2): an Oneota manifestation in the Central Des Moines River Valley

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The Clarkson site (13WA2):
An Omeota manifestation in the
Central Des Moines River Valley

by

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Signatures have been redacted for privacy

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CHAPTER 1.

INTRODUCTION

General Background

During the 1960s, as part of a general reservoir flood control program for the Mississippi-Missouri River drainage network, the United States Army Corps of Engineers began construction of Red Rock Reservoir. This reservoir was designed to impound the waters of the Des Moines River in a large pool extending from the Iowa towns of Knoxville and Pella north to the southern limits of the city of Des Moines. The dam was completed in 1969, and almost immediately, the conservation pool formed a permanent lake filled to an elevation of 725 - 730 feet above sea level and covering an area of 8,950 acres. By the summer of 1973 water had risen into the flood control pool several times during periods of high flooding, and the impounded waters had spread out over 65,500 acres of land to an elevation of 780 feet (Gradwohl 1973: 5; U.S. Army Corps of Engineers 1966).

In an attempt to salvage as much archaeological information as possible from the reservoir area prior to completion of the flood control project, the National Park Service, as part of the interagency river basin salvage program, contracted with Iowa State University to archaeologically investigate specified sites within the area during the summers of 1964 through 1966. A report on the individual sites covered by those contracts has been submitted to the National Park Service (Gradwohl 1973). Supplementary work was also undertaken at some
additional sites not included specifically in the original contracts.

The excavation of the Clarkson site (13WA2),\(^1\) within the flood control pool of Red Rock Reservoir, was conducted under these auspices during the summer of 1966 and is the subject of this study (see Figure 1).

**Statement of Purpose**

It is the intent of this study to present in a systematic manner the investigation and analysis of materials from the Clarkson site, a double-component archaeological site in Warren County, Iowa. The primary component is a prehistoric Oneota occupation area. The second component consists of material reflecting the remains of the late 19th and early 20th century Euro-American village of Clarkson. The primary focus of this study is the description and interpretation of the prehistoric component and its importance as it relates to the definition of the Moingona Phase as proposed by David M. Gradwohl (1967: 211-212) and to the more general occurrence of Oneota manifestations throughout the Prairie-Plains region. The ultimate value of this discussion extends beyond material description and taxonomy of an archaeological complex to the potential better understanding of the dispersal of Chiwere (and possibly Dhegiha) Siouan speakers in the eastern Prairie-Plains during the late prehistoric and protohistoric times.

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\(^1\)Following the procedure of the Smithsonian Trinomial System, the Clarkson site was designated 13WA2: 13 is the number for Iowa in an alphabetically-arranged list of states, WA indicates that the site is located within Warren County, and 2 designates the number of the site within Warren County.
Figure 1. Location of the Clarkson site within Red Rock Reservoir. (U.S. Army Corps of Engineers map, 1959)
The secondary focus in this study is on the Euro-American settlement of Clarkson and will serve to document in the archaeological record portions of the meager remains of a once-thriving whistle-stop of the Victorian era. In addition to reporting site data as completely as possible, the discussion of the archaeological remains of the historic Clarkson community illuminates aspects of pioneer settlement and economic systems in the region. It also provides a challenging yet humbling perspective on the vagaries of the material (archaeological) evidence in attempting to understand the full range of socio-cultural activities in the past.

Although the author was not involved in the excavation of the Clarkson site, she did visit the site during the fall of 1966 while participating in the excavation of the Howard Goodhue site (13PK1), a nearby Oneota site, as part of the field exercise in the introductory archaeology class at Iowa State University. A continuing intrigue in understanding the culture history of the Des Moines Valley stems back to that experience. Since that time the author has participated in the excavation of several Oneota sites, as well as other prehistoric sites and those relating to the Euro-American settlement of the region. The present study, therefore, is not only a reflection of the author's continuing interest in Oneota archaeology, but also a contribution toward understanding different human responses over time to the environment of the Central Des Moines Valley.
Methodology

The data recovered from the Clarkson site were collected in 1966 according to the general standard methodological field procedures outlined in Heizer, Heizer, and Graham (1975), Field Methods in Archaeology. These procedures, discussed further in Chapter 4, included initial surface collections from the site, an assessment of the expected impact of the reservoir on the locality, an evaluation of the site in terms of excavation potential, setting up a test grid, uncovering the buried cultural horizon, and documenting the location of artifacts and features encountered.

The analytical framework employed here is essentially that used in standard site reports and further outlined in Willey and Phillips (1958), Method and Theory in American Archaeology. For the purposes of description the archaeological data are divided into portable objects and structural remains. The portable objects are initially categorized according to source material, next into units based on formal characteristics, and finally, when possible, into functional groupings. Using operational units defined by Willey and Phillips, two distinct components are described at the Clarkson site.

If an archaeologist is to function at all as an anthropologist he or she must assume that material objects may be used to varying degrees to discern the non-material aspects of culture. To achieve this goal for the Clarkson site data the author has used the general model proposed by C. F. C. Hawkes (1954: 161-162) for the reconstruction of
socio-cultural activities from archaeological evidence. In Hawkes' model the most easily-made reconstruction is the technology of a culture, the next is the economic basis upon which that culture operates, and the most difficult reconstructions are those of socio-political structure and magico-religious beliefs. Rarely are we allowed to infer the latter two levels with any degree of validity. In general this is the case with the domestic settlement data at the Clarkson site: more detail can be elaborated in regard to technology and economic systems than to socio-political structure and magico-religious beliefs and practices.

In conclusion, following the primary emphasis of this study, the prehistoric component at the Clarkson site is tentatively related to larger systems as known through the archaeological evidence. These relationships are viewed throughout the methodological perspective of the Willey and Phillips system of culture-historical integration. The Clarkson site data are linked to other site data in the Central Des Moines Valley region, specifically to a previously defined operational unit known as the Moingona Phase. This basic description further clarifies relationships of the Owens Oneota component at 13WA2 to the larger system of the Oneota Tradition. The author's basis for this latter perspective was achieved by consulting as much of the extensive literature on Oneota manifestations throughout the Prairie-Plains region as possible. In addition, collections of Oneota and related materials were observed in the Des Moines Historical Building; the Sanford Museum in Cherokee, Iowa; the Nebraska State Historical Society;
the Milwaukee Public Museum; the University of Missouri Museum; the Kansas State Historical Society; and in private collections of amateur archaeologists within the Red Rock Reservoir area. Invaluable information was obtained by conversation and correspondence with archaeologists noted for their interest and expertise in the definition of Oneota manifestations. Among others these persons include Mildred and Waldo Wedel, and James Griffin. These comparative perspectives contributed not only to the analysis of the Clarkson site data but to the setting of those data within a framework facilitating further investigation of Oneota archaeological relationships and the possible historic links of these manifestations to the occupation of the Prairie-Plains by groups of Chiwere and/or Dhegihan Siouan speakers.

Plan of Presentation

The discussion of this study is presented in the following manner. Chapters 2 and 3 describe the general environmental and culture-historical setting as a background and context for the aboriginal and historic Euro-American occupations of this locale within the Central Des Moines River Valley region. Chapter 4 involves a description of the archaeological investigation procedures at the site. Chapters 5 and 6 present the analyses of the material remains from the Owens Oneota component and the historic Clarkson component, respectively. Chapter 7 summarizes the prehistoric data as these relate to the definition of the Moingona Phase and makes some suggestions as to the relationships between Oneota manifestations within the Prairie-Plains region.
CHAPTER 2.

THE ENVIRONMENTAL SETTING

The Central Des Moines River Region

The Des Moines River is the largest tributary of the Mississippi River within the state of Iowa, and this river and its tributaries serve as the major drainage system between the Mississippi and Missouri Rivers. The region of the Central Des Moines Valley has been separated by glacial factors into two rather distinct segments, the contact zone of which is the city of Des Moines where the Raccoon River joins the Des Moines.

The Des Moines Valley below the Des Moines-Raccoon fork is that of a mature stream: broad, well drained, and crossed by many tributary streams (Lees 1916: 435-436, 455). The fork marks the southernmost extent of the Cary stadial (Des Moines lobe) of the Wisconsin glaciation, the last great ice sheet to cover Iowa. South of this point the Des Moines River flows out over the Kansan drift plain toward the Mississippi (Ruhe 1969: 157-159). Here the Des Moines River has not only widened its valley but side wash has assisted it in smoothing down the valley slopes and its many tributaries have penetrated nearly all the surrounding prairies, which have been transformed into more or less flat-topped ridges and divides separating wide valleys (Lees 1916: 457).

This transition is described as "abrupt and decisive," somewhat obscured now by extensive settlement and intensive land use. The
stream valley above the fork is much younger. The river there has cut a bed that is narrow and shallow, edged by poorly drained prairies (sloughs) and fewer tributary streams -- a typical glaciated topography.

In terms of biome the Des Moines River drainage is located along the eastern edge of the Prairie-Plains transition zone. This zone is characterized by riverine deciduous forested areas which finger out into the tall-grass prairie lands. The most prominent tree communities represented are the upland species of the maple-linden and oak-hickory forest associations. Some floodplain species also occur, and shrub species, particularly hazelnut and sumac, dominate the margin between the deciduous forest and the prairie (Aikman and Gilly 1948: 69-72). The soil groups present below the Des Moines-Raccoon fork are derived primarily from an original forest and mixed forest-prairie vegetational cover, while the soil association north of the fork reflects a more varied grass prairie-sedge prairie-deciduous forest origin (Gradwohl 1974: 91-92). The dominant native grasses which flourished in central Iowa included big blue stem, little blue stem, and wild dennet grass; grama grass and some of the fescues also occurred in the drier prairie areas (Pammel, Weems, and Lamson-Scribner 1901: 297). The fauna of the area has been a mixture of woodland and grassland species. In addition to fresh-water fishes, mollusks, and migratory waterfowl, there are mice, voles, moles, chipmunks, gophers, squirrels, rabbits, woodchucks, mink, weasels, skunks, badgers, opossums, raccoons, fox, coyote, timber wolf, and white-tailed deer. The mammals which were at one time present but have been exterminated through modern land use
include the black bear, otter, cougar, lynx, wildcat, elk or wapiti, plains bison, marten, fisher, wolverine, swift fox, black rat, porcupine, and pronghorn (Scott 1937: 43-44).

The climate in this region is one of extremes. Within one year's time the temperatures may range from -30°F to 110°F. and the annual precipitation averages between 30 and 32 inches per year (Gradwohl 1974: 92). Most of this precipitation occurs during the growing season and the precipitation in successive months is more irregular in the tall-grass prairies than it is to the east and north in the mixed forest areas (Transeau 1935: 429). Mid to late summer drought is not uncommon. The last killing frost normally occurs no later than April 27 and the first fall freeze may be expected around October 10 (Reed 1941).

The Clarkson-Carlisle Locale

The Clarkson site is located within the Central Des Moines River Valley south of the Des Moines-Raccoon fork within the extreme northeastern corner of Warren County. The legal provenience is the center of Section 1, T 77 N, R 23 W. Presently this area is 2 miles east of the town of Carlisle and within 6 miles of the Des Moines city limits. The site is located on the broad open floodplain about a mile above the west, or right, bank of the Des Moines River. Two northeastwardly-flowing streams bisect this floodplain: the North River is located north of the site and the Middle River passes to the south. The low terrace on which the site is found lies at an elevation of 770 feet.
above sea level, placing the site within the flood control pool of Red Rock Reservoir.

A geological cross-section of an exposed outcrop 3½ miles east of the site on the Middle River was recorded by J.L. Tilton for the Iowa Geologial Survey in 1896. The section shows a mantle of drift and loess 20 feet thick underlain by alternating beds of shale, soft yellow sandstone, bituminous shale, clay shale, and white clay.

...the strata can be traced in the bluff which forms the south bank of the Des Moines and Middle rivers. Beyond this point the exposures are not so continuous, but the principal seam of coal which appears just above the railroad track at the station, comes to an end as it reaches the water level of Middle river, about one-fourth mile east of the bridge at Clarkson. At this point the upper part of the vein is well exposed. The overlying sandstone is present, but not so thick as at Ford, and the dark shale and soft sandstone crop out in the bluff (Tilton 1896: 332-333).

It is not known whether the soft and sulfurous coal was exploited by the historic inhabitants of Clarkson, but Tilton's observation does indicate that sandstone and a source of clay would have been readily available to the inhabitants of the area in prehistoric times. J.H. Lees, in recording the physical features of the Des Moines Valley, noted that the Des Moines constricts somewhat in the vicinity of Clarkson because of the resistant red rock sandstone in that region, leaving steep and rugged river bank walls (Lees 1916: 560, 605).

These steep walls are also notable for the tributaries of the Des Moines south of the Des Moines-Raccoon fork, specifically the North, Middle, and South Rivers. Here the southern walls of the stream
valleys are much more steep than the opposite slopes.

These south walls are generally well timbered while those opposite are bare of trees and grade imperceptibly into the uplands, owing to their greater exposure to sun and wind with attendant desiccation and degradation (Lees 1916: 562).

Therefore, it seems the Des Moines Valley below the fork would offer an ideal setting for agriculturalists: open, well-drained land on a gentle southerly gradient near a ready water supply. The near-by streams provided diet supplements in the form of fish and mollusks, and the stream banks supplied an almost unlimited source of raw materials for the manufacture of pottery and stone tools. The Des Moines may also have served as an avenue of transportation and trade for those items which were not so readily available. The riverine timberland provided the agriculturalists with a constant supply of wood for fuel, housing, and tools; the flora supplied fruit and nuts for gathering; and the forest fauna served as their major year-round meat source. Seasonal hunting of the prairie bison also played an important role in their food quest.

The success of the prehistoric inhabitants of the Clarkson site lay in their exploitation of all the varied econiches available to them. This cultural adaptation may have resulted as a response to changing environmental factors during the Neo-Boreal climatic episode, roughly A.D. 1200-1700. During this time the climate gradually became more cool and moist and the growing season shortened. It is hypothesized that Oneota cultures shifted from a marked dependence upon agriculture around the beginning of this period to a heavier emphasis on hunting (Baerreis and Bryson 1965: 206; Griffin 1964: 250-251).
CHAPTER 3.

THE CULTURE-HISTORICAL SETTING

Prehistoric and Protohistoric Occupations
within the Central Des Moines Valley

The evidence that man occupied the Des Moines River Valley region during or immediately following the retreat of the Wisconsin ice sheet nearly 14,000 years ago has not, to date, been well documented in the archaeological record. Clovis and Folsom projectile point styles of the Paleo-Indian Big Game Hunting Tradition, dating from 10,000 to 8,000 B.C., have been reported from scattered surface finds throughout Iowa (McKusick 1964: 43), but the context of these fluted points within archaeological sites has yet to be demonstrated.

Archaic

The succeeding Archaic Tradition spanned a time range from 8,000 to 1,000 B.C. and was characterized by lanceolate, stemmed, and medium-sized side-notched points and the presence of ground stone tools, particularly fully-grooved axes (Willey 1966: 60, 251; Wormington 1957: 4). The economic base of the Archaic Tradition represents a shift from the dependence upon the nomadic hunting of big game animals such as mammoth and the large, now-extinct species of bison to one of intensive hunting of smaller animals and the gathering of wild food plants. Several unexcavated sites of the Archaic Tradition are indicated by surface finds in the Central Des Moines Valley (Gradwohl
1974: 93; Gradwohl and Osborn 1973a: 69; 1974: 63), and some excavated sites have been reported in other parts of the state (Frankforter 1959; Frankforter and Agogino 1960; McKusick 1964: 68-72; Shutler, Anderson, et al. 1974).

Woodland

During the first millennium B.C. the occurrence of ceramics heralded the beginning of the more widespread Woodland Tradition throughout eastern North America. Along with pottery manufacture came the development of incipient agriculture, the building of burial mounds, and a probable expansion and intensification of regional populations. In Iowa this tradition is represented by semi-sedentary village areas on riverine terraces and by burial mounds, normally located on adjoining uplands. Diagnostic materials found at these sites include heavy cord-marked grit-tempered pottery, side and corner-notched projectile points, three-quarter grooved axes, and grinding stones. Based on a seriation of ceramic types suggested by Logan (1958) the Woodland Tradition within the state may be traced through Early, Middle, and Late developmental stages, the last of which may have existed in some areas well into the 13th century (McKusick 1964: 95). Although compressed in time as compared to northeastern North America, the full range of Woodland manifestations is apparently reflected in the Central Des Moines Valley, with the only exception being the absence of an effigy mound complex, a regional variant exclusive to the upper Mississippi area (Willey 1966: 281). Excavated
information is known for thirteen Woodland sites within Red Rock and Saylorville Reservoirs (Gradwohl 1973: 128-149; 1974: 94; 1975: 15-99, 197-208, 218-234) and mound locations and surface evidence are known for many others (Gradwohl and Osborn 1973a: 70; 1973b; 1974: 63-65).

Great Oasis

Aboriginal life in the Central Des Moines Valley from the first millennium A.D. on had become more diversified, reflecting complex developments to the southeast in the Middle Mississippi River Valley and to the west in the Central and Northern Plains. It is apparent that several groups may have occupied the Central Des Moines River Valley more or less coterminously. North of the Des Moines-Raccoon fork sites of the post-Woodland Great Oasis manifestation have been located. This manifestation, probably related to the Middle Missouri Tradition, is characterized by carefully decorated thin-walled fine grit or sand-tempered jars, small triangular points, and an economic base firmly established on agriculture. Although the presence of at least eleven sites is known in the region on the basis of surface finds, the Meehan-Schell site (13BN110) is the only one to have been fully excavated. The resultant cluster of radiocarbon dates shows that the site was occupied circa A.D. 1000 (Gradwohl 1974: 97; 1975: 122-164). Based on ceramic style and the associated lithic artifacts the Central Des Moines Valley Great Oasis materials correspond closely to the type site materials defined by Wilford for southwestern Minnesota (Wilford 1945; 1955: 138) and to other sites reported for southeastern South
Dakota and northwestern Iowa (Henning 1971; Johnston 1967; Williams 1975). The full time span for the existence of Great Oasis occupation is not yet known, although a range from A.D. 900 to 1300 has been postulated (Henning 1971: 130).

Oneota (Moingona Phase)

Immediately south of the Des Moines-Raccoon fork another prehistoric agricultural complex was found. Here the diagnostic post-Woodland sites yielded globular shell-tempered wares with trailed decoration on the vessel shoulders, small triangular points, chert hide scrapers, and fairly extensive village occupations honey-combed with subterranean storage pits. These sites have been attributed to the Moingona Phase (Gradwohl 1967: 211-212), one of many Oneota manifestations ultimately related to Middle and Upper Mississippian sites in Illinois, Wisconsin, and Minnesota.

Since the earliest part of the twentieth century the list of sites belonging to an archaeological complex known as "Oneota" has been steadily growing. Ellison Orr was the first to describe this complex as he found it in northeastern Iowa (Orr 1914), but it was not until 1927 that Charles Reuben Keyes assigned the name "Oneota" to such materials, since those first reported had come from the Oneota (Upper Iowa) River Valley (Keyes 1927: 224). Most of these archaeological materials were found within burials, some of which contained historic Euro-American trade goods. Therefore it was assumed that the Oneota complex was a rather recent one.
Following this premise, Mildred Mott (1938) set out to demonstrate that these archaeological manifestations could be related to known historic Native American groups. By correlating the locations of given Indian tribes in the historic record with the occurrence of Oneota sites in which historic European trade goods were found, she was able to show that Oneota manifestations of the Orr Focus, primarily in northeastern Iowa, corresponded to archivally and cartographically known positions of the Ioway and possibly those of the Oto. Mott's work further demonstrated the link of Oneota archaeological manifestations with Chiwere Siouan speakers, a suggestion offered earlier by Keyes (1927) and Griffin (1937).

As time went on, more sites of the Oneota complex were reported, expanding the knowledge of its spatial distribution. Within Iowa, sites were reported not only in the northeastern portion, but in northwestern and north central Iowa (Harvey 1971; Henning 1961) and within the Des Moines River Valley from the city of Des Moines southeast to its confluence with the Mississippi (Gradwohl 1967, 1973; Slattery, Horton, and Ruppert 1975; Straffin 1971). Oneota sites in southeastern and south central Minnesota (McKern 1945; Wilford 1945, 1955), extreme southeastern South Dakota (Henning 1961), eastern Nebraska (Frantz 1966; Hill and Wedel 1936), extreme northeastern Kansas (W. Wedel 1959: 131-171), northern Missouri (Berry and Chapman 1942; Henning 1970), the eastern and northern portions of Illinois (Bluhm and Fenner 1961; Bluhm and Liss 1961), and the southern half of Wisconsin (Brose 1970; Gibbon 1966, 1973; Hall 1962) attested that Oneota was not a local
phenomenon but a rather widespread cultural tradition throughout the Mississippi-Missouri River drainage region.

It was evident that within this distinctive complex there were variations in ceramic form that seem to reflect cultural differences. Keyes felt that tribal variation could be the explanation of these differences (Keyes 1927: 223). These variations in ceramic and other traits may also be a result of temporal factors, for many Oneota sites had no trade goods and radiocarbon dates indicated that many were occupied well before the historic horizon. On the basis of these variations in formal and temporal attributes, and in the spatial distribution of given sites, sub-categories were delineated for Oneota manifestations.

As one of these sub-categories, the Moingona Phase is comprised of at least 19 known sites within the Red Rock Reservoir area (Gradwohl 1967: 211-212; 1974: 95). Four of these (including the Clarkson site) have been excavated, two have been tested, and the rest are known from extensive surface collections. To date, no historic trade goods have been found in association with any of these materials and the radiocarbon dates received from three of the sites indicate probable occupation during the 11th through the 13th centuries A.D. (refer to the discussion of radiocarbon dates below).

It is of particular interest to note the distribution of Moingona Phase sites in the Central Des Moines Valley with regard to that of the Great Oasis sites. Each cultural manifestation seems to have occupied mutually exclusive territories within the valley; no Great Oasis sites
have been found south of the Des Moines-Raccoon fork, and no demonstrably Moingona Phase sites have been located north of that point. This apparent separation may be a function of two contemporaneous groups occupying adjacent, yet distinct, territories.

Protohistoric and historic Native American groups

By the middle of the 17th century the advance guard of European exploration had reached the North American interior, with the Mississippi River as the avenue for this exploration. The Native American groups along its banks, open to scrutiny and description by these voyageurs, became themselves informants as to the conditions and occupants of the region to the west. Thus, for almost a century, specific information as to the occupancy of the Central Des Moines Valley was of a general and second-hand nature. Mildred Mott has advised that such information should be used with caution (Mott 1938: 230-234).

From the maps of Marquette and Joliet, published in 1673 and 1674, respectively, a group known as the Moingwena was shown to be in the Des Moines River region, although it is also possible that the river referred to may be the Iowa (Mott 1938: 233). About 1735 a group of French were said to have engaged in battle with the Sauk and Fox who were living on the Des Moines to the north of the Des Moines-Raccoon fork (Mott 1938: 274). From the notes of Auguste Chouteau, written in the 1760s, it is evident that the Ioway lived, at least for a time, in the Des Moines Valley and feared incursions from the Sioux, Otoes, and Omaha (Woolworth 1956: 33). Subsequent reports show that the Ioway returned periodically to the Des Moines during the first two decades
of the 19th century and had at least one village there (Morse 1822: 204; Thwaites 1905: 270). By 1830, all Ioway lands within Iowa had been ceded to the U.S. Government, but the Sauk and Fox (Mesquakies) retained control over a portion of the Des Moines until October 11, 1845 (Gradwohl 1974: 98-99; Royce 1899: 778). The Mesquakies lived and traded at Fort Des Moines, at the Des Moines-Raccoon fork, between 1843 and 1845 (Union Historical Company 1880: 218).

Although the presence of Native Americans within the Central Des Moines Valley during the historic period is noted in the written record, no known archaeological sites can be assigned specifically to the historic Indian occupation there. Some site numbers have been given to areas said to have been groves in which maple sugar was collected by Indians in the late 19th century (Ashworth and McKusick 1964: 8, 20-21), but this fact cannot be demonstrated by the archaeological evidence.

Settlement by Euro-Americans in the 19th and Early 20th Centuries

Although the Central Des Moines Valley region was not officially open to Euro-American settlement until late in 1845, fur traders and soldiers had traversed the area for nearly a century before. The first major settlement was the establishment of Fort Des Moines, presumably an attempt to protect the Sauk and Fox (Mesquakies) from encroachment by the Sioux on one hand and Euro-American squatters on the other (Union Historical Company 1880: 218).
As white settlers flocked into the area from the East, towns were platted by many in hopes that a future commercial center would be developed there. The pioneer industries of coal mining and stoneware production flourished in the valley because the raw materials were readily available. Some of the early pottery kilns documented in the archaeological record (Reynolds 1970; Schroeder ca. 1976; Schulte 1974) include those at Coalport (13MA103 and 13MA106), Moingona (13BN120 and 13BN132), and at Coal Valley (13BN111). Stoneware kilns at Hartford and Carlisle, in the Clarkson area, served those communities during the latter decades of the 19th century (Tilton 1896: 358). Many of the towns founded on coal lasted only as long as the coal industry survived into the early 20th century, and others, such as Clarkson, faded away as surrounding towns grew in prosperity and prominence.
CHAPTER 4.

EXCAVATION OF THE CLARKSON SITE

Previous Archaeological Investigations

In the late 1940s, the Smithsonian Institution River Basin Surveys program sponsored Richard P. Wheeler in an initial survey of the proposed Red Rock Reservoir. Among those sites reported was 13WA2, an occupation site "attributable to the Oneota manifestation." Wheeler did not himself visit the site but received his information from Osborne Owens of Carlisle, Iowa. Mr. Owens had surfaced several sites in the Carlisle area in addition to 13WA2, collecting both pottery and stone artifacts from them. Wheeler assigned an A-1 priority to the "Owens Farm" site, feeling it to be of relatively great archaeological importance with high destruction potential from the impending reservoir (Wheeler 1949: 10).

No further work was done in this area until 1961, when Marshall McKusick and Joe Ries, personnel from the Office of the State Archaeologist of Iowa, compiled an "Archaeological Survey of Red Rock Reservoir, Iowa" (McKusick and Ries 1962) for the National Park Service. For 13WA2 they reported the occurrence of points and chips "along the road cut and in the field west of the road and south of the C.B. & Q. Railroad tracks." No mention of pottery was made. They concluded that "At the present time, it (the site) is almost entirely destroyed" (McKusick and Ries 1962: 4). In a brief culture-historical summation
within the same report, they commented that

...Oneota culture soon extended itself into the Des Moines Valley. It never intensively occupied the Red Rock Area and only a single village was located (McKusick and Ries 1962: 14-15).

The "single village" which McKusick and Ries refer to as Oneota is probably 13PK10, although they report several other sites to have yielded shell-tempered ceramics. Those data alone should have indicated to them a more extensive Oneota occupation, as previously suggested by Wheeler (1949: 6-7). Subsequent archaeological investigation of the Red Rock area by Iowa State University has shown that the Oneota occupation of this part of the Des Moines River Valley is indeed rather extensive.

Rationale

During the summer of 1966 the Iowa State University Archaeological Field School, under the direction of Dr. David M. Gradwohl assisted by John D. Reynolds, began the second season of excavation at the Howard Goodhue site (13PK1), a large Oneota site in Polk County just north of the Warren County line. It was decided that excavation operations should be expanded to include additional sites within the reservoir. The Clarkson site was chosen because surface indications showed it to be an Oneota occupation area of some magnitude, because of its proximity to the field headquarters (formerly the Clate Owens home), and because permission to investigate the site was kindly granted by the land owner, Mrs. Dora Sanford, and tenant farmer, Mr. James Goodhue. In addition, the surface materials were a mixture of Oneota ceramics,
stone tools, and debitage along with historic glass, iron, stoneware, and china. Although it was assumed that this historic material could be attributed to the historic village of Clarkson, there was also the possibility that some of these materials might be historic trade items associated with a late Oneota occupation such as those in the Orr Focus of the Upper Iowa River Valley region. This was a problem that could be solved only by controlled excavation. Like the Howard Goodhue site, the Clarkson site was within the flood control pool of the Red Rock Reservoir and would be subject to periodic inundation from that lake. Therefore it seemed expedient that as much of this site as possible be salvaged before serious flooding took place.

Excavation Methods and Site Stratigraphy

After permission to excavate the site was received, a locational grid of ten-foot squares, oriented along north-south and east-west axes, was established for the Clarkson site. Three separate 10' x 10' excavation units (N1050/W1000, N1060/W1050, and N1050/W1090) were opened between the 2nd and 4th of July in the area of greatest surficial artifact concentration. Subsequently, three more units (N1060/W1060, N1070/W1050, and N1090/W1040) were opened, and smaller extension units were added to existing squares as features within the units were defined (see Figures 2 and 3). In the southeast corner of unit N1050/W1000 a 5' x 5' stratigraphic pit was dug to a depth of 4.5' in an attempt to establish the sequence of vertical units that could be expected throughout the site.
Figure 2. Topography and general location of excavation units at the Clarkson site
Figure 3. Major excavation unit area and location of features, Clarkson site. (Excavation unit N1050/W1000 is not shown.)
Because the area had been extensively cultivated for many years, the top 0.8' or 0.9' of soil had been disturbed by the plow. This plowzone layer was removed by hand shovelling and the soil was screened through \( \frac{1}{4} \)" mesh hardware cloth to recover the artifacts. As on the surface, artifacts from the plowzone were a mixture of aboriginal materials from the Oneota component along with pieces of historic metal, glass, china, etc. from the village of Clarkson. Evidently very little topsoil had covered the earlier Oneota occupation level and plow action had truncated the upper portion of this cultural zone, turning its products to the surface. However, what remained of the undisturbed Oneota cultural zone was at least 1.2' thick, with features extending below it as much as another 1.8'.

Below the plowzone, excavation proceeded by hand trowelling and screening. Because there were no indications of natural or culturally-derived stratigraphy within the Oneota cultural horizon, the soil was stripped away in 0.1' levels. (During excavation all measurements were taken in feet and tenths of feet.) The cultural matrix was a mixed clay loam ranging in color from yellow to tan to gray (see Figure 4). The outlines of storage pits were distinguishable in this matrix by a darker humic fill. As these features were defined, each was dug as a stratigraphic unit within itself.

As the excavation progressed it became apparent that none of the historic materials could be associated with Oneota materials in undisturbed context. Those historic items which were found below the plowzone were within rodent burrows into which the soil had slumped
Figure 4. Vertical profile showing the general stratigraphy at the Clarkson site.
from the surface and plowzone. Therefore, it appeared that the two components at the Clarkson site were well separated in time from one another.

Excavation continued at the Clarkson site until the end of the field season. By July 28 a relatively small portion of the site had been intensively tested and recorded. The pits were backfilled and the area was once again put to cultivation. The area has been inundated several times since closure of Red Rock Reservoir in 1969, and archaeological materials may still be found on the site surface.
CHAPTER 5.
ANALYSIS OF THE OWENS ONEOTA COMPONENT
Analysis of the Artifacts

**Artifacts**

**Ceramics** Broken shell-tempered vessel fragments comprise the greatest number of artifacts from the Owens Oneota component at the Clarkson site. These are assumed to be the remnants of domestic cooking and storage vessels. The deposition of the sherds found with the child's remains in Feature 4 suggest that these were part of the general refuse fill rather than in primary funerary context. A total of 4,483 pieces of pottery was recovered and a generalized distribution of these within the site is shown in Figure 5.

The general attributes of this ceramic assemblage follow closely those reported for Oneota manifestations throughout the Prairie-Plains region and discussed in depth by Hall (1962), Harvey (1971), Henning (1961, 1970), Mott (1938), Orr (1914), Straffin (1971), M. Wedel (1959), Wilford (1955), and others.

**Vessel form** Unfortunately, none of the ceramics recovered at the Clarkson site are complete vessels. However, a few rims and shoulder segments are sufficiently large that some projected dimensions may be estimated (see Figure 6). Most of the vessels represented appear to be of the common globular jar form and these occur in an array of sizes. There is some evidence for bowls at the Clarkson site, and these are found in limited quantity in at least one other Moingona Phase component (Gradwohl 1973: 24). Generally the jars are symmetrically round with the greatest circumferential dimension occurring at the shoulder.
<table>
<thead>
<tr>
<th>Vessel Element</th>
<th>Surface</th>
<th>Plowzone</th>
<th>Sub-plowzone Horizon</th>
<th>Features</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rims</td>
<td>62</td>
<td>90</td>
<td>69</td>
<td>123</td>
<td>344</td>
</tr>
<tr>
<td>Necks</td>
<td>26</td>
<td>58</td>
<td>28</td>
<td>0</td>
<td>112</td>
</tr>
<tr>
<td>Handles</td>
<td>7</td>
<td>8</td>
<td>5</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>Decorated Bodysherds</td>
<td>112</td>
<td>294</td>
<td>205</td>
<td>427</td>
<td>1038</td>
</tr>
<tr>
<td>Undecorated Bodysherds</td>
<td>28</td>
<td>954</td>
<td>672</td>
<td>1315</td>
<td>2969</td>
</tr>
<tr>
<td>Totals</td>
<td>235</td>
<td>1404</td>
<td>979</td>
<td>1865</td>
<td>4483</td>
</tr>
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</table>

Figure 5. Distribution of vessel elements, Clarkson site
<table>
<thead>
<tr>
<th>Catalogue Number</th>
<th>Provenience</th>
<th>Relative Vessel Size</th>
<th>Extrapolated Orifice Diameter</th>
<th>Extrapolated Shoulder Diameter</th>
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</thead>
<tbody>
<tr>
<td>1499</td>
<td>N1060/W1050 1.0'-1.5'</td>
<td>Medium</td>
<td>158 mm.</td>
<td>208 mm.</td>
</tr>
<tr>
<td>1699</td>
<td>N1060/W1050 1.5'-2.0'</td>
<td>Small</td>
<td>58 mm.</td>
<td>119 mm.</td>
</tr>
<tr>
<td>2806</td>
<td>Feature 1 1.1'-1.2' below orifice</td>
<td>Small</td>
<td>65 mm.</td>
<td>99 mm.</td>
</tr>
<tr>
<td>5054</td>
<td>Feature 10 0.6' below orifice</td>
<td>Small</td>
<td>77 mm.</td>
<td>131 mm.</td>
</tr>
<tr>
<td>5076</td>
<td>Feature 10 0.8' below orifice</td>
<td>Large</td>
<td>278 mm.</td>
<td>----</td>
</tr>
<tr>
<td>5470</td>
<td>Feature 12 No depth given</td>
<td>Small</td>
<td>51 mm.</td>
<td>95 mm.</td>
</tr>
</tbody>
</table>

Figure 6. Projected horizontal dimensions of selected vessel segments, Clarkson site
None appear to exhibit ellipsoidal characteristics so common in Orr Focus ceramics (M. Wedel 1959: 84, 113). The shoulder form may vary from one vessel to another from gently rounded to almost horizontally flat (see Figures 7A - 11). The straight rim joins the body in a vertical or slightly everted position. Often the interior neck juncture has been worked to a sharply-defined edge during the process of manufacture. Handles, when they occur, span the angle between rim and upper shoulder, with upper handle attachment at the lip or slightly below it on the rim exterior. It is assumed that handles occur in diametrically-opposed pairs, although only one of the rim segments from the Clarkson site was complete enough to verify this assumption.

Rim height in Moingona Phase vessels tends to correspond directly to vessel size; i.e., larger vessels have taller rims than do smaller ones. Of the 344 rims recovered from the Clarkson site, 135 were complete enough to take height measurements. This measurement was made on the rim interior and taken from the rim/shoulder juncture to the top of the lip edge. These heights ranged from 7.5 mm. to 59 mm. This range is not inconsistent with those reported for other Oneota sites (see Figure 12). There is no obvious clustering of heights within this range although there is a slight tapering off towards each end of the scale. The mean height is 32 mm.

Medial rim thickness ranges from 3 mm. to 10.5 mm. in the 330 measureable rims at the Clarkson site, although one aberrantly thick rim measures 12 mm. This measurement was taken midway between the lip edge and the neck juncture. Fourteen of the recovered rims were
Figure 7A. Exterior and cross-section of vessel rim and shoulder 3413, Clarkson site. Actual size

Figure 7B. Exterior and cross-section of vessel rim and shoulder 986, Clarkson site. Actual size
Figure 8. Exterior and cross-section of vessel rim and shoulder 4790, Clarkson site. Scale is approximately one half actual size.
Figure 9A. Exterior and cross-sections of vessel rim and handle 3245, Clarkson site. Actual size

Figure 9B. Exterior and cross-section of vessel rim and handle 1701, Clarkson site. Actual size
Figure 10. Exterior and cross-section of vessel rim and shoulder 1699, Clarkson site. Scale is four-fifths actual size.
Figure 11. Exterior and cross-section of vessel rim and shoulder 1499, Clarkson site. Scale is four-fifths actual size.
<table>
<thead>
<tr>
<th>Site</th>
<th>Range</th>
<th>Mean</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clarkson (Moingona phase)</td>
<td>7.5 - 59 mm.</td>
<td>32 mm.</td>
<td>Gradwohl 1973: 37</td>
</tr>
<tr>
<td>Goodhue (Moingona phase)</td>
<td>4 - 68 mm.</td>
<td>not available</td>
<td>Henning 1961: 31</td>
</tr>
<tr>
<td>Preston (Central Des Moines valley)</td>
<td>28 - 57 mm.</td>
<td>not available</td>
<td>Henning 1961: 31</td>
</tr>
<tr>
<td>Correctionville (Correctionville Focus)</td>
<td>15 - 40 mm.</td>
<td>25.5 mm.</td>
<td>Henning 1961: 11, 27</td>
</tr>
<tr>
<td>Dixon (Correctionville Focus)</td>
<td>17 - 30 mm.</td>
<td>25.2 mm.</td>
<td>Henning 1961: 17</td>
</tr>
<tr>
<td>Dixon (Correctionville Focus)</td>
<td>8 - 31 mm.</td>
<td>20.4 mm.</td>
<td>Harvey 1971: 219</td>
</tr>
<tr>
<td>Orr Focus (general)</td>
<td>12 - 60 mm.</td>
<td>not available</td>
<td>M. Wedel 1959: 85</td>
</tr>
<tr>
<td>Lane-Hartley Terrace (Orr Focus)</td>
<td>17 - 69 mm.</td>
<td>42.3 mm.</td>
<td>Henning 1961: 20, 28</td>
</tr>
<tr>
<td>Flatiron Terrace (Orr Focus)</td>
<td>23 - 70 mm.</td>
<td>50.2 mm.</td>
<td>Henning 1961: 23</td>
</tr>
<tr>
<td>Shrake-Gillies (Orr Focus)</td>
<td>18 - 40 mm.</td>
<td>not available</td>
<td>M. Wedel 1951: 114</td>
</tr>
<tr>
<td>Midway (Orr Focus)</td>
<td>14 - 45 mm.</td>
<td>not available</td>
<td>M. Wedel 1959: 114</td>
</tr>
<tr>
<td>Blood Run (Orr Focus)</td>
<td>8 - 36 mm.</td>
<td>30 mm.</td>
<td>Harvey 1971: 318</td>
</tr>
<tr>
<td>Kingston</td>
<td>not available</td>
<td>36.2 mm.</td>
<td>Straffin 1971: 50</td>
</tr>
<tr>
<td>Guthrey</td>
<td>not available</td>
<td>35.4 mm.</td>
<td>Straffin 1971: 50</td>
</tr>
<tr>
<td>Utz</td>
<td>not available</td>
<td>30 mm.</td>
<td>Straffin 1971: 50</td>
</tr>
<tr>
<td>Dowell</td>
<td>not available</td>
<td>38.7 mm.</td>
<td>Straffin 1971: 50</td>
</tr>
<tr>
<td>Leary</td>
<td>28 - 75 mm.</td>
<td>not available</td>
<td>Henning 1961: 39</td>
</tr>
<tr>
<td>Fanning</td>
<td>9 - 60 mm.</td>
<td>not available</td>
<td>Henning 1961: 38</td>
</tr>
</tbody>
</table>

Note: This figure can be used only as a rough tool because the populations upon which each range is based vary considerably, because some of the information is incomplete, and because some of the height measurements are internal while others are external.

Figure 12. Reported ranges and means for rim height from selected Oneota sites.
rejected from this sample because they were either split or too fragmentary for a valid measurement. Discounting the 12 mm. figure the distribution of rim thicknesses forms a regular bell curve with a mean, mode, and median of 7 mm. In most instances, the thickest portion of the rim (and of the entire vessel) is at the rim/shoulder juncture, presumably because this angle must support the entire weight of the rim.

Among the bodysherds recovered from the Clarkson site the vessel wall thicknesses range from 2 mm. to 10 mm. (only one observance was recorded at 10 mm.) with a mean thickness of 5 mm. In instances in which such an observance was possible, the thickest pieces are from the upper portions of the vessel shoulder.

One very intriguing characteristic of Oneota ceramics is the extreme relative thinness of the vessel walls. The use of crushed mussel shell as the tempering agent may be the greatest factor in the success of the Oneota potter in this realm, since the flat shell particles tend to align themselves in a lamellar structure parallel to the wall surfaces. Little specific information is known about the preparation of the shell for use as temper other than the valves have been reduced to particles that are rarely greater than 5 mm. across. Because calcium carbonate is the primary component of these shell particles, it is probable that the vessels were fired at a temperature no greater than 800°C., for it is at this temperature or below that calcification occurs, rendering the shell to a powder (Shepard 1954: 30).
Clay for the manufacture of pottery was readily available to inhabitants of the Clarkson site. In reporting the geological resources of Warren County for the Iowa Geological Survey in 1896, J.L. Tilton noted:

The clay that can be used is derived from three sources: first, the loess; second, the alluvial deposits along the rivers; and third, the coal measure shales (Tilton 1896: 356).

Any or all of these sources may have been utilized prehistorically, but it is the clay from the coal measures which underlie the Des Moines River drainage system in northeast Warren County which has been exploited most extensively in the historic period.

The Des Moines series forms the top of the bedrock beneath all of Warren County. It outcrops or is beneath only thin overburden in many places along the valleys of North, Middle, and South Rivers and their larger tributaries, in places where the drift has been removed by fluvial erosion.

The shales and clays of the series were at one time used in the manufacture of ceramic ware at Hartford and are at present used at Carlisle in the manufacture of heavy clay products by the Carlisle Brick and Tile Co. Raw material is secured from a pit on the east bank of North River Valley, in the NE 1/4 Sec. 4, Allen Township, (T.77N., R.23W.) (Gwynne 1943: 337-338).

The quantity of clay available is quite substantial, for the operation at the Carlisle kilns continues to the present day.

The paste in the Oneota ceramics from the Clarkson site tends to be quite fine, serving as a "cement" between the shell particles. Ceramic hardness ranges from 2 (gypsum) to 3 (calcite). Most of the sherds are dark to medium gray in color, although buff and tan coloration is not
uncommon. Eleven sherds exhibit red-orange coloration and two of these appear to have been slipped. The surface treatment, exclusive of decorative motif, is generally smoothed but not burnished. One exception is a sherd of a thin (3 mm.) vessel that had been burned black and polished.

One interesting characteristic of the paste is the occurrence of hematite flecks. Of 1,038 decorated bodysherds, 519, or 50%, had hematite inclusions; of the 2,969 undecorated bodysherds, 1,205 sherds, or 40.6%, were flecked with hematite. These hematite inclusions range from flecks the size of ground pepper to granules 1 mm. in diameter. The hematite may have been added intentionally to the wet clay prior to its use in vessel construction, or it may have been part of the mineral composition of one of the original clay deposits.

Lip decoration Vessel lip decoration in Oneota ceramics usually consists of tool impressions made on or near the rim edge while the clay was still moist. The effect created is generally a crenelation of the lip top or internal lip edge. Such impressions may be continuous around the entire rim or may occur as interrupted groups of impressions separated by undecorated spaces. Such rim edge treatment has been reported from most Oneota sites but, as with all other Oneota decorative techniques, there are variations. One technique noticeably absent from Clarkson site ceramics, but reported for Orr Focus and other Oneota components (Henning 1970: 42), is the creation of lip impressions with the finger tips. One bowl rim is decorated with fingernail impressions,
but other than this, only tool impressions are noted for the Clarkson site.

Of a sample size of 332 rims with intact lips from the Clarkson site 211, or 63.5%, had no lip decoration whatsoever. Within the inventory of those rims with some form of lip treatment there were four rather distinct design categories: 58.7% of the 121 decorated lips had short vertical tool impressions inside and below the lip, 9.9% were punctated on top of the lip, 5% had oblique tool impressions in the top of the lip, and 26.4% had tool impressions in the top of the lip which were perpendicular to the lip edge (see Figures 7B, 9B, 11, 13A, and 13B). There were no instances of any lip decoration occurring on the outer surfaces of the rim.

**Internal rim decoration** In Moingona Phase ceramics, usually the only rim decoration below the lip edge occurs on the rim interiors in the form of trailing. As the rims on these Oneota vessels tend to be slightly everted it is the interior surface of the rim which is most readily seen and, therefore, may be the most logically decorated surface. There are two categories of internal rim decoration. One of these is a nested chevron, varying from 2 to 5 chevrons per set (see Figures 13A and 13B). In all cases the chevrons begin at the lip edge and the points are extended toward the rim/shoulder juncture. Of the 32 rims found with internal decoration, 13 had nested chevrons. In one instance a line of tool-impressed punctates bordered the internal line of a set of 2 nested chevrons.
Figure 13A. Decorated interior and cross-section of vessel rim 1, Clarkson site. Actual size

Figure 13B. Decorated interior of vessel rim 1499, Clarkson site. Actual size
The other category of internal rim decoration is the occurrence of groups of oblique parallel trails extending from the lip edge toward the rim/shoulder juncture. This is not, in all observances, a discrete category since in some fragments this may be part of a nested chevron. However, two rim segments were complete enough to show that a group of parallel trails is a distinct motif. Nineteen rims of the 32 with interior decoration had oblique parallel incised trailing. Of the 32 rims with inner trailing, only 5, or slightly more than 15%, had any form of accompanying lip decoration.

The occurrence of inner rim decoration is not consistent for all reported Oneota ceramics. It is relatively rare or absent in Orr Focus materials (Harvey 1971: 320; Henning 1961: Fig. 5; M. Wedel 1959: 87). However, in Correctionville ceramics, Henning reports that 10% of 171 rims recovered had some form of trailing on the inner rim (Henning 1961: 12); seven of these were chevrons. Nearly 40% of the rim interiors from the Dixon site were decorated either with chevrons or parallel trailing (Harvey 1971: 232). Three instances of inner rim trailing are reported for the Utz site, Saline Co., Missouri: one with trailed parallel oblique lines, one with a chevron motif, and one with a "trailed motif" (Henning 1970: 111). The presence of internal rim decoration has been noted as a characteristic of Moingona Phase ceramics (Gradwohl 1974: 95).

Two exceptions to the rule that jar rims are decorated only internally were found at the Clarkson site. One of these is a rim from the plowzone which has external tool impressions below the vessel lip.
The other is a rim from the surface which has external vertical trails below the lip which have been spaced 10 mm. apart from each other. Two bowl rims also exhibit some external rim decoration (see the discussion of bowls).

**Vessel shoulder decoration** Of the 4,007 body sherds recovered at the Clarkson site, 1,038 of these were found to be decorated. In addition, 88 shoulders attached to rims were also decorated. Therefore, the number of body fragments bearing some form of decoration at the Clarkson site is nearly 27.5% of the total. With the exception of 21 cord-roughened sherds, all decorative effects on vessel shoulder surfaces were created by trailed (and a few finely incised) lines and/or short tool impressions (punctates). The tool used appears to have been a flat or bluntly rounded object which created a reasonably crisp impression as it was drawn across or pressed into the wet clay surface. For the sake of comparison the tip of a small spatulate piece of worked bone from Feature 9 was laid into the trails of bodysherd #2686. The similarity in "fit" may be due to more than pure coincidence (see Figure 14A). Smaller vessels and some described as "pinch pots" have often been scribed with a narrow pointed object, presumably because the area available for decoration is so restricted (see Figure 15). Trails on some of the larger vessels may be as broad as 6 mm.

From an earlier study of Moingona Phase ceramics at the Howard Goodhue site, 13PK1 (Gradwohl 1973: 21-60), it was observed that the trailed and punctated designs on vessel shoulders were made up of a series of distinct motifs or design components that could be used in
Figure 14A. Decorated vessel body sherd 2686 and broken tip of a bone needle or bodkin from Feature 9, showing the relationship of the tool impressions to the tool which may have been used, Clarkson site. Actual size

Figure 14B. Decorated vessel body sherd 4811, illustrating design motif category 2A, Clarkson site. Actual size
Figure 15. Examples of fine-line trailing on vessel bodysherds from the Clarkson site. (A) Bodysherds 3342, 3343, 3494, and 3499; pieces glued together, (B) Bodysherid 3340, and (C) Bodysherid 5217. Actual size.
repetition or in combination to form the "necklace" of design around the vessel. As a general rule, these design components are delineated from one another by sets of oblique or vertical trails (the number may vary) which extend from the neck juncture to the shoulder periphery. It appears that a limited number of design components was considered to be "right" or "acceptable" within these potters' cultural realm, thus allowing the archaeological analyst to classify these design units and to note them down as a decorative series. The notation used here is that described by Gradwohl for ceramics from the Howard Goodhue site (Gradwohl 1973: 26) and graphically depicted in Figure 16. As an example, the design series on the rim/shoulder segment #1499, shown in Figure 11, can be recorded in the following manner, reading from left to right: 4D, 4C (slightly modified), (1A). The parentheses around the symbol for the last component indicate that it is incomplete.

Figure 17 is a list of design component series observed on individual vessel shoulders at the Clarkson site. The + symbol indicates that those components occur together within the same design space, and the H symbol indicates the presence of a handle.

In addition to these, recognizable individual design components occurring on smaller sherds were recorded in the following numbers:
- Cat. 1, 4 sherds; Cat. 1A, 1 sherd; Cat. 1B, 3 sherds; Cat. 2, 1 sherd;
- Cat. 2A, 4 sherds; Cat. 3, 2 sherds; Cat. 3B, 3 sherds; Cat. 4B, 4 sherds; Cat. 4C, 1 sherd; Cat. 4D, 3 sherds; Cat. 5A, 12 sherds;
- Cat. 5B, 1 sherd; Cat. 5D, 3 sherds; and Cat. 7A, 4 sherds.
Figure 16. Categories of stylized design components noted on ceramic vessels at the Clarkson site. Adapted from Gradwohl 1973: 27.
<table>
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<th>Design Components</th>
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<tr>
<td>2026</td>
<td>Plowzone</td>
<td>1E + 2 + 1E</td>
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<td>Feature 2</td>
<td>4B, 1E, 4B</td>
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<td>(1E), 4C</td>
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<td>(1E), 3A, 1C, 1A, (1C)</td>
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Figure 17. Design component series observed on individual vessel shoulders, Clarkson site
Figure 18. Decorated vessel bodysherd 4501, illustrating design component series 1A, 5A, 1E, (5), Clarkson site. Scale is four-fifths actual size.
Unfortunately, the majority of the decorated shoulders and body-sheerds recovered from the Clarkson site are not large enough to describe according to given design components. These have been broken down into the following broad categories: sherds with parallel trails, 432; sherds with parallel trails perpendicular to trailing, 117; sherds with trails edged by punctations, 92; sherds with punctations, 54; sherds with at least one trail, 213; and sherds with some fine-line incising, 18.

It has been noted that the same motifs are reported for almost all Oneota sites in the Prairie-Plains peninsula, yet it is the frequency of occurrence of these given motifs which tends to distinguish one site from another (M. Wedel 1959: 112). One example of this tendency is the potters' use of punctates as either (1) a space filler, or (2) as a border for trailed lines. Orr Focus ceramics characteristically have design spaces filled with punctates (Harvey 1971: 321; M. Wedel 1959: 117), while Correctionville ceramics (Harvey 1971: 321), and those from the Leary site (Hill and W. Wedel 1936: 37), the Guthrey site (Henning 1970: 69-72, 137), and the Goodhue site (Gradwohl 1973: 27) tend to have punctates used as a border in conjunction with trailed lines. Punctates were not common at all in the Utz site ceramic inventory (Henning 1970: 137).

Undecorated bodysherds The lower half of Oneota vessels are smoothed and without decoration. The sherds from this undecorated area were found to vary little in thickness or color from the decorated
sherds. At the Clarkson site, 2,969 undecorated sherds were recovered, nearly half of which were found within features.

**Handles** There are 37 instances of handles at the Clarkson site, some occurring on rim segments while others are isolated fragments. In addition, there are attachment areas on 13 rim and/or shoulder sherds which indicate the former presence of handles. Two of these attachments include mortise holes, indicative of at least one mode of attachment used to affix these appendages. The handles are attached to the rim either at the lip edge or slightly below the lip on the rim exterior. In the instance of one large vessel fragment, the handle is attached as much as 18 mm. below the lip.

These handles are of three basic forms: (1) strap handles, which are more broad than they are deep; (2) loop handles, which tend to be round or ovoid in cross-section; and (3) buttress or vertical lug handles, which fill the angle between rim and shoulder and may or may not be perforated. Almost without exception, the strap handles are decorated with a series of parallel trails which travel the length of the handle. These trails vary in occurrence from two trails up to as many as eleven within the sample available. In a few cases, the trails are "broken" by an undecorated area half-way down the handle (see Figure 9B). The only instance of an undecorated strap handle is on a vessel rim which at one time had had four equidistant handles. Only two adjacent handles remain and, of these, one is trailed and the other is not. Of the ten measurable strap handles, the breadths range from
12 - 45 mm. and the thicknesses range from 6 - 10.5 mm. These handles
do not taper and breadth is consistent along the length of the handle.

Loop handles occur almost equally as often as do strap handles in
the sample from the Clarkson site. The loop handles at the Clarkson
site tend not to be decorated, although there is one instance of
successive tool impressions occurring along the length of one of these.
Of the 9 measurable loop handles, the breadths range from 9 - 29 mm.
and the thicknesses range from 7 - 22 mm.

Only four buttress handles were found. These handles range in
breadth from 7 - 15 mm. and, in each case, are decorated by a series of
tool impressions along the "rib" of the handle; these impressions are
perpendicular to the handle length. Three buttress handles are
penetrated by a small hole near the neck juncture and one is solid.

The function of handles on Oneota vessels is not entirely clear --
in very few instances is the bore of the handle large enough to allow
more than one finger to pass through it. It is probable that leather
thongs or lengths of cordage were strung through the handles for
carrying or suspending the vessel. Seemingly, handles are intentionally
incorporated into the decorative motifs which occur on the vessel
shoulders. Oblique parallel trails are oftentimes found to "emanate"
from the bases of handles, and the symmetrical placement of handles
probably served to guide the arrangement of motifs.

Bowl fragments Although it is very difficult to distinguish
bowl fragments from those of jars when the pieces are quite small, there
are 9 rims from the Clarkson site ceramic assemblage that appear to be
from bowls. All but one are shell tempered. Two are decorated on the bowl exterior: one small bowl from the cultural horizon has a set of four nested chevrons below the lip exterior and an apparently larger bowl fragment from Feature 11 is decorated with a motif similar to Cat. 2B. This latter example appears to be similar to one illustrated from the Kingston site (Straffin 1971: 71). Two more rims have lip decoration: one from the cultural horizon has a set of 6 tool impressions on top of the lip and another from Feature 4 has fingernail impressions on the lip exterior. A portion of a miniature bowl from the plowzone without visible tempering has a punctate which completely pierces through one side of the vessel near the lip. Three apparently undecorated rims were found on the surface, in the cultural horizon, and in Feature 8, respectively.

**Miniature vessels and 'pinch pots'** Portions of very small vessels, some obviously hastily manufactured, may have been pieces used to test the clay or made as children's toys. Most are roughly globular in shape with rather indistinct neck junctures. A few were made with more care. In two instances there is some degree of decoration on the rim exteriors and in three the body areas are decorated. From Feature 1, two miniature jar fragments have loop handles. One tiny rim from the plowzone has punctates which perforate the neck at intervals 22.5 mm. apart. Eight more fragments, mostly rims, were found throughout the site.

**Miscellaneous ceramics** Sixteen shell tempered sherds and six grit tempered sherds have cord marked exteriors. Five are from the
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surface, 9 are from the plowzone, 1 is from the general cultural horizon, and 8 are from features. The presence of some cord roughening on other Moingona Phase ceramics has been previously noted (Gradwohl 1974: 95). Four of the grit tempered sherds were found on the surface or in the plowzone and one was found within the refuse fill of Feature 8. These could possibly be attributed to an aboriginal occupation other than Oneota. In none of the samples from the Clarkson site does trailing occur with or over the cord marked surface treatment.

Two shell tempered sherds appear to have at least one cut edge. One of these is from the plowzone and the other is from Feature 12.

Chipped stone

Other than ceramics, the bulk of the artifact assemblage at the Clarkson site is comprised of chipped stone tools. The majority of these artifacts have been manufactured from relatively homogeneous grades of gray, gray/tan, and gray/white banded cherts. The stone is often fossiliferous and the surrounding cortex, when present, often contains quartz crystals. Some of the pieces have been subjected to heat treatment but its occurrence is minimal. It has been theorized that this uniformity in the lithics used at Moingona Phase sites may indicate the material was quarried from a centralized source, rather than having been gleaned from the local glacial till and stream gravels (Gradwohl 1973: 66). Occasionally the gray cherts are supplemented by butterscotch-colored cherts and quartzites from these latter sources, and the most varied range of lithics used tends to be found in the projectile points.
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<th>Sub-plowzone Horizon</th>
<th>Features</th>
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<td>Projectile points</td>
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<td>126</td>
<td>145</td>
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<td></td>
<td>End scrapers</td>
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<td>17</td>
<td>8</td>
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<td>Knives and biface fragments</td>
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<td>4</td>
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</table>
Projectile points

As is typical of Oneota and other Mississippian manifestations, most of the projectile points recovered from the Clarkson site are small plain triangular arrow points (see Figure 20). The only definite exceptions are four projectile points from the surface:

(1) One triangular point with a convex base, made on a decortication flake; 32 mm. in length, 23 mm. wide, and 7 mm. thick.

(2) One elongate stemmed point, 46.5 mm. in length, 21 mm. wide, and 6.5 mm. thick; the stem is 5 mm. long.

(3) One notched point fragment, 15.5 mm. wide and 6 mm. thick.

(4) One expanded-base side-notched point fragment, 2 mm. in thickness.

Twenty-six complete and 50 partial points were recovered from the site. Of these 76 examples, 64 were found on the surface or within the plow-zone. This number does not adequately reflect the total possible because the Clarkson site has been surfaced for many years by local collectors who selectively choose projectile points and other chipped stone artifacts over other types of aboriginal remains.

Of those points and point fragments found in undisturbed cultural context, 5 were within refuse pits and 7 were within the general cultural fill. From a sample size of 25 small triangular points on which the length could be measured the range in length is 15 - 29.5 mm., with a mean length of 21 mm. One plain triangular point with tip missing is at least 33.5 mm. long.

Many of the point fragments are complete except for their tips; therefore, width and thickness, but not length, could be measured. Out
Figure 20. Examples of projectile points and end scrapers from the Clarkson site. (A-D) Small plain triangular points 5833, 152, 151, and 1900; (E-I) End scrapers 1073, 6809, 201, 766, and 5838. Actual size
of a sample of 51, the range of basal widths is 11 - 21 mm., with a mean width of 15.5 mm. The only notable exception is an equilaterally triangular point with a width of 28 mm. Thickness ranges from 1.5 - 6.5 mm. from a sample of 72, with a mean thickness of 3 mm.

All of these small triangular points are manufactured on flakes by pressure flaking around the flake margins. All but one are on blank flakes. Five point fragments appear to have been utilized along one or more of the broken edges. Two point segments have possible graver tips.

End scrapers Snub-nosed end scrapers are the single most characteristic chipped stone tool type reported for the Plains and Prairie-Plains region and attest to the great socio-economic importance placed upon hide preparation in prehistoric and protohistoric times. Even though pressure from Euro-American trade in historic times pushed aboriginal hide preparation to a fever pitch, the chert end scraper fell into disuse on the protohistoric time horizon because metal blades procured by trade were much more efficient. Therefore, little specific information is known about the manner in which end scrapers were hafted and used (Lowie 1954: 58).

These scrapers are most often described as plano-convex flake tools, generally ovoid, tear-shaped or rectangular in outline, with a blunt steeply retouched working end. The ventral surface is a single flake scar formed when the flake was struck from the core. Often the bulb of percussion is still intact on this ventral surface at the narrow end of the tool, but in some instances it has been removed by local pressure flaking. Thirteen scrapers had been retouched to varying degrees on the
ventral surface. This ventral retouch never occurs, however, along the working edge; usually it is the lateral edges or the basal area that have been retouched.

Roughly 16.5% of the end scraper inventory had been made on decortication flakes. In these instances, cortical material is normally found on the dorsal surface of the scraper and often covers the entire surface, with retouch occurring along the margins of the flake. In only one instance does cortex occur on the ventral surface. It may be that the presence of cortex was used as a positive characteristic -- the rough surface may have aided in keeping the insert from slipping in the haft.

The dorsal surface generally retains the flake scars that had been on the core surface, and it is on the basis of the type of scars remaining, as well as general tool outline, that end scrapers have often been categorized. The distinction is one of a "keeled" or ridged dorsal surface versus a flat one. Another distinction is the degree to which the dorsal surface has been altered by subsequent pressure flaking.

There are 91 complete and 76 fragmented end scrapers recovered from the Clarkson site (see Figure 20). Of these, 71 of the complete specimens come from the surface and plowzone. It is possible to categorize the dorsal surfaces on 148 specimens; 84, or 56.8% of the total, have a dorsal ridge, while 64 have a negative dorsal flake scar which has left an almost flat surface. The only significant difference between the two categories is that the former was made on flakes that had been struck from a prepared core directly above a longitudinal ridge while that latter was made on flakes struck from the core at a point
between two longitudinal ridges. When thicknesses of the two categories are plotted the keeled scrapers range from 3.5 - 12.5 mm., with a mean thickness of 7 mm., while the flat scrapers range from 3 - 10 mm., with a mean thickness of slightly over 6 mm. If all scrapers are taken together, their mean thickness is 7 mm.

Likewise, when the widths of the working ends of keeled and flat scrapers are plotted, the range for keeled scrapers in 15 - 26.5 mm., with a mean width of 20 mm. The range for flat scrapers is 13 - 28.5 mm., with a mean width of 20 mm. (One fragmentary flat scraper was far below the normal range with a width of 3.3 mm. and was not considered in the sample.) Using thickness and width as criteria, there would appear to be little significant difference between "keeled" and flat scrapers at the Clarkson site.

Comparing the lengths of end scrapers is probably not a sufficient base upon which to place them in meaningful categories either. As the tools became dull with use they were undoubtedly retouched, thereby reducing the length each time this resharpening occurred. We have little way of knowing at which stage each tool had been left, but we can establish parameters by which we might infer how short a scraper could become before it was discarded. There are 92 end scrapers from the Clarkson site from which valid length measurements could be gotten. These lengths range from 14.5 - 44.5 mm. with a mean length of 27 mm. Fifty percent of the total fall within the 23 - 29 mm. range.

**Knives** The inventory of recognizable chipped stone cutting tools from the Clarkson site is quite small. It is suspected that, like
projectile point and end scraper forms, aboriginal knives were selectively collected by amateurs from the surface of the site, thereby depleting the number available for study. Two categories of knives have been defined on the basis of a very few tools.

**Category 1.** Parallel-sided knives with straight bases (5).

These are slightly elongated forms with lateral edges tapering to a point at the apex and converging slightly near the straight base (see Figure 21). The tools range from 4 - 6 mm. in thickness, and the three complete specimens are 40 mm., 35 mm., and 32 mm. long, respectively. In cross-section, these are thinly lenticular. In only one specimen, which appears to be heat-treated, is the pressure-flaking well-controlled across the faces of the tool. A large number of hinge fractures are found on the surfaces of the four remaining specimens. It is possible that some of these may have been intended as projectile points rather than cutting tools, although the general shape and thickness is not characteristic of most Oneota points. All specimens are from the surface.

**Category 2.** Ovate or lanceolate knife (1).

This knife segment has a thickness of 5 mm. and is thinly lenticular in cross-section. The specimen is from the surface.

**Biface fragments** The bulk of the bifacially-worked tools from the Clarkson site are too fragmentary for adequate categorization. Many are tips, edges, or midsections of finished or nearly-finished tools; others may be the edges of preforms. Some may have been hafted because, in certain instances, one lateral edge has not been perceptibly worked.
Figure 21. Examples of knives and biface fragments from the Clarkson site. (A-B) Knives 378 and 5942, category 1, and (C-D) Miscellaneous biface fragments 726 and 6818. Actual size
A total of 214 biface fragments was recovered, 200 of which came from the surface and plowzone and 14 from the undisturbed cultural levels. Twenty-six pieces retain some amount of lithic cortex. Few pieces exceed 10 mm. in thickness. In general, flake scars across the surfaces tend to be large, with some pressure flaking along the edge margins (see Figure 21).

**Drills** These are slender bifacially-worked tools which normally show wear from having been used in a rotating motion. The inventory from the Clarkson site, with one exception, is comprised of the shank portions of drills. The only complete specimen is a relatively small drill, 19 mm. long, with a slightly bulbous base. In cross-section one shank is diamond-shaped, three are ovate, and one is trapezoidal. The shaft margins of three of the segments are well worn. All are made on blank flakes. Four are from the surface and plowzone and one is from the Oneota cultural horizon.

**Graver/Perforators** This category closely corresponds to the Graver Category II established for Oneota sites in the lower Missouri Valley by Henning.

These gravers are manufactured on random flakes upon which a tip has been fashioned through either unifacial pressure flaking, the striking of burin blows or a combination of the two techniques... (Henning 1970: 47).

There are 30 such tools from the Clarkson site. Twenty-four are from the surface and plowzone, 4 are from the cultural horizon, and 2 are from features.
One salient characteristic of these tools is the occurrence of a ridge between two flake scars as the midrib down the length of the perforating shank, often accentuated by short pressure flakes taken off on either side (see Figure 22). Only two of these tools have a working end approximating a burin tip. It is, therefore, assumed that most items in this assemblage are principally perforating and/or boring tools rather than graving instruments. None of the working ends appear to have been subjected to a rotating action and can not be classed as drills (Henning 1970: 47).

Retouched flakes Several of the chert tools recovered from the Clarkson site cannot be classified into any traditional chipped stone artifact type, although it is apparent that the flakes upon which they are made were intentionally altered by pressure flaking (see Figure 22). These tools will be referred to as retouched flakes (Gradwohl & Osborn 1972: 32). In some cases, these retouched flakes may be traditional tool types which are so fragmentary as to be unrecognizable. Some of the unifacially-retouched pieces may be "scrapers" although morphologically dissimilar to end scrapers. These will be referred to here as retouched flakes/scrapers. Another alternative is that some may have been test pieces -- random flakes of a particular type of microcrystalline stone picked up and worked to determine the feasibility of that particular flake or stone type for use as chipped stone tool material. All of these flakes are small to medium in size -- rarely does any dimension exceed 40 mm., and most are much smaller. One hundred fifty-five retouched flakes were recovered from the site, 117 of these coming
Figure 22. Examples of chipped stone tools from the Clarkson site. (A-D) Graver/perforators 446, 444, 345, and 455, (E-F) Retouched flakes 2368A and 5906, and (G) Retouched flake/scaper 243. Actual size.
from the surface and plowzone and 37 from undisturbed cultural context. Of the total, 14.8%, or 23 retained some amount of lithic cortex; the remaining flakes are blank.

Utilized flakes Upon microscopic investigation (with a binocular microscope at 9X) many of the chert flakes recovered from the Clarkson site exhibit small non-continuous flake scars along portions of the flake margins. These have been referred to as "utilized flakes"—momentary tools resulting from the use of otherwise unmodified flakes for scraping and/or cutting activities (Gradwohl & Osborn 1972: 33). A total of 964 utilized flakes were recovered, 838 of which came from the surface and plowzone and 125 from the undisturbed cultural horizon. One hundred and sixty-five, or 17% of the total, are utilized decorative flakes; the rest are blank.

Cores and debitage

Cores and core fragments A total of 15 cores and 94 core fragments were found at the Clarkson site, the majority of which (86 specimens) come from the surface and plowzone. Seven of the cores are regular in form, having had large percussion flakes removed from adjoining lateral faces to produce a sinuous edge (see Figure 23). Some of these may be considered as preforms. Eight cores are somewhat irregular in form, having had large percussion flakes detached "randomly" from the surface of each nucleus. Many of these irregular cores still have some cortex remaining on their surfaces. Of the core fragments, 67 have blank surfaces while 26 retain some amount of cortex.
Figure 23. Full and edge views of two regular chert cores 1914 and 6576, Clarkson site. Actual size
**Shatter**  A few medium to large pieces of chert exhibit at least one broken face and may be "fall out" from the testing of a nodule as a chert source. These appear not to have been utilized beyond this point. Eleven specimens within this category were recovered at the Clarkson site.

**Waste flakes**  A total of 2,670 pieces of chipped stone debris was recovered from the Clarkson site. Nearly one-fifth (18.4%) of the waste flakes are primary and secondary decortication flakes (after Gradwohl & Osborn 1972: 34), which would indicate that some of the stone used had not been dressed or otherwise prepared prior to its having been chipped at the site. Of the blank flakes, 75 retain a portion of a biface edge and have been formed by the retouching or thinning of a biface or preform. As with the worked stone tools, only a minimal amount of heat treatment is evidenced by the chipped stone debitage.

**Ground stone**

Local sedimentary and glacial rock deposits were utilized as raw materials for the production of ground stone tools. A non-local source material notably absent from the Clarkson site inventory is catlinite. Catlinite items, including pipe bowls and engraved tablets, have been reported for many Oneota manifestations, including the Iowa sites of New Albin, Dixon, and Blood Run (Harvey 1971: 196; 281; M. Wedel 1959: 57), the Humphrey site in Minnesota (Wilford 1945: 33), and the Utz site in Missouri (Betancourt 1965: 256-270). Those ground stone items
which do occur at the Clarkson site appear to be portions of tools; no ornaments or pipes are represented.

**Grooved abraders** A total of 40 grooved abraders manufactured from the coarse-grained local sandstones (mostly varieties of the "red rock" of Red Rock Reservoir) was recovered at the Clarkson site. These may be grouped into three general categories: (1) those with U-shaped grooves, (2) those with V-shaped grooves, and (3) those with grooves of which the shapes vary or are indeterminant (refer to Figure 24). Twenty-one abraders were found to have U-shaped grooves, 9 with V-shaped grooves, and 10 with indeterminant groove patterns.

Six of the abraders with U-shaped grooves have the characteristic rectangular or "boat" shape and are of the category commonly referred to as shaft abraders or shaft smoothers. Shaft abraders are found in aboriginal context throughout the Central Plains (W. Wedel 1961: 106). The remaining 15 abraders with U-shaped grooves are either too fragmentary to be recognized as shaft abraders or are not of a classic abrader type.

The two rectangular abraders with V-shaped grooves may be in a preliminary stage of manufacture into shaft abraders (Flenniken ca. 1976: 26). The bulk of the abraders with V-shaped and indeterminant grooves are probably pointed tool abraders or flint-knapping abraders (Flenniken ca. 1976: 40-69; W. Wedel 1959: 285, 374) and the stone appears not to have been intentionally shaped beyond the formation of the grooves.
Figure 24. Examples and cross-sections of grooved sandstone abraders from the Clarkson site. (A-B) Shaft abrader sections 1200 and 1012 showing U-shaped grooves, and (C-D) Flint-knapping and/or tool sharpening abraders 1806 and 1381 showing V-shaped grooves. Actual size
Celts Three ground stone celts, all of compact gray/green diorite, were recovered from the surface and plowzone. One is a complete specimen, 150 mm. long x 47.5 mm. broad x 19 mm. deep. The tool surface is polished only from the blade to 40 mm. behind the blade and it may be that the tool had been hafted or covered by rawhide beyond this point. The butt end is broken away from the other two specimens. On two of these tools one of the flat sides is pitted and pecked, indicating that each had served a dual purpose as both chopping tool and anvil stone (see Figures 25 and 26A).

Hammerstones Nine battered nodules or cobbles of quartz, chert, diorite, and compact granite represent the inventory of recognizable hammerstones. Three are from the surface and plowzone, two are from the general cultural horizon, and four were found within features.

Anvil stones and grinding slab Five flat stones show varying degrees of centralized pecking and wear. One large gray sandstone slab, 400 mm. x 230 mm. x 50 mm., from Feature 11, has a circular pitted area approximately 100 mm. in diameter and was probably used for grinding. Two granite specimens from the surface, one diorite piece from the cultural horizon, and one diorite stone from Feature 4 are much smaller and probably served as anvil stones.

Pecked and ground stone Eight fragments of granite and diorite had pecked or ground surfaces. These may be portions of ground stone tools or specimens in the process of being formed into recognizable tools. Three are from the surface, one is from the cultural horizon, and four are from features.
Figure 25. Ground stone celts 6913 and 2284 showing secondary use as anvil stones, Clarkson site. Actual size
Figure 26A. Bit end of ground stone celt 2108, Clarkson site. Actual size

Figure 26B. Worked bone flaker 5017 with cross-sections, Clarkson site. Actual size
Smoothed sandstone Many fragments of the local granular red and gray sandstones were found scattered throughout the Clarkson site. Thirty-four of these pieces had been smoothed, probably in the process of grinding or abrading another material. Four of the specimens were stained with hematite on the grinding surfaces.

Smoothed and grooved siltstone Ten pieces of gray powdery siltstone were found, five of which had been worked in some manner. Three bore shallow repetitive grooves over the stone surfaces and two others had smoothly ground surfaces. These may have served an abrading function or had been powdered for use as a gray pigment.

Worked bone

By comparison with the ample numbers of ceramic and chipped stone artifacts present in the Owens Oneota component at the Clarkson site, the inventory of worked bone tools is relatively sparse. Since much of the unworked bone material appears to be in fairly good condition this paucity cannot be entirely attributed to a lack of preservation. However, those items represented here are not inconsistent with worked bone materials found in other Oneota contexts.

Matting needles or bodkins By far the most common item of worked bone at the Clarkson site is the bone matting needle or bodkin. Twenty-one complete or fragmentary needles were recovered from seven storage/refuse pits. Only two were eyed; the rest were either broken or without perforation of any kind. In Feature 9 nine needles were found in a bundle, but the rest were found scattered throughout the pit
fill. One of the needles was manufactured from a fish rib and the rest were probably manufactured from long bones by the groove and split method. These specimens range in width from 1.5 mm. to 6.5 mm., with a mean width of 2.8 mm. Nine complete specimens, with the exception of the fish rib needle, range in length from 72.5 mm. to 86.5 mm., with a mean length of 77.6 mm. The fish rib needle is 52.5 mm. long. It is noted with interest that the shape of the tips of many of these so-called needles correspond closely with the punctated and trailed impressions found on the ceramics (refer to Figure 14A) and it is suggested that these may have been used during the manufacture of decorated ceramic pieces. Barton (1967: 18) also raises the possibility that these may be tattooing needles, based on ethnographic examples for the use of such items in the Prairie-Plains region.

**Punches or flakers** Two slender bone tools, one each from Features 10 and 11, are presumed to have been used as punches or as flint-knapping flakers. The specimen from F-10 is complete, with a maximum circumference of 7 mm. and a length of 121 mm. In cross-section the tool is circular at one end and triangular at the other with blunted ends (see Figure 26B). The specimen from F-11 is more sharply pointed and more likely served as a perforating tool.

The assumption that one of these tools may be a flaker is strengthened when the general association of near-by artifacts within the undisturbed Oneota horizon is considered. Those materials usually taken to comprise a flint-knapping assemblage appear to occur in concentration within the adjoining excavation units of N1060/W1050, N1060/W1060, and
N1070/W1050 and associated features (including F-10 and F-11). Within this area of 300 square feet the following items were found in addition to the bone tools: 274 waste flakes, 18 cores and core fragments, 3 pieces of shatter, 4 hammerstones, 3 anvil stones, 18 pieces of smoothed sandstone, 17 grooved abraders, 33 bifaces, 31 retouched flakes, 101 utilized flakes, 12 projectile points, and 13 end scrapers. No antler batons, presumed to have been used in percussion flaking, were found.

Fishhook  A broken fishhook of thin flat polished bone was recovered from the fill of Feature 9. The upper portion of the shank is slightly bulbous, presumably to keep the line from sliding off the shank.

Perforated deer phalange  Also in Feature 9 was found a right third deer phalange which had been ground smooth and perforated. The proximal end had been cut and a hole drilled three-quarters of the way into the length of the bone. The end result is a nearly hollow cone. Guilday, Parmalee, and Tanner (1962: 78) illustrate similar specimens and refer to them as "cup-and-pin" gaming pieces.

Miscellaneous cut and polished bone  Four pieces of variously worked bone were recovered from Features 1, 2, and 11. One is the broken end of a thin spatulate-shaped object, 4 mm. broad. Another may be the shank portion of a very large fishhook fashioned from a small animal rib. A third specimen is a hollow tube, 52.5 mm. long, made from a bird long bone which had been circumscribed with a sharp instrument.
and then split. Another fragmentary specimen is longitudinally grooved along the polished bone surface.

Miscellaneous items

**Daub**  Hardened clay "plaster" fragments have been found scattered throughout Moingona Phase sites, implying the former presence there of wattle and daub structures. However, no accompanying post molds or fire hearths were found at the Clarkson site. Other pieces without stick and grass impressions may be fragments of potters' clay. A total of 406 pieces of fire-hardened clay was recovered, 321 of which came from the undisturbed cultural horizon. Sub-plowzone and plowzone concentrations occurred in excavation units N1050/W1000, N1060/W1050, N1070/W1050 and N1060/W1060. Many of the pieces had stick and grass impressions and one had been perforated by a stick 5 mm. in diameter. A very few were covered with ash. Eight pieces contained small flecks of hematite and the remainder had no inclusions. Most of the pieces are small to medium in size (30 mm. in diameter or less) although a few were substantial, the largest being 42 mm. x 38.5 mm. x 26 mm. Some of these larger pieces are smoothed and may have had a non-plaster function; e.g., one cylindrical piece from Feature 9 was smoothed on one end and carried finger impressions along its length and may have been used as a "pot polisher" during vessel construction.

The remains of house structures are not well known from Oneota sites. However, Marshall McKusick does report "long house" type structures for the Grant Oneota Village in northeastern Iowa which, on
the basis of three radiocarbon dates, was probably occupied during the
eleventh century (McKusick 1973: 10). No daub was reported at the
Grant Village. McKusick postulates that these were probably summer
structures of bark and/or mat construction similar to those known
ethno-historically for groups in the prairie-woodland contact zone,
including the Chiwere-speaking Ioway, Oto, and Missouri. The Ioway
were also known to have constructed wattle and daub structures (Skinner
1926: 276) and it may be that these were the more substantial shelters
built for winter habitation.

Pigment source materials Hematite and limonite occur in small
quantities in the coal measures of northeastern Warren County (Tilton
1896: 339, 354) and these natural pigment sources were collected by
the aboriginal inhabitants of the Clarkson site. A total of eighty
pieces of hematite and four pieces of limonite were recovered, of which
only seven pieces showed signs of intentional scratching or grinding.
All of the limonite and fourteen pieces of hematite were found within
the plowzone. The remaining sixty-six pieces of hematite were found
within the undisturbed Oneota horizon and features; nearly half of these
were found within one refuse-filled pit, Feature 11. Hematite flecking
is noted in 40-50% of all ceramics from the Clarkson site. The flecking
may be due to an intentional inclusion of ground pigment into the clay
base by the potter, or the hematite may be a natural constituent in
the clay source.

Galena Nineteen chunks of native lead sulfide, or galena (PbS),
were recovered from a concentrated area within the excavation. All but
two were found within the plowzone of N1060/W1060; one piece was found at the 1.5' - 2.0' level and another within Feature 9, both also within excavation unit N1060/W1060. The pieces are unworked cuboidal crystals and are of a size small enough to be termed "dice mineral" (Leonard 1897: 26). Galena does not occur naturally within the geological deposits of Warren County but is common along the Mississippi River in the driftless region of northeast Iowa, northwest Illinois, and southwest Wisconsin (Leonard 1897: 18). It is probable, therefore, that these crystals were carried or traded into the site; however, the aboriginal use of galena is unknown. The occurrence of galena has also been reported for the Guthrey and Útz Oneota sites in Missouri (Henning 1970: 79).

**Vitreous cinder** Several pieces of gray/green vitreous cinder were recovered from the plowzone, cultural horizon, and Features 4, 7, and 11. Shepard (1954: 23) states that a glass is formed when new minerals crystallize from the alumina and silica left by the decomposition of clay during burning. The pieces of cinder were examined by Dr. Donald Biggs, Department of Geology, Iowa State University, and he has suggested these slag deposits may have resulted as a by-product of ceramic firing.

**Features**

All of the features designated within the Owens Oneota component at the Clarkson site are refuse-filled pits. Prior use of these features as cache pits is probable. The upper portions of most of these pits have
been truncated by the plow, and depths recorded at the time of excavation probably fall short of the actual depths. The following is a summary of the contents and the contextual information for each feature.

**Feature 1**

**Location:** N1069.2 / W1057 (Approximate center of pit).

**Shape:** Circular basin-like depression.

**Horizontal dimensions at defined orifice:** 3.8 feet N-S and E-W.

**Depth below defined orifice:** 2.3 feet.

**Contents:**

- **Ceramics**
  - Rims: 15
  - Decorated body sherds: 57
  - Undecorated body sherds: 146

- **Chipped stone**
  - Small triangular projectile points: 2
  - End scrapers: 3
  - Retouched flakes: 2
  - Utilized flakes: 22

- **Ground stone**
  - Grooved sandstone abraders: 2
  - Sandstone grinding slab: 1
  - Smoothed sandstone: 1

- **Worked bone**
  - Needles or bodkins: 2
  - Perforated spatulate tool: 1
  - Cut bird bone: 1

- **Lithic debitage**
  - Shatter: 1
  - Waste flakes: 22

- **Unworked stone**
  - Sandstone: 4

- **Daub:**
  - 13

- **Unworked faunal remains**
  - Bone with butcher marks: 12
  - Calcined bone: 11
  - Bone: 1,552
  - Teeth: 3
  - Mussel shell fragments: 28

- **Plant remains**
  - Charred corn kernel: 1
  - Wood charcoal samples: 4
  - Charred floor material sample: 1

- **Miscellaneous**
  - Ash sample: 1
**Feature 2**

Location: N1064.8 / W1061.1 (Approximate center of pit).
Shape: Circular basin-like depression.
Horizontal dimensions at defined orifice: 4.4 feet N-S, 4.3 feet E-W.
Depth below defined orifice: 1.9 feet.

Contents:

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<tr>
<th>Category</th>
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Feature 3

Location: N1055.1 / W1090.8 (Approximate center of pit).
Shape: Circular straight-walled depression with flat bottom.
Horizontal dimensions at defined orifice: 4.4 feet N-S, 4.2 feet E-W.
Depth at which orifice was defined: 1.6 feet below surface.
Vertical depth: 1.7 feet below orifice.

Contents:
Ceramics
- Rims ................................................. 4
- Decorated body sherds ..................... 13
- Undecorated body sherds ................. 26
Chipped stone
- Small triangular projectile point ........ 1
- Bifaces ............................................. 3
- Utilized flake ................................... 1
Ground stone
- Grooved sandstone abraders ............. 2
- Smoothed sandstone ....................... 1
Cores
- Core fragment ................................. 1
Lithic debitage
- Waste flakes ................................... 3
Unworked stone
- Hematite ........................................... 1
Daub ................................................... 2
Unworked faunal remains
- Calcined bone ................................. 28
- Bone ............................................... 7
Plant remains
- Wood charcoal samples ................... 3

Feature 4

Location: N1062 / W1053.5 (Approximate center of pit).
Shape: Circular bell-shaped pit.
Horizontal dimensions at defined orifice: 4.2 feet N-S, 4.5 feet E-W.
Depth at which orifice was defined: 2.4 feet below surface.
Vertical depth of feature: 1.8 feet below orifice.

Contents:
Ceramics
- Rims ................................................. 12
- Decorated body sherds ..................... 43
- Undecorated body sherds ................. 161
- Animal effigy head ....................... 1
Feature 5

Location: N2057.5 / W2001.4 (Approximate center of pit).
Shape: Circular basin-like depression.
Horizontal dimensions at defined orifice: 4.2 feet N-S, 4.1 feet E-W.

Chipped stone
- Small triangular projectile point 1
- End scrapers 4
- Retouched flakes 2
- Utilized flakes 5

Ground stone
- Grooved sandstone abrader 1
- Anvil stone 1
- Polished shale or coal 1

Worked bone
- Eyed needle 1
- Cut and polished bone 3

Lithic debitage
- Shatter 1
- Waste flakes 16

Unworked stone
- Sandstone 5
- Hematite 5

Daub 35

Unworked faunal remains
- Bone with butcher marks 2
- Calcined bone 21
- Teeth 5
- Bone 80
- Fish scales 2
- Mussel shell fragments (half are very small complete valves) 127
- Snake skeleton (recent intrusion) 1

Plant remains
- Charred corn kernels 25
- Charred corn cob fragments 7
- Charred corn husk pieces 2
- Charred bean 1
- Charred acorn hulls 4
- Charred rose hip (?) 1
- Charred twig 1
- Wood charcoal samples 16
- Miscellaneous carbonized material 1

Human child's skeleton 1

Miscellaneous
- Cinder-like material 2
Depth at which orifice was defined: 1.3 feet below surface.  
Vertical depth of pit: 1.6 feet below orifice.

Contents:

Ceramics
- Rims ............................................ 3
- Decorated body sherds ......................... 2
- Undecorated body sherds ..................... 9

Feature 6

Location: N1048.4 / W1092.6 (Approximate center of pit). 
Shape: Circular straight-walled pit. 
Horizontal dimensions at defined orifice: 4.8 feet N-S, 4.6 feet E-W.

Depth at which orifice was defined: 1.9 feet below surface.  
Vertical depth of pit: 2.1 feet below orifice.

Contents:

Ceramics
- Rims ............................................ 2
- Decorated body sherds ......................... 8
- Undecorated body sherds ..................... 8
- Thick bowl or pipe bowl fragment, untempered .. 1

Lithic debitage
- Waste flakes ..................................... 2

Daub ................................................ 2

Unworked faunal remains
- Calcined bone .................................... 8

Plant remains
- Wood charcoal samples .......................... 4
- Carbonized material (husks or grass) .......... 3

Feature 7

Location: N1100.2 / W1046.6 (Approximate center of pit). 
Shape: Circular pit with straight walls. 
Horizontal dimensions at defined orifice: 4.45 feet N-S, 3.7 feet E-W.

Depth at which orifice was defined: 1.4 feet below surface.  
Vertical depth of pit: 3.2 feet below orifice.

Contents:

Ceramics
- Rims ............................................ 3
- Decorated body sherds ......................... 20
- Undecorated body sherds ..................... 71
Chipped stone
- Perforator or punch ........................................ 1
- End scrapers ............................................ 5
- Biface ..................................................... 1
- Retouched flake ........................................ 1
- Utilized flakes ........................................ 3

Ground stone
- Hammerstone ........................................... 1

Worked bone
- Scratched bone .......................................... 1

Cores
- Core fragment ............................................. 1

Lithic debitage
- Waste flakes ............................................. 7

Unworked stone
- Sandstone .................................................. 1

Daub .......................................................... 15

Unworked faunal remains
- Bone with butcher marks .............................. 2
- Calcined bone .......................................... 13
- Beaver incisors ......................................... 2
- Bone ..................................................... 110
- Mussel shell fragments ................................ 18

Plant remains
- Wood charcoal samples ................................ 4
- Charred floor material samples ..................... 8

Miscellaneous
- Ash samples .............................................. 3
- Cinder-like material .................................... 1

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Feature 8

Location: N1090.4 / W1047 (Approximate center of pit).
Shape: Bell-shaped cavity with a slightly basin-shaped bottom.
Horizontal dimensions at defined orifice: 5.3 feet N-S, 4.7 feet E-W.
Depth at which orifice was defined: 1.9 feet below surface.
Vertical depth of pit: 2.4 feet below orifice.

Contents:
Ceramics
- Rims ..................................................... 10
- Decorated body sherds ................................ 25
- Undecorated body sherds .............................. 80
- Cord-marked shell-tempered body sherds .......... 1
- Undecorated grit-tempered body sherds ........... 1
### Feature 9

**Location:** N1067 / W1068.9 (Approximate center of pit).
**Shape:** Circular straight-walled pit.
**Horizontal dimensions at defined orifice:** 3.9 feet N-S, 4.0 feet E-W.
**Depth at which orifice was defined:** 1.6 feet below surface.
**Vertical depth of pit:** 1.9 feet below orifice.

**Contents:**

#### Ceramics

- **Rims:** 14
- **Decorated body sherds:** 54
- **Undecorated body sherds:** 218
- **Handle attachment:** 1

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<td>1</td>
</tr>
<tr>
<td>Smoothed sandstone</td>
<td>4</td>
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<tr>
<td>Worked bone</td>
<td></td>
</tr>
<tr>
<td>Polished bone</td>
<td>1</td>
</tr>
<tr>
<td>Cores</td>
<td></td>
</tr>
<tr>
<td>Core fragment</td>
<td>1</td>
</tr>
<tr>
<td>Unworked stone</td>
<td></td>
</tr>
<tr>
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</tr>
<tr>
<td>Daub</td>
<td>11</td>
</tr>
<tr>
<td>Lithic debitage</td>
<td></td>
</tr>
<tr>
<td>Waste flakes</td>
<td>42</td>
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<tr>
<td>Unworked faunal remains</td>
<td></td>
</tr>
<tr>
<td>Calcined bone</td>
<td>7</td>
</tr>
<tr>
<td>Bone</td>
<td>66</td>
</tr>
<tr>
<td>Mussel shell fragments</td>
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</tr>
<tr>
<td>Charred corn kernel</td>
<td>1</td>
</tr>
<tr>
<td>Charred corn cob fragment</td>
<td>1</td>
</tr>
<tr>
<td>Wood charcoal samples</td>
<td>8</td>
</tr>
<tr>
<td>Charred floor material samples</td>
<td>4</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td></td>
</tr>
<tr>
<td>Ash samples</td>
<td>2</td>
</tr>
</tbody>
</table>
Feature 10

Location: N1068.7 / W1050.5 (Approximate center of pit).
Shape: Slightly bell-shaped pit.
Horizontal dimensions at defined orifice: 5.5 feet N-S, 5.0 feet E-W.
Depth at which orifice was defined: 2.35 feet below surface.
Vertical depth of pit: 1.3 feet below orifice.
Contents:

Ceramics
- Rims ........................................... 18
- Decorated bodysherds ......................... 40
- Undecorated bodysherds ....................... 100
- Decorated handle ............................. 1

Chipped stone
- Bifaces ........................................... 3
- Retouched flakes .............................. 2
- Utilized flakes ................................ 8

Ground stone
- Grooved sandstone abraders .................. 2
- Hammerstone .................................... 1
- Celt blank fragment ............................ 1
- Smoothed sandstone ......................... 2

Worked bone
- Needle or awl tip .............................. 1
- Blunt punch or flaker ......................... 1
- Grooved and cut bone ......................... 1

Cores
- Core fragment .................................. 1

Lithic debitage
- Shatter .......................................... 1
- Waste flakes .................................... 16

Daub ................................................ 17

Unworked stone
- Sandstone ....................................... 1
- Hematite ....................................... 3

Unworked faunal remains
- Calcined bone .................................. 29
- Bone .............................................. 137
- Mussel shell fragments ....................... 160

Plant remains
- Charred corn kernels .......................... 2
- Charred acorn hull ........................... 1
- Wood charcoal samples ....................... 3

Feature 11

Location: N1075.6 / W1056.6 (Approximate center of pit).
Shape: Circular basin-shaped pit.
Horizontal dimensions at defined orifice: 4.55 feet N-S, 4.55 feet E-W.
Depth at which orifice was defined: 2.2 feet below surface.
Vertical depth of pit: 2.0 feet below orifice.
Contents:

Ceramics
- Rims .................................................. 9
- Decorated body sherds .................................. 79
- Undecorated body sherds ............................... 217
- Fired shell-tempered potting clay .................... 1

Chipped stone
- Small triangular projectile points ................... 2
- Bifaces .................................................. 3
- Retouched flakes ........................................ 4
- Utilized flakes .......................................... 9

Ground stone
- Grooved sandstone abrader ............................. 1
- Anvil stone or grinding stone ......................... 1
- Pecked cobble ........................................... 1

Worked bone
- Needles or bodkins ...................................... 2
- Punch or flaker .......................................... 1

Lithic debitage
- Waste flakes ............................................ 48

Daub .......................................................... 62

Unworked stone
- Sandstone ................................................ 6
- Hematite .................................................. 30

Unworked faunal remains
- Bone with butcher marks .............................. 1
- Calcined bone .......................................... 22
- Bone ...................................................... 189
- Mussel shell fragments ................................. 89

Plant remains
- Charred corn kernels .................................. 5
- Charred cherry or plum pit .......................... 1
- Wood charcoal sample .................................. 1

Miscellaneous
- Ash samples ............................................. 3
- Cinder-like material fragments ..................... 7
- Coal shale ............................................... 4

Feature 12

Location: N1062 / W1065.3 (Approximate center of pit).
Shape: Circular straight-walled pit.
Horizontal dimensions at defined orifice: 4.8 feet N-S, 4.7 feet E-W.
Depth at which orifice was defined: 2.05 feet below surface.
Vertical depth of pit: 1.7 feet below orifice.
Contents:

Ceramics
- Rims
- Decorated body sherds
- Undecorated body sherds

Chipped stone
- End scraper
- Bifaces
- Retouched flakes
- Utilized flakes

Ground stone
- Granite celt fragment
- Smoothed sandstone

Lithic debitage
- Waste flakes

Daub

Unworked stone
- Sandstone
- Hematite
- Schist

Unworked faunal remains
- Calcined bone
- Bone
- Mussel shell fragments

Plant remains
- Charred corn kernels
- Wood charcoal samples

Miscellaneous
- Coal shale

Feature 13

Location: N1094 / W1040 (Approximate center of pit).
Shape: Deep basin-shaped pit.
Horizontal dimensions at defined orifice: 5.25 feet N-S, 1.9 feet E-W (unexcavated portion of pit extends into the east wall of the excavation unit).
Depth at which orifice was defined: 2.2 feet below surface.
Vertical depth of pit: 2.4 feet below the orifice.

Contents:

Ceramics
- Rims
- Decorated body sherds
- Undecorated body sherds

Chipped stone
- Utilized flake
Lithic debitage
Shatter ........................................ 1
Unworked stone
Smooth round granite stones .................. 2
Hematite. ........................................ 1
Unworked faunal remains
Calcined bone .................................. 1
Bone. ........................................... 2
Miscellaneous
Coal shale ...................................... 1

Feature 14

Location: N1069.2 / W1056.5 (Approximate center of excavated portion of pit).
Shape: Circular pit with walls expanding toward the orifice.
Horizontal dimensions at defined orifice: 0.8 feet N-S (unexcavated portion of pit extends into the north wall of the excavation unit), 3.0 feet E-W.
Depth at which orifice was defined: 2.1 feet below surface.
Vertical depth of pit: 2.2 feet below the orifice.

Contents:
Ceramics
Rims ............................................. 2
Decorated bodysherds .......................... 1
Undecorated bodysherds ........................ 14
Chipped stone
Utilized flakes .................................. 2
Worked bone
Eyed needle or bodkin .......................... 1
Lithic debitage
Waste flake ..................................... 1
Daub ............................................ 2
Unworked faunal remains
Bone with butcher marks ........................ 2
Calcined bone .................................. 1
Bone .......................................... 70
Mussel shell fragments ........................ 3
Miscellaneous
Ash sample ..................................... 1

Feature 15

Location: N1070 / W1050 (Approximate center of the pit).
Shape: Circular pit with walls expanding toward the orifice.
Horizontal dimensions at defined orifice: 2.1+ feet N-S, 0.9+ feet E-W (the feature extends into the north and east walls of the excavation unit).
Depth at which orifice was defined: 2.3 feet below surface.
Vertical depth of the pit: 2.35 feet below orifice.

Contents:

Ceramics
- Rims. ................................................................. 1
- Decorated bodysherds. .......................................... 4
- Undecorated bodysherds. ....................................... 6

Chipped stone
- Utilized flake. .................................................... 1

Daub ................................................................. 4

Unworked stone
- Hematite. .......................................................... 1

Unworked faunal remains
- Bone. ............................................................... 6
- Mussel shell fragments. ......................................... 9

Plant remains
- Charred corn kernels. ........................................... 10
- Charred bean. ..................................................... 1

Human Osteological Remains

During the excavation of Feature 4, one of a cluster of storage/refuse pits, the remains of a child were uncovered. The pit extended 1.8' below the plowzone contact into sterile yellow clay and the child's body lay sprawled east/west in a prone position on the pit floor (see Figure 27). There were no apparent grave goods associated with the body, and the pit fill covering the body contained cultural refuse similar to that found in the surrounding pits. Because the body lay directly on the pit floor it is assumed that the conversion of the pit from storage to refuse purposes occurred after the deposition of the body. The remains of a snake were found between the child's legs and are probably inclusive with the refuse deposits of the pit, although it is
Figure 27. Deposition of child's skeleton within Feature 4, Clarkson site
possible that the reptile burrowed there sometime after the pit was filled.

The tooth eruption pattern indicates that the child was 5 or 6 years of age at the time of death. All deciduous teeth are present and all four first permanent molars lie just below the jaw line. The dentition is straight and even, without evidence of caries. As is to be expected in Native American populations, the maxillary incisors are somewhat concave on the lingual surfaces. The deciduous incisors and canines of the mandible are worn to the extent that a thin line of primary dentine is exposed along the upper tooth surfaces. The robustness of the mandible is striking in so young a child.

The post-cranial skeleton appears normal in all respects except for the absence of a portion of the right forearm. The right hand and distal half of the right radius and ulna were not to be found at the time of excavation. There are no obvious cut marks or marks of rodent gnawing on either bone; however, it is the observation of the writer that the edges of the bones appear to be splintered and torn. This is a condition one would find difficult to attribute to the work of rodents or insects, particularly when the absence of the forearm and hand is complete. A more extensive osteological analysis must be conducted before the true reason for the missing extremity is understood.

The interment of the dead within cache and trash pits is not unknown in other Oneota manifestations. Primary burials within abandoned storage pits are reported by Wilford for the Bryan site in southeastern Minnesota, a Silvernale focus site of the Oneota aspect
(Wilford 1955: 140). The bodies had been flexed to fit within the pits and were accompanied by ceramic grave goods. At Carcajou Point the primary burial of an infant, accompanied by a marine shell pendant and grooved sandstone abrader, was found between 8 and 12 inches above the bottom of a refuse pit within deposits assumed to be of the prehistoric Oneota occupation (Hall 1962: 29). The burial of an adult male within a storage pit is reported for the Utz site (O'Brien and Hart 1972: 64).

In these instances, it is obvious that the use of the pits was deliberate and some time for preparation had been taken. However, in an historical account of an attack by the Dakota upon the Pawnee near the Plum Creek mission in eastern Nebraska (Wedel 1936: 54), the disposal of the dead within pre-existing pits was a hurried affair:

> The Pawnees were so badly frightened they threw their dead into corn caches and heads of ravines, covered them lightly, picked up some of their traps and left some in their lodges, crossed the river and went about three miles that night. It was on the twenty-seventh of June, I think in 1845 (Allis 1887: 155).

The prone position of the dead child at the Clarkson site is not typical of Oneota burials and may perhaps be explained by a similar hurried or haphazard situation.

Faunal Remains

_Bone and teeth_

A total of 3,087 fragments of unworked bone and teeth was found throughout the excavation of the Clarkson site. However, nearly two-thirds of these were recovered from a single refuse-filled pit,
Feature 1. Of the total number only 326 pieces had been charred or calcined. The bulk of the unburned inventory was relatively well preserved.

The bone material discernable as mammalian was analyzed by E. Arthur Bettis, an Honors student specializing in zoo-archaeology at Iowa State University. He was able to positively identify twelve different species from 171 bone fragments and teeth. These species include white-tailed deer, bison, dog or wolf, elk, bobcat, beaver, mink, cottontail rabbit, squirrel, opossum, skunk and muskrat. All of these species, with the probable exception of the bison, would have been readily available in the riverine woodlands near the site. The bison would have been found on the open prairies, possibly at some distance away from the Clarkson site.

Pertinent data for the identified mammalian remains is given in Figure 28. The numbers given for individuals represented are the minimum numbers present; therefore, the estimates are very conservative. Estimated dressed weights of animals were taken from Guilday, Parmalee, and Tanner (1962: 61) and White (1953: 397-398). Dressed weights of juveniles were estimated as one-half the dressed weight of an adult of the species. In the case of the bison remains the sex of the specimens was not discernible; therefore, the estimated dressed weight used was 650 pounds per individual, a weight midway between the figures used for male and female dressed weights by White (1953: 397). The absolute figures derived are certainly not the true ones, but the figures should be roughly comparable. The identification of rib and vertebral frag-
<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Pieces</th>
<th>Percent of Total</th>
<th>Individuals Represented</th>
<th>Estimated Pounds Represented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odocoileus virginianus</td>
<td>White-Tailed Deer</td>
<td>119</td>
<td>29.16</td>
<td>5Ad. 2Juv.</td>
<td>600</td>
</tr>
<tr>
<td>Bison bison</td>
<td>Bison</td>
<td>22</td>
<td>20.83</td>
<td>2Ad. 3Juv.</td>
<td>2275</td>
</tr>
<tr>
<td>Canis (sp.)</td>
<td>Dog or Wolf</td>
<td>4</td>
<td>4.16</td>
<td>1</td>
<td>12.5</td>
</tr>
<tr>
<td>Cervus canadensis</td>
<td>Elk</td>
<td>3</td>
<td>4.16</td>
<td>1</td>
<td>350</td>
</tr>
<tr>
<td>Lynx refus</td>
<td>Bobcat</td>
<td>1</td>
<td>4.16</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>Castor canadensis</td>
<td>Beaver</td>
<td>14</td>
<td>12.5</td>
<td>2Ad. 1Juv.</td>
<td>96.25</td>
</tr>
<tr>
<td>Mustela vison</td>
<td>Mink</td>
<td>1</td>
<td>4.16</td>
<td>1</td>
<td>.75</td>
</tr>
<tr>
<td>Sylvilagus floridanus</td>
<td>Cottontail Rabbit</td>
<td>2</td>
<td>4.16</td>
<td>1</td>
<td>1.75</td>
</tr>
<tr>
<td>Glaucous (sp.)</td>
<td>Squirrel</td>
<td>2</td>
<td>4.16</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Didelphis marsupialis</td>
<td>Opossum</td>
<td>1</td>
<td>4.16</td>
<td>1</td>
<td>8.5</td>
</tr>
<tr>
<td>Spilogale putorius or</td>
<td>Skunk</td>
<td>1</td>
<td>4.16</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Mephitis mephitis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ondatra zibethicus</td>
<td>Muskrat</td>
<td>1</td>
<td>4.16</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Figure 28. List of mammals represented from faunal remains at the Clarkson site. Data prepared by E. Arthur Bettis.
ments was not attempted in most cases. The majority of the long bones had been shattered into small pieces, presumably in the process of removing the marrow. In no instance were any pathologies observed. Several of the mammalian remains exhibited butchering and skinning marks.

The fish remains were examined by Lynn Alex of the Office of the State Archaeologist, University of Iowa, and a catalogue list of identified species is given in Appendix A. She was able to determine that the inventory was dominated by channel catfish (*Ictalurus punctatus*) and flat-head catfish (*Pylodictus olivarus*), with suckers (*Catostomidae*) represented in a lesser number. The presence of these species would suggest that the Oneota fishermen had fished in the open channel of a fairly large river (Lynn Alex 1976: personal communication). In addition to the fish remains, one turtle bone, the bones of one snake, and several bird bones were recovered and these pieces await further identification.

The apparent emphasis on the utilization of artiodactyl meat at the Clarkson site parallels closely the analysis of faunal materials from the Lane Enclosure, an Oneota site in northeastern Iowa which was occupied at least twice, the first time circa 1465 A.D. and later around 1700 A.D.:

...deer, both by weight and number, were the primary source of meat. The wapiti or "elk" and bison, respectively, follow. Beaver, softshell, and fish are significant by number but only contributed to 12 percent of the usable meat. The beaver, along
with other small mammals, probably were collected for meat as well as for fur. This can be substantiated, in part, by the recovery of proportional numbers of all skeletal elements (Jenkins and Semken 1972: 76).

This would seem to indicate that, at least for these Oneota sites, the almost exclusive emphasis on the bison as a meat source was not so pronounced a trait as for those groups to the west on the Great Plains. The inhabitants of Oneota sites in Iowa apparently consumed a broad-spectrum meat diet by exploiting the woodland, riverine, and prairie sources around them.

Fresh-water mussel shell

Although a large number of fresh-water mussel shells was present throughout the prehistoric cultural horizon, none appear to have been fashioned into tools or ornaments. This is unusual since several pieces of worked shell have been reported for Moingona Phase sites (Gradwohl 1973: 78-79; 1974: 96). Some of the items described from 13PK1 include shell spoons or scoops, shell "minnows" possibly used as fish lures, shell beads, and serrated and incised shell pieces. The absence of worked shell at the Clarkson site may be due simply to the limited area sampled at the site.

A total of 551 fragments of unworked shell were collected, the bulk of which were found in Features 4 and 10. These shells await classification as to genus and species. Over half of those found within Feature 4 are very small complete valves and would not have provided a very substantial amount of meat. Since the calorie content of most
fresh-water mussels is quite low it is probable that these could not have provided a major source of nutrition (Parmalee and Klippel 1974: 432). It remains a moot question as to whether the aboriginal population collected these mussels primarily as a food source, or if the main intent was to use them as the source of the tempering material so characteristic of Oneota ceramics.

Plant Remains

Due to the highly perishable nature of organic materials most plant remains have low survival potential within archaeological sites in this region. Only those occasional items which become charred or carbonized are left for study. Even this factor leaves the archaeologist at a disadvantage because charring often alters the morphological structure of the plant remains and destroys the seed color, seed coat, bark, and other identifying characteristics of the living specimen. It is from this scant evidence, then, that assumptions must be drawn as to the kinds of plants used by prehistoric populations. The following discussion summarizes those plant remains preserved at the Clarkson site.

Seeds and nuts

With the kind assistance of Dr. Roger Landers of the Department of Botany, Iowa State University, the remains of at least two species of cultigens and of three types of wild plants were tentatively identified. These include several kernels and cob segments of corn (Zea mays) and
two beans (*Phaseolus vulgaris*). The corn is probably of the flint
variety, but the cob segments are so fragmentary that the number of
rows cannot be discerned. In addition, the remains of at least two
cherry or plum pits, several acorn hulls, and a possible rose hip were
recovered. A more detailed catalogue of these plant remains is given
in Appendix B. These would seem to indicate the utilization of both
cultivated and wild plants as food sources.

**Grass**

The tall-grass prairies of the region would have provided an
abundant supply of that material for a wide variety of uses. Several of
the storage pits (Features 1, 6, 7, 8, and 9) at the Clarkson site had
apparently been lined with grass. It was noted at the time of excavation
that some of this grass material appeared to be woven. However,
laboratory analysis failed to define any evidence of weaving, possibly
the effect of disintegration of the material over time.

**Wood**

Wood charcoal was found scattered throughout the Clarkson site.
Identification analysis was made of a representative sample of charred
wood fragments from four refuse-filled pits (Features 1, 2, 9, and 11)
by Barbara Schulte, with the assistance of Dr. Dwight Bensend of the
Department of Forestry, Iowa State University. Those species identified
include American elm, red elm and/or hackberry, rock elm, white oak,
red oak, hickory, white ash, American sycamore, walnut, basswood and/or
birch, cottonwood, honeylocust, and possibly sassafras (see Figure 29).
Wood Species | Number of Samples Identified
---|---
Red elm (*Ulmus rubra* Muehl.) or hackberry (*Celtis occidentalis* L.) | 11
American elm (*Ulmus americana* L.) | 5
Rock elm (*Ulmus racemosa* Thom.) | 1
White oak (*Quercus alba* L.) | 7
Red oak (*Quercus rubra* L.) | 1
Oak (*Quercus*) | 1
Hickory (*Carya*) | 5
Walnut (*Juglans*) | 1
Birch (*Betula*) | 1
White ash (*Fraxinus americana* L.) | 2
American sycamore (*Platanus occidentalis* L.) | 2
Cottonwood (*Populus deltoides* Marsh.) | 2
Basswood (*Tilia americana* L.) | 1
Honeylocust (*Gleditsia triacanthos* L.) | 2?
Sassafras (*Sassafras albidum* (Natt.) Nees or *Sassafras variifolium* (Salisb.) Kuntze) | 1?

Figure 29. Species of wood identified from Features 1, 2, 9, and 11, the Clarkson site
All the tree species represented are hardwoods and are found most often on deep-soiled, well-drained higher bottomlands and alluvial deposits or in streambank habitats (Harlow 1957: 91-266). A more detailed catalogue of the identified woods is given in Appendix B.

Radiocarbon Dates

Prior to 1975 several conflicting radiocarbon dates were available from Moingona Phase sites. Carbon samples collected from Feature 3 at the Howard Goodhue site (13PK1) were submitted to the radiocarbon laboratory at Gakushuin University in Japan and to the Smithsonian Institution in Washington, D.C. The Gakushuin run (GAK-879) reported the date to be "modern", while results from the Smithsonian (SI-357) gave a date of A.D. 1650 ± 200 (Gradwohl 1973: 126). To further confound the problem, carbon dates run on charcoal from the Mohler Farm site (13MA30), a Moingona Phase site on the Des Moines in Marion County, were also disparate.

Charcoal from a storage pit, Feature 23, at 13MA30 assayed at A.D. 690 ± 90 (GAK-699) and A.D. 1680 ± 180 (SI-359). Similarly charcoal from Feature 5 at 13MA30 yielded dates of A.D. 960 ± 80 (GAK-698) and A.D. 1500 ± 200 (SI-358). An additional date was obtained from wood from a presumed posthole (Feature 11) at 13MA30 -- GAK-697 assay being reported as "modern." The latter feature could indeed represent a modern intrusion into the site although it was regarded as aboriginal at the time the site was excavated in 1964 (Gradwohl 1973: 127).
Although the more recent of these dates is highly plausible considering what is known of the occupation of Oneota sites on the historic horizon in northeastern Iowa (Mott 1938: 302), the total absence of trade goods in the Moingona Phase sites begs for earlier dates of occupation. Also, the long time span reflected by dates from charcoal within the same storage pits is curious.

Through the good graces of Dr. David Baerreis and Dr. Margaret Bender of the Center for Climatic Research at the University of Wisconsin-Madison, several more assays of carbon from the Central Des Moines Valley Oneota sites were run. These included another sample of carbon from Feature 3 at 13PK1, other samples of carbon from Features 5 and 23 at 13MA30, plus four samples from Features 2 and 9 at 13WA2. The four wood charcoal samples submitted from the Clarkson site had been identified as to species: white ash, red elm or hackberry, white oak, and ash, respectively. The resultant dates are:

<table>
<thead>
<tr>
<th>Site</th>
<th>Feature</th>
<th>WIS-Code</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>13PK1</td>
<td>Feature 33</td>
<td>WIS-733</td>
<td>760±60; A.D. 1190</td>
</tr>
<tr>
<td>13MA30</td>
<td>Feature 5</td>
<td>WIS-734</td>
<td>930±50; A.D. 1020</td>
</tr>
<tr>
<td>13MA30</td>
<td>Feature 23</td>
<td>WIS-763</td>
<td>740±45; A.D. 1210</td>
</tr>
<tr>
<td>13WA2</td>
<td>Feature 2</td>
<td>WIS-738</td>
<td>650±55; A.D. 1300</td>
</tr>
<tr>
<td>13WA2</td>
<td>Feature 2</td>
<td>WIS-756</td>
<td>660±60; A.D. 1290</td>
</tr>
<tr>
<td>13WA2</td>
<td>Feature 9</td>
<td>WIS-731</td>
<td>705±50; A.D. 1245</td>
</tr>
<tr>
<td>13WA2</td>
<td>Feature 9</td>
<td>WIS-732</td>
<td>765±55; A.D. 1185</td>
</tr>
</tbody>
</table>

This fairly consistent clustering of dates within the 11th through the 13th centuries seems more feasible considering the data available; however, it does not explain the very early and very late dates obtained from the earlier assays.
If it is assumed the 11th to 13th century dates are the true ones, this could make the Clarkson site roughly contemporaneous with several other Oneota manifestations throughout the Prairie-Plains: the Dixon site in northwestern Iowa produced dates ranging from A.D. 930±80 to 1670±70 with the dates clustering around A.D. 1315 (Harvey 1971: 250); the Grant site in northeastern Iowa was dated between A.D. 980±95 and 1080±180 (McKusick 1973: 10). In Wisconsin at Carcajou Point the dates span a wide range from A.D. 890±80 to modern, the Walker-Hooper site dates cluster around A.D. 1230, and the Lasley's Point dates range from A.D. 990±70 to 1480±69 with a clustering around 1270 (Henning 1970: 168). The Bryan site in southern Minnesota has dates ranging from A.D. 1135±150 to 1450±120 (Henning 1970: 171), the Guthrey site in northern Missouri produced dates ranging from A.D. 1200±80 to 1430±75 with an average date of 1345 (Henning 1970: 170), and the Leary site in eastern Nebraska has produced dates ranging from 1205±70 to 1360±70 (W. Wedel 1967: personal communication to D. Gradwohl). From this evidence alone it is suggested that Oneota cultural manifestations during this time period represent not one, but several, spatially-separate but culturally-related groups.
CHAPTER 6.
ANALYSIS OF THE HISTORIC CLARKSON COMPONENT

Historical Background

The village of Clarkson was begun by W. H. Hartman of Warren County circa 1879. Hartman owned land in Sections 1 and 2 of Allen Township and the principal impetus for the village's inception was the building of a railroad through this northeastern corner of Warren County. A county history, written in 1879, predicted the eventual establishment of a station on Hartman's land:

The third and last railroad to be built in the county is not yet completed, but so nearly as to warrant us in treating it as though it were. This is the Knoxville and Des Moines branch of the Chicago, Burlington and Quincy Railway, which enters the county near the northeast corner of Richland township, following the Des Moines river, and crossing Middle River not far from its mouth, thence in a northwesterly direction through Richland and Allen township, about a mile and a half from its eastern line.

There will probably be two stations on the new road in Warren County. One at or near Taylor's, about two miles north of Hartford, and the other near the farm of W. H. Hartman, in Allen township, about two miles east of Carlisle (Union Historical Co. 1879: 390).

The Knoxville and Des Moines branch was open for traffic on 10 January 1880 (Baldwin 1929: 199) and Clarkson was to be the only station on the C., B. and Q. line in Allen township (Martin 1908: 293).

A post office was established in Clarkson on 22 November 1880 with W. W. Martinson as its postmaster (Wolters and Westholm n.d.: 126).
Within ten years the village obviously had become a small business center:

...you behold the C, B, & Q train pulling into Clarkson, in Allen township, only two miles from Carlisle. Clarkson has a grain elevator. There is a nice cosy station and freight house, of which Mr. Albert Hartman is agent and operator (Blue Grass League of Warren County 1890: 19).

By 1892, W. H. Hartman had taken over the job of postmaster, with the post office housed in his general store (Iowa State Gazetteer 1892: 867; Mabel Owens Shaffer in Schultz and Berry 1953: 74). The population of Clarkson by 1905 had increased to 50 individuals and the following businesses were located there:

- B. Banford, blacksmith
- Lee Furrow, R.R., Exp. & Tel. agt.
- Wm. H. Hartman, gnl. store
- Iowa Grain and Product Co.
- W. M. Morgan, blacksmith
- Owens Bros., sawmill
- Sigler Lumber Co., grain
  (Iowa State Gazetteer 1905-6: 351)

Despite Clarkson's apparent growth it could not match that of the near-by town of Carlisle. The Clarkson post office was discontinued on 30 June 1906 and its former patrons received delivery out of Carlisle (Wolters and Westholm n.d.: 126). Hartman continued his general store into the 1920's and the village of Clarkson continued to be listed in the 1922-23 edition of the Iowa State Gazetteer (1922-23: 225).

Gradually the buildings that had once comprised Clarkson were torn down, leaving only two farm houses. These, along with the Clarkson railroad depot sign, were removed in 1967 after the U.S. Army Corps of
Engineers had acquired the property. Historic materials, including an 1884 silver dollar, were found on the surface of 13WA107, directly east of 13WA2. These items as well as those from 13WA2 are the only remaining evidence of Clarkson, and the artifacts from 13WA2 are described below.

Artifacts

China household ware

Ninety-six pieces of broken china were recovered from the surface and plowzone at 13WA2, representing a collection of pitchers, lids, plates, saucers, cups, and small bowls typical of household ware from the late nineteenth and early twentieth centuries. These ironstone and porcelain fragments generally range from 1.5 mm. to 5 mm. in thickness, although one plain white plate fragment is 10 mm. thick and is probably a heavy-duty utility item.

Although the bulk of the china recovered is plain white ware, several pieces are decorated and four vessel bases bear trademarks. The marked bases are fragmentary and, in each case, only a small portion of the mark remains. Some writing is decipherable on three of the bases, and it is possible to identify two of the trademarks. One is the mark of H. Alcock, probably Henry Alcock and Company of Cobridge, England, which made and sold wares in the latter half of the nineteenth century (Jervis 1897: 2; Kovel & Kovel 1953: 242; Thorn 1947: 53). The other shows the first name of the potter to be George and the factory location to be Stoke-upon-Trent and is probably the mark of Geo. Jones & Sons which operated a factory in that English town in the late nineteenth century.
and early twentieth century (Jervis 1897: 19; Thorn 1947: 70). All that is readable in the third mark are the words "Stone China".

All four trademarks include variations of the royal coat of arms (a standard of a lion and unicorn standing upon a banner reading "Dieu et Droit"). The trademark without writing shows only the unicorn portion of the standard.

The decorated pieces are dominated by floral designs and colored transfers. Six pieces of very thin (1.5 - 2.5 mm.) porcelain are covered with floral transfers in shades of pink, green, and yellow and probably represent pieces from one ceramic set. Another porcelain piece, a small bowl or tea cup, is decorated with cobalt blue in a Chinoiserie design. One white porcelain rim is decorated with a molded scroll design and another porcelain rim has external underglaze striping in blue and brown. One small thin porcelain cup fragment is colored inside and out with dark cobalt blue.

The decorated ironstone pieces include:

3 pieces of brown transfer ware, one of which has a trellised background (1 rim and 2 body sherds)
4 pieces of green transfer ware (2 rims and 2 body sherds)
2 pieces of red transfer ware (body sherds)
3 pieces of blue transfer ware (body sherds)
1 piece of orange and blue transfer ware (body sherd)
3 pieces of multi-color floral underglaze painted ware (1 rim and 2 body sherds)
1 rim with an overglaze painted blue edge band
2 rims edged by molded raised work and colored with cobalt blue (variations of the "blue feather edge" decoration)
1 plate rim with a decorative band of molded raised work bounded on each edge by a band of red overglaze paint. Part of the raised work is a large A and may indicate that this is a commemorative plate.

7 rims of plain white ware with molded raised work

Two additional pieces of plain white ware decorated by molded raised work deserve some attention. One fragment is a lid edge. Assuming the lid is circular, the projected interior diameter of the vessel mouth to which it belonged is 135 - 140 mm. (5 3/8 - 5 1/2 inches) across. The lid would have been seated on top of the vessel rim with an interior ridge which fit down into the vessel around its interior circumference. The top of the lid is decorated with molded raised work; the lid itself is slightly convex. There is also a fragment of a very large handle, 16 mm. maximum thickness and 30.5 mm. maximum width, decorated with similar raised work. It is highly probable that these represent pieces of the same toilet set.

Stoneware household ware

A total of seventy-seven pieces of stoneware was recovered from the surface and plowzone at the Clarkson site. Most appear to be of industrial manufacture, rather than from a smaller-scale wheel-turned operation, and fall into rather distinct categories of utility items for domestic use.

Milk bowls Eight rims and five body sherds from milk bowls were collected. Six of the rims have an "Albany" and "Albany"-like slip on both the bowl interior and exterior; one has an "Albany" slip interior and
a salt glazed exterior; and one has a creamy white interior and exterior glaze. All indications are that these bowls had been machine formed.

**Churns**
Two pieces are remnants of butter churns. One of these is a rim with a heavy internal channel or shelf upon which the lid could rest. There is an external lug on this piece 45 mm. below the lip edge. A creamy white glaze covers both the interior and exterior surfaces. The other piece is the rim portion of a churn lid covered with an "Albany" slip.

**Bottles**
Three salt glazed pieces are from relatively cylindrical containers with constricted necks and are presumed to have once contained such liquids as ale, blueing, or ink. Two are body sherds and one piece is a vessel neck and shoulder.

**Cylindrical containers**
This is a general category including containers such as crocks and butter jars on which the neck opening approximates the circumference of the vessel base. Two rims from 13WA2 fall into this category; both are reserve rims designated after the category established by Reynolds (1970: 130). One is like Reynolds' subcategory K, with a salt glazed exterior and an "Albany" glazed interior. The other is similar to Reynolds' subcategory N, with a gray-white glaze on the interior and exterior.

**Chicken waterer**
One nearly-complete item from the surface is a mold-made stoneware chicken waterer. The vessel is cylindrical with a domed top and has two ports around the open bottom. The pan in which it sat is missing. It is covered with a gray lustrous glaze and two cobalt-blue stamps. One of these identifies the vessel as having been made by
the Red Wing Union Stoneware Co. of Red Wing, Minnesota and the other
designates it as a KLONDIKE CHICKEN DRINKING FOUNT AND BUTTERMILK
FEEDER, KLONDIKE INCUBATOR CO., DES MOINES, IOWA. It is apparently a
promotional piece and is not necessarily associated with the early
occupation at Clarkson.

Flower pot One molded rim is that of a flower pot. The vessel
has been bisque fired and then covered by a layer of blue paint on the
pot exterior.

Miscellaneous Vessel Fragments A small number of fragments
cannot be assigned to any definite vessel type. Included are six bases
with interior and exterior gray-white glaze, five bases with interior
and exterior "Albany" slip, one base with an "Albany" interior and a
salt glazed exterior, and one base with an "Albany" interior and a
gray-white glazed exterior. One of the gray-white bases is stamped in
black on the exterior with the words "(M)OINES, I(____)", indicating
that it is of local manufacture in the city of Des Moines or was used
as advertising there. Of the body sherds there are fifteen with gray-
white glaze inside and out, four with "Albany" slip interiors and
gray-white glazed exteriors, nine with "Albany" slip interiors and salt
glazed exteriors, and thirteen with "Albany" slip inside and out. One
of these gray-white body sherds is stamped in blue with the cartouche
of the Union Stoneware Co. of Red Wing, Minnesota. One "Albany" slipped
handle is present, either from a jug or a pitcher. Two curved molded
pieces (possibly portions of a lid) and piece of bas relief molded
stoneware are covered by a very lustrous brown glaze.
Household glass

Glass bottles Four complete clear glass bottles were collected: one of these is 122 mm. high and 46 mm. in diameter with 6 [0] 9 stamped into the base and a flanged rim meant to be corked or stoppered; another is 95 mm. high and 43 mm. in diameter with the symbol \( \frac{1}{2} \) stamped into the base and 6.K.5862-C stamped into the base and 2 1/2 oz stamped just below the wide-mouthed slightly flanged rim, which was either stoppered or closed with a cork. The two remaining bottles have screw-top closures. One of these is 135 mm. high and 50 mm. in diameter with "Fitch's" stamped into the base and a constricted neck with an opening 5 mm. across. The other is a small flask-shaped perfume bottle, 55 mm. high, with the numbers 683 stamped into the base.

In addition, several bottle fragments were recovered and these include:

1. the rims of two clear "medicine" bottles with wide flanges (extend 5 mm. from the neck)
2. the rim of a clear "medicine" bottle with a narrow flange
3. the rim of a dark blue bottle with a narrow flange
4. the sheared (straight) rim of a clear flask-like bottle
5. the rim of a green bottle with a screw-top closure
6. the rim of a clear wide-mouth bottle or jar with a screw-top closure
7. the base of a clear glass bottle stamped DESIGN PATENT 7 7 86565
8. the side of a rectangular clear glass bottle stamped DEWITT & CO. CHICAGO, U.S.A.
9. the side of a clear glass bottle stamped BRAD
10. the side and base of a clear glass bottle; stamped on side is LAIN'S and on the base is 2 BOTTLE MADE IN U.S.A.
(11) the side of a clear glass bottle with C and N below it
(12) eight pieces of miscellaneous clear glass bottle fragments

Preserve jars and lid liners Two fragments of pale green preserve jars were found, one of which has a portion of the Ball trademark. In addition, four pieces of milk glass preserve jar lid liners were collected.

Milk glass jars Four fragments of milk glass jars were collected. One is a portion of a circular base on which the letters ME in ornamental script occur. Another piece is the base of a smaller cylindrical jar with a radius of 20 mm, on which is stamped ___LATUM REG TRADE MARK and may be part of a mentholatum jar. Of the remaining fragments, one is a jar side decorated with faceting and scallops, and the other is a portion of a rim with screw-on threads.

Milk glass lamp fragment One piece of milk glass appears to be the lower edge of a lamp globe. The contact edge has been slightly roughened.

Miscellaneous ornamental glass This category includes fragments of glass tableware, nicknacks, and etched glass. Four pieces are pinkish pressed glass fragments and appear to have belonged to the same candy or jelly dish. Three pieces have molded grooves or trellising on their surfaces. One fragment is a small faceted knob. A piece of flat glass has been etched by acid in geometric patterns and may be part of an ornamental window pane. One piece of milk glass has small flowers molded on its surface; another piece of very thin milk glass is
decorated with red transfer and green paint. There is also a piece of peach-colored carnival glass with a molded wheat sheaf pattern.

**Melted glass**  Six lumps of glass attest to the probability that some of the material found is from a dump area which had been burned.

**Children's toys**

**Marbles**  Two glass marbles were found, one of which has been broken through the center. Both are 16 mm. in diameter. The complete specimen is of translucent glass with an opaque blue swirl. The broken marble is of milk glass with red and green mottling on the surface.

**China doll fragments**  Three pieces of what is probably one china (parian or stone bisque) doll were found. These include the right foot and lower leg, a shoulder, and a portion of the face, including the nose and upper teeth. The doll is white with molded features; the lips and the sock and shoe are tinted with color. The doll is hollow molded, with mold lines running up both the front and back of the leg. The length of the foot is 22 mm.; the width is 11 mm. The distance from the bottom of the foot to the knee is 38 mm. The teeth had been formed as a separate unit and then set into place behind the upper lip.

Also found was the torso of a small china (porcelain) doll of the type known to collectors as a "Frozen Charlotte". Most "Frozen Charlottes" were manufactured in Germany from the 1840s or 1850s until the turn of the century and were so popularly inexpensive in America that they were often called "penny dolls" (Fox 1974: 289; Johl 1946: 235; St. George 1948: 41; Young 1967: 155). The example from 13WA2 is
solid and has been molded in one piece, with mold lines running up each side of the body. The appendages are non-movable. The doll has no clothing or adornment of any kind. The present height of the doll (minus head and feet) is 42 mm.

**Clothing accoutrements**

**Buttons** Three different buttons were found at 13WA2. One is a two-hole white mussel shell button, 22 mm. (7/8 inch) in diameter and 2 mm. in thickness. It is chipped and the surface has begun to erode. Another is a molded two-hole hard rubber button, 18 mm. (3/4 inch) in diameter and 2 mm. in thickness. The button is dull red in color and has been damaged by exposure to heat along one edge. The third button is of milk glass, bi-conical in shape with a self-shank (Peacock 1972: 123); it is 10 mm. (3/8 inch) in diameter and 7 mm. in thickness. One edge has been chipped away.

**Bead** A single multi-faceted clear red glass bead was recovered from the surface, 14 mm. in length and 5 mm. in diameter. The facets are irregular, having been cut rather than molded. The bore is 1 mm. wide and passes off-center through the bead, suggesting that the bead was not machined but had been made by hand.

**Bone ornament** A portion of an oval decorative carved bone object was found and is presumed to have been part of a hair ornament, brooch, or fancy buckle. The portion remaining consists of a rosette surrounded by leaves and flowers, all carved in relief on a flat or slightly curved bone, and retains a natural white to gray-white bone
color. The upper surface has been covered by a clear lacquer. The approximate reconstructed dimensions are 40 mm. x 44 mm. with a thickness of 5 mm. The surface of the ornament has begun to crack and the piece is slightly warped.

**Buckle**  
A decorative brass buckle cover was found, embossed with an emblem of an ax and mallet, handles crossed, on a field of branches. The buckle cover is rectangular, 75 mm. x 52 mm., and has a slot along one edge for attachment to a belt.

**Sewing accoutrements**

**Thimble**  
A silver thimble, covered entirely by dimpling except for a fretted band around the circumference near the opening, was found; it had become misshapen by flattening. The circumference of the opening is 48 mm. and the diameter of the closed end is 12 mm.

**Smoking paraphernalia**

**Pipe**  
A portion of the bowl of a redware clay pipe was recovered. Molded parallel lines over the entire surface follow the curved outline of the pipe bowl. The piece has not been glazed and retains its natural dull red bisque color.

**Gun Supplies**

**Bullet**  
A lead .44 or .45 caliber bullet was found and could have been used as early as the late 19th century.
Pooled lead  A lump of once-molten lead was found and is presumed to be residue from bullet manufacture or from soldering.

Metal Hardware

Pocket knife  A badly corroded pocket knife was found on the surface. The iron blades are almost entirely rusted away; however, the brass sheath pieces are preserved, minus a riveted inset which may have been of wood or bone. The knife is 90 mm. long and 15 mm. wide.

Padlock  An extremely rusted iron padlock was recovered from the surface. The body is circular, 45 mm. in diameter and 10 mm. thick.

File  A portion of a large flat file was found, so rusted that the oblique grooves are barely discernible. The width of the segment remaining is 25 mm.

Nails and spikes  Ten square-headed iron nails and/or spikes were recovered, the longest of which is 103 mm. Also found was a tear-drop shaped iron tack 22 mm. long. Two more recent round-headed nails were also collected.

Fencing staples  Seven small U-shaped fencing staples were found and are probably attributable to relatively recent farming activity.

Wire  At least fifteen lengths of thin-gauge iron wire were found. Two of these pieces appear to have previously carried barbs.

Miscellaneous metal fragments  Among the pieces of metal recovered is an iron ring, 55 mm. in diameter to which four links of chain are attached, a hinge-like iron object containing two rivets, a heavy ladle-like iron object, three pieces of sheet iron, a small thin
rectangular piece of copper with gradations marked at 1/8 inch intervals, a stamped copper piece riveted to a brass strip, two copper rivets punched through a double strip of leather, a rusted iron rod 54 mm. long and 7 mm. in diameter, a segment of an iron screw-on cap 10 mm. deep, and a piece of zinc with a threaded surface.

Construction materials

Brick Four fragments of salt glazed brick, one piece of very porous fire brick, and two pieces of red brick were recovered. One of the pieces of red brick is complete: 90 mm. long, 50 mm. wide, and 25 mm. thick.

Tessera or tile One small square of grey marble tessera or tile was recovered, 20 mm. square and 5 mm. thick.

Drainage tile Nine pieces of red ceramic drainage tile were collected and are probably attributable to modern farming practices in the area.

Railroad items

Three items may be attributed to the presence of the Chicago, Burlington and Quincy Railroad that ran through the village of Clarkson. One of these is a large iron spike, 135 mm. long and 12 mm. thick. Two pieces of thick glass may also be associated with the operation of the railroad: one thick convex piece of dark green glass may be part of a signal light; another piece is an oval of thick clear glass which appears to have been purposefully chipped to that shape and may also have been part of a signal.
Miscellaneous items

Graphite rod       A small graphite rod segment 7 mm. in diameter was recovered.

Insulators        Two pieces of milk glass may have served as electrical insulators. One has a glossy white surface and is circular with a central perforation. The other is cylindrical with a perforation through the width of the cylinder. It is glazed dark blue.
CHAPTER 7.

SUMMARY AND CONCLUSIONS

This study has been concerned with the investigation and analysis of materials recovered from the Clarkson site (13WA2). Both the prehistoric Oneota component and the historic Clarkson component have been taken into consideration, and in the definition and reconstruction of each the archaeological data and historic and literary research information have been utilized. The general geomorphological and ecological setting of the site was discussed in the fore part of the study, followed by a discussion of the general culture-historical development within the region over time. Both of these sections served to "set the stage" for the discussion of the cultural groups which came to inhabit and exploit the specific area of the Clarkson site.

The major emphasis of this study has been the prehistoric Owens Oneota component and this is summarized in more detail in the conclusions below. The secondary emphasis has been on the occupation of the little community of Clarkson, which enjoyed a brief existence from the 1880s into the 1920s, and then faded away as surrounding towns grew in importance. But for the fleeting references to the village in a few county histories and government records and the pieces of historic debris which were recovered for the archaeological record, the former existence of the village would be consigned to oblivion.
Owens Oneota Component

Controlled excavation of a portion of the Owens Oneota component at the Clarkson site has shown that the historic materials scattered on the surface and throughout the plowzone of the site may be attributed to the Euro-American occupation of Clarkson. No historic trade items were found within Oneota context and radiocarbon dates from the site, ranging from A.D. 1185 to 1300 ± 55, confirm the suspicion that the site was occupied well before the time of historic contact.

The excavation has revealed a prehistoric occupation area laced with subterranean storage pits which had been secondarily used as trash pits and filled with cultural debris. Included in the fill of one of these pits was the body of a young child, and the manner of deposition has suggested that this was something other than a ritual burial. One is left to wonder at the attendant thoughts surrounding the disposal of the child's body in such a summary manner.

The main emphasis in the analysis of the material remains from the Owens Oneota component has been the description of the ceramics found there. This preoccupation is derived from the fact that the Oneota ceramic style and form are the most characteristic traits of that complex and thereby serve as the most universal bases for comparison with materials from other Oneota sites. The analysis of the Clarkson site ceramics has shown that the Oneota potters there were making carefully-executed vessels of clay tempered with crushed shell. The uniformity and thinness in the manufacture of the wares was so well done that it nearly defies replication by modern hand-building.
techniques. The trailed decoration of the vessel shoulder and rim areas was neat and deliberate, and the geometric motifs utilized were so distinct and patterned that these may now be categorized by the archaeologist. The typical vessel form represented was symmetrically round and globular, with an acutely-angled rim/shoulder juncture and an upright to out-flaring rim.

Analysis of the lithic materials from the Owens Oneota component has shown that these people had engaged in flint-knapping for the production of tools to be used in hunting, hide-working, and general craft activities. Their primary utilization of a homogeneous and non-local chert has indicated that these people either travelled some distance to quarry their supply or had established a system of trade for the material. Evidence for a possible trade network was also indicated by galena found at the site. The presence of sandstone grinding and abrading tools has shown that the Oneota craftsmen were exploiting local materials for their needs as well.

Analysis of the faunal and plant remains has shown that the Oneota inhabitants of the Clarkson site were both hunters and gatherers as well as agriculturalists. The animal remains found at the site have indicated that these people exploited the prairie, woodland, and riverine econiches available and had drawn on the resources of each for a large portion of their food supply. However, it is also apparent that the emphasis on the hunting of the prairie bison was not so great as it would later become for groups in the Prairie-Plains region. The presence of both cultigens and wild plant food remains, though limited
in quantity by the vagaries of preservation, has shown that a wide range of food plants also supplemented the aboriginal diet.

The presence of storage or cache pits indicates that the economic base of these people was stable enough to allow for the storage of surplus materials. The occurrence of clay plaster or daub has suggested that the Oneota inhabitants had lived in dwellings of some permanence; however, other structural evidence was not available to substantiate this assumption. This inability to find post molds may be due to the small amount of area excavated rather than to the total absence of some form of structural support mechanism.

Several items found at other Moingona Phase sites were not represented in the Clarkson sample. These items include copper beads or other copper ornaments of native manufacture. Such items were found at the Howard Goodhue site in association with human burials, and the fact that ritual inhumations were not found at the Clarkson site may account for the fact that worked copper was not discovered there. The paucity of bison and elk scapula hoes and of worked shell items is also striking. The apparent absence of all these items may be due to the relatively small amount of area tested at the Clarkson site.

The Moingona Phase

Several years of archaeological investigation within the Red Rock Reservoir area of the Central Des Moines Valley region has revealed a significant uniformity in the materials recovered from Oneota sites there. This apparent cultural uniformity has prompted David Gradwohl to designate this complex of sites as the Moingona Phase (Gradwohl 1967:
His use of the term "phase" follows the basic archaeological unit concept as defined by Willey and Phillips. By their definition a phase is

...an archaeological unit possessing traits sufficiently characteristic to distinguish it from all other units similarly conceived, whether of the same or other cultures or civilizations, spatially limited to the order of magnitude of a locality or region and chronologically limited to a relatively brief interval of time (Willey and Phillips 1958: 22).

Gradwohl's designation of the Moingona Phase has covered nineteen known sites, six of which have either been tested or excavated (Gradwohl 1974: 95). The criteria of uniqueness of formal, spatial, and temporal factors seems to have been met in these Oneota sites within the Central Des Moines Valley and are further substantiated by the analysis of materials from the Clarkson site.

The characteristics of Oneota pottery everywhere it is found are such that the ware is readily distinguishable from all other ceramics. As Henning has stated,

Oneota pottery is heterogeneous by nature, but it is instantly recognizable to those with a minimum of experience in handling it, and bears a kind of 'ethos' branding it as Oneota (Henning 1970: 13).

To distinguish, then, the ceramics from individual sites and phases (or foci, as used in the Midwestern Taxonomic System) within the Oneota Tradition one must pay strict attention to the variations in detail that do occur. Mildred Wedel has suggested that these details are ones of the frequency of occurrence of given traits. For instance, she has noted that the same decoration motifs may be found at most Oneota sites,
but it is the frequency of given motifs at individual sites that distinguish those sites or groups of sites from one another (M. Wedel 1959: 112). Similar frequencies may be noted in general vessel shape, the presence and form of handles, general rim height and configuration, and other characteristics. Vessels described for the Clarkson site are typical of those described for other Moingona Phase sites (Gradwohl 1974: 95).

All traits taken together, there are several tendencies which seem to distinguish Moingona Phase ceramics. Handles are common and occur in strap, loop, and buttress (or carinate) forms, the latter being the most rare. The rim interiors and lip surfaces are often decorated, the most common rim decoration being sets of nested chevrons. Vessel shoulders are horizontal to gently sloping and are almost always decorated. The design motifs are geometric, carefully executed, and somewhat predictable as they alternate around the vessel. Variations of the trailed nested chevron is the most often-occurring theme, each design area being set off with sets of vertical or oblique trailed lines. Punctates occur as a border along trailed lines and rarely have been used as space fillers. Concentric circles, circles with crosses, and crosses often occur within open design spaces. The occurrence of some grit-tempered pottery is minimal.

In general, the motifs and decorative techniques represented in Moingona Phase ceramics correspond very closely to those illustrated by Henning (1970: 37-41, 69-73) for the Guthrey site in north central Missouri and by Straffin (1971: 67-79) for the Kingston site in extreme
southeastern Iowa. Many of the motifs reported and illustrated for the Leary site in Nebraska (Hill and Wedel 1936: 35-38) appear to be identical to those in Moingona Phase ceramics -- particularly the occurrence of concentric circles and circles with crosses. The Moingona motifs are also similar to those described for the Blue Earth Focus (Wilford 1945: 35) and particularly the pottery type designated as Perrot Punctate (Hall 1962: 175-177). A salient characteristic of this so-called pottery type is the use of punctates as a fringe or border to trailed lines. This form of decoration is common at the Shrake-Gillies site in western Wisconsin (Henning 1961: 35-36; McKern 1945: Pl. 51; M. Wedel 1959: 117). The material at this site also shares the Moingona trait of being very carefully trailed (Henning 1961: 35). Mason (1970: 201-202) reports eight Perrot Punctate sherds from the Oneota component at the Porte des Morts site on the edge of Green Bay in eastern Wisconsin and the motif illustrated is that of Category 3A found in Moingona Phase ceramics (see Figure 16).

Mildred Wedel has been particularly interested in the manner in which punctates have been used from site to site (Mildred Wedel 1976: personal communication). She has noted the predominance of the use of punctates as space fillers within Orr Focus ceramics (M. Wedel 1959: 117). This trait is also common at the protohistoric Blood Run site (Harvey 1971: 321) and occurs to some degree at the protohistoric Fanning site in northeastern Kansas (W. Wedel 1959: 149). The alternate use of punctates as a border to trailed lines predominates in Moingona Phase ceramics, and only three examples of the use of punctates as
space fillers have been reported in those inventories (Gradwohl 1973: 40, 42, 54). Ceramics from the Dixon site in northwest Iowa appear to be decorated primarily with punctates as a border design (Harvey 1971: 220-231). Both uses of punctates occur at the Leary site (M. Wedel 1959: 117). Although there are some shared traits between Correctionville wares from northwest Iowa and those of the Moingona Phase, one obvious difference is in rim form. Correctionville rims tend to be outcurved (Henning 1961: 27, Pl. 1) while those in the Moingona Phase sample tend always to be quite straight and either upright or obliquely everted.

There are some subjective perceptions on ceramic differences which may be linked to temporal considerations. Impressionistically, the Orr Focus material appears to have been manufactured in a rather "slap-dash" manner when compared to other Oneota wares. The decoration is not as carefully executed and the "trailing" has often been done with a sharply pointed tool. This "incising" is a trait which is also reported for the protohistoric Blood Run site (Harvey 1971: 314). The general haste that appears to have taken place may also be due to the fact that many of the Orr Focus vessels have been found in a funerary context. The trend toward asymmetry in vessel shape may be associated only with the later time period.

The non-ceramic artifacts common to Moingona Phase sites fall generally within the parameters of materials found in most Oneota sites. The lithic assemblage from the Central Des Moines Valley sites includes small plain triangular projectile points, end scrapers, thin bifaces,
drills, and flaked chert preforms. Worked bone items, particularly scapula hoes and antler picks, bone matting needles, fishhooks, and bone tubes, are usually abundant; worked shell in various forms is common. Unworked galena has been found in at least two of the excavated Moingona Phase sites. Materials often found in other Oneota manifestations but absent in Moingona Phase contexts include stone disk pipes and objects of catlinite.

The storage pits at Moingona Phase sites may be either basin or slightly bell shaped, and in either case these are relatively shallow but show some similarities to those found in Plains Oneota sites to the west (W. Wedel 1959: 609). The only structural feature other than storage pits and hearths found in Moingona Phase context is an apparent mortuary enclosure at the Howard Goodhue site (Gradwohl 1973: 120; 1974: 96).

Spatially the Moingona Phase is apparently limited in the Central Des Moines Valley to a northern boundary at the Des Moines-Raccoon fork; no Oneota sites are known for the Raccoon River Valley and an intensive archaeological survey of the Central Des Moines Valley north of the fork has failed to reveal any sites that are demonstrably Oneota (Gradwohl and Osborn 1973a: 70; 1974: 65). No Oneota sites have been reported in Mahaska County to the south of the Red Rock area (Gradwohl 1974: 96), nor are any known for the Skunk River or Squaw Creek in Story County (Gradwohl and Osborn 1972: 122).

Temporally Moingona Phase sites appear to be relatively early within the post-Woodland period. No historic trade goods have been found
in association, and radiocarbon dates from three different Moingona Phase sites cluster in the 11th to 13th century A.D. range, although one date registered in the 7th century and three others were in the A.D. 1500 to 1680 range.

Possible Relationships of Oneota Manifestations

Within the Prairie-Plains

Many attempts have been made to explain the ubiquitous yet elusive relationships of sites within the Oneota Tradition. For some time it has been suggested that Oneota manifestations probably represent the former habitations and burial areas of Chiwere Siouan speakers -- principally the Ioway, Oto, and Missouri, and more distantly, the Winnebago. In the late 1920s Keyes (1927: 224) had looked upon the Oneota sites known at that time as being "almost certainly Siouan," and in 1937 Griffin summarized the consensus of the times in an article entitled "The Archaeological Remains of the Chiwere Sioux." This assumption was based in large part by a common oral tradition among the Ioway, Oto, Missouri, and Winnebago of a shared origin in the Great Lakes area of Wisconsin and the subsequent migration of the former three groups southwest into the Mississippi River region. This migration may explain why the Winnebago and Iowa-Oto-Missouri linguistic groups, even though closely related, were mutually unintelligible into the historic period (Glenn 1974: 46). The pioneering work of Mildred Mott in 1938, in which she demonstrated through archival and cartographic sources that Orr Focus sites could be attributed to the historic Ioway, served to rein-
force the assumption that the Oneota were Chiwere Siouan speakers.

However, during the historic period it appears there were ties between the Chiwere-speaking groups and those groups of the Dhegihan Siouan linguistic stock (Omaha-Ponca-Kansa-Osage-Quapaw). The oral legend of these people indicates their ancestors had come into the Prairie-Plains from the lower Mississippi region up the Missouri River. As early as 1886, the Reverend J. Owen Dorsey had written "The Migrations of Siouan Tribes" in which he documented the close relationship of the Iowa and Oto in the historic period and their affiliation for a time with the Omaha. He also noted the splitting of the Missouris into groups which joined, respectively, the Osages, Kansas, and the Oto (Dorsey 1886: 214).

In several instances Oneota sites have been linked by the direct historical approach to these known historic groups. Mott's documentation of the Ioway has already been noted. Subsequent work has shown that Lake Winnebago Focus sites in Wisconsin may be attributed to the Winnebago (Quimby 1960: 103), the Utz site in northern Missouri to the historic Missouri, a site in Vernon County, Missouri, to the Osage, the Fanning site in extreme northeastern Kansas to the Kansa, and the Ashland site in eastern Nebraska to an historic Oto occupation (W. Wedel 1959: 611).

To some degree, then, it is known which groups may be attributed to given Oneota sites during the historic period, but it is less clear which groups are represented by the earlier prehistoric manifestations. The Koshkonong Focus in Wisconsin has been considered as a plausible
prehistoric manifestation of the historic Winnebago (Hall 1962: 158). Both prehistoric Ioway and Oto affiliations are suggested for the Correctionville-Blue Earth materials in southern Minnesota and northwestern and north central Iowa (Mott 1938: 304; Wilford 1955: 142), but these are as yet not conclusively demonstrated. Further archaeological investigation of Oneota sites may broaden the scope of inferences which may be made about the dispersal of Siouan-speaking groups during the prehistoric period. Data from the Owens Oneota component at the Clarkson site, as well as other Moingona Phase sites, will thus help elucidate this important question in the prehistory of the Prairie-Plains.
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Lees, J. H.

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Logan, Wilfred D.

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McKusick, Marshall

McKusick, Marshall and Joe Ries

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Straffin, Dean  

Thorn, C. Jordan  

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United States Army Corps of Engineers  

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Willey, Gordon R.

Willey, Gordon R. and Philip Phillips

Williams, Patricia A.

Wolters, George and Woodrow Westholm
Woolworth, Alan Ronald  

Wormington, H. M.  

Young, Helen  
The results of this study were made possible only by the assistance of many colleagues and friends. Members of the Graduate Faculty, including D. Michael Warren, Michael B. Whiteford, and Geitel Winakor, have provided encouragement and criticism on this manuscript. Technical advice and analyses were provided by several staff members and students at Iowa State University: Dr. Donald Biggs, Department of Geology, has made several lithic identifications; Dr. Roger Landers, Department of Botany, advised on the analysis of some of the plant remains; Barbara Schulte, with some assistance from Dr. Dwight Bensend, Department of Forestry, has identified the wood species; E. Arthur Bettis has provided analysis of the mammalian fauna; and J. Jeffrey Flenniken was patient enough to field many questions on flint-knapping techniques and worked stone analysis. Lynn Alex of the Office of the State Archaeologist, University of Iowa, has analyzed the fish remains.

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The scientific illustrations were done by Marc M. Mills and greatly enhance the value of this study. Howard Vest, Head Photographer of the Nebraska National Guard, has provided the air photo of the site. Becky Klatt has spared me from many hours of agony by typing the manuscript.

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My greatest depth of gratitude is extended to David M. Gradwohl who, as major professor, teacher, and friend, has guided (and sometimes cajoled) me through my course of study and has helped me find my life's work at the bottom of a trash pit.
APPENDIX A: CATALOGUE LIST
OF IDENTIFIED FISH REMAINS, CLARKSON SITE
CATALOGUE LIST OF IDENTIFIED FISH REMAINS, CLARKSON SITE
Prepared by Lynn Alex

<table>
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<th>Cat. No.</th>
<th>Skeletal Component</th>
<th>Species</th>
<th>Common Name</th>
</tr>
</thead>
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<td>Catostomidae</td>
<td>Sucker (probably buffalo sucker)</td>
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<td>Cleithrum fragment</td>
<td>Ictalurus punctatus</td>
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<td>Catfish and bullhead family</td>
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<td>Species</td>
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# APPENDIX B:

## CATALOGUE LIST OF PLANT REMAINS, CLARKSON SITE

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<th>Square or Feature No.</th>
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<td>1779</td>
<td>N1060/W1050 (depth 1.5'-2.0')</td>
<td>Corn kernel</td>
</tr>
<tr>
<td>2246</td>
<td>N1070/W1050 (depth 2.7')</td>
<td>Cherry or plum pit</td>
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<td>2641A</td>
<td>Feature 1</td>
<td>Red elm or hackberry, cottonwood</td>
</tr>
<tr>
<td>2641B</td>
<td>Feature 1</td>
<td>Hickory</td>
</tr>
<tr>
<td>2678</td>
<td>Feature 1</td>
<td>Red elm or hackberry</td>
</tr>
<tr>
<td>3294</td>
<td>Feature 1</td>
<td>White oak</td>
</tr>
<tr>
<td>3337</td>
<td>Feature 1</td>
<td>Corn kernel</td>
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<tr>
<td>3353</td>
<td>Feature 1</td>
<td>Grass matting?</td>
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<tr>
<td>3354</td>
<td>Feature 2</td>
<td>Red elm or hackberry</td>
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<td>Red elm, hickory</td>
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<td>Feature 2</td>
<td>Red elm or hackberry, hickory</td>
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<td>American elm</td>
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<td>Feature 2</td>
<td>Red elm or hackberry, walnut, white oak</td>
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<td>Feature 2</td>
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<td>Feature 2</td>
<td>Birch</td>
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<td>3470A</td>
<td>Feature 2</td>
<td>Cottonwood, hickory</td>
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<td>Feature 2</td>
<td>White oak, American sycamore</td>
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<td>Feature 4</td>
<td>Corn kernels, bean, twigs and wood charcoal</td>
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<tr>
<td>3700A</td>
<td>Feature 4</td>
<td>Corn kernels, acorn hull</td>
</tr>
<tr>
<td>3771</td>
<td>Feature 4</td>
<td>Corn cob</td>
</tr>
<tr>
<td>3772</td>
<td>Feature 4</td>
<td>Corn cob</td>
</tr>
<tr>
<td>3773</td>
<td>Feature 4</td>
<td>Corn cob and husk</td>
</tr>
<tr>
<td>3800</td>
<td>Feature 4</td>
<td>Corn kernels</td>
</tr>
<tr>
<td>3835</td>
<td>Feature 4</td>
<td>Corn kernels, acorn hulls, rose hips?</td>
</tr>
<tr>
<td>3676</td>
<td>Feature 4</td>
<td>Charred dense carbonaceous material</td>
</tr>
<tr>
<td>4261</td>
<td>Feature 6</td>
<td>Husks or grass</td>
</tr>
<tr>
<td>4478-4485</td>
<td>Feature 7</td>
<td>Grass matting?</td>
</tr>
<tr>
<td>4585</td>
<td>Feature 8</td>
<td>Corn cob</td>
</tr>
<tr>
<td>4646</td>
<td>Feature 8</td>
<td>Corn kernel, wood charcoal</td>
</tr>
<tr>
<td>4649-4652</td>
<td>Feature 8</td>
<td>Grass matting?</td>
</tr>
<tr>
<td>4708A</td>
<td>Feature 9</td>
<td>Red oak</td>
</tr>
<tr>
<td>4711</td>
<td>Feature 9</td>
<td>Honeylocust?</td>
</tr>
<tr>
<td>4750</td>
<td>Feature 9</td>
<td>Honeylocust?</td>
</tr>
<tr>
<td>4750A</td>
<td>Feature 9</td>
<td>American elm, ash or sassafras</td>
</tr>
<tr>
<td>Cat. No.</td>
<td>Square or Feature No.</td>
<td>Plant Remains</td>
</tr>
<tr>
<td>---------</td>
<td>-----------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>4751</td>
<td>Feature 9</td>
<td>American elm</td>
</tr>
<tr>
<td>4752</td>
<td>Feature 9</td>
<td>White oak</td>
</tr>
<tr>
<td>4753</td>
<td>Feature 9</td>
<td>Ash</td>
</tr>
<tr>
<td>4788</td>
<td>Feature 9</td>
<td>Basswood (or possibly birch)</td>
</tr>
<tr>
<td>4866</td>
<td>Feature 9</td>
<td>Red elm or hackberry</td>
</tr>
<tr>
<td>4907</td>
<td>Feature 9</td>
<td>American elm</td>
</tr>
<tr>
<td>4923</td>
<td>Feature 9</td>
<td>Corn cob</td>
</tr>
<tr>
<td>4924A</td>
<td>Feature 9</td>
<td>Red elm or hackberry, American sycamore</td>
</tr>
<tr>
<td>4924B</td>
<td>Feature 9</td>
<td>White oak</td>
</tr>
<tr>
<td>4924C</td>
<td>Feature 9</td>
<td>American elm</td>
</tr>
<tr>
<td>4924D</td>
<td>Feature 9</td>
<td>Red elm, white oak</td>
</tr>
<tr>
<td>4925</td>
<td>Feature 9</td>
<td>Rock elm</td>
</tr>
<tr>
<td>4933</td>
<td>Feature 9</td>
<td>Grass matting?</td>
</tr>
<tr>
<td>5074</td>
<td>Feature 10</td>
<td>Corn kernel, acorn hull?, wood charcoal</td>
</tr>
<tr>
<td>5114</td>
<td>Feature 10</td>
<td>Corn kernel</td>
</tr>
<tr>
<td>5208</td>
<td>Feature 11</td>
<td>Oak</td>
</tr>
<tr>
<td>5208A</td>
<td>Feature 11</td>
<td>White oak</td>
</tr>
<tr>
<td>5265</td>
<td>Feature 11</td>
<td>Cherry or plum pit</td>
</tr>
<tr>
<td>5417</td>
<td>Feature 11</td>
<td>Corn kernels</td>
</tr>
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<td>5529</td>
<td>Feature 12</td>
<td>Corn kernels</td>
</tr>
<tr>
<td>5729</td>
<td>Feature 15</td>
<td>Corn kernels, large bean</td>
</tr>
</tbody>
</table>

In addition, unidentified pieces of wood charcoal were recovered from squares N1050/W1000, N1050/W1090, N1060/W1050, N1070/W1050, and N1090/W1040, and from all features except F-5, F-13, and F-14.
Plate 1. Air photo of the Clarkson site and environs in 1966 after excavation. Note the Des Moines River to the east at the upper left and old channel scars of the Middle River to the right. Photo courtesy of Howard Vest, Head Photographer, Nebraska National Guard.