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MINNESOTA ARCHAEOLOGY: CURRENT EXPLORATIONS AND CONCEPTS

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The history of archaeological research in Minnesota can be divided into two major periods, a first period extending from 1880 to 1911, and a second period extending from 1932 to the present. During the earlier period archaeological research was primarily under the auspices of the Minnesota Historical Society; the activities of the second period have been under the auspices of the University of Minnesota. The leading figures of the earlier investigations were Alfred J. Hill, Theodore H. Lewis, Jacob V. Brower, and N. H. Winchell. From 1880 to 1895 Lewis and Hill conducted a survey of the Indian mounds and earthworks of the state, one of the most comprehensive surveys of the last century. From 1895 to 1905 Brower visited many prehistoric sites and excavated some of them. The Historical Society published his reports in a series of eight books, five of which deal with Minnesota. After Brower's death in 1905, Winchell prepared for publication the data gathered by Lewis and Hill and added to this much pertinent material from Brower and from his own observations, as well as from other sources. The whole monumental report was published by the Historical Society in 1911, under the title of "The Aborigines of Minnesota."

The second period began in 1932 when Dr. A. E. Jenks of the Department of Anthropology, University of Minnesota, initiated a program of excavation of mounds and habitation sites in all parts of the state. The purpose of this investigation was to discover and study the material remains of the prehistoric Indians in order to classify them into distinct cultural divisions or complexes on the basis of similarities and dissimilarities, and then to relate these various divisions or complexes to one another from the point of view of relative advancement in civilization and of relative place in time. Other aims were to connect the cultural complexes found in Minnesota with those found in other states, and to identify these complexes with historically known Indian tribes as far as possible. The program was made possible by the support of the University, by the aid of federal agencies such as C.W.A., E.R.A., and W.P.A., and by the generous gifts of money of twelve citizens of Minneapolis, James Ford Bell, Mrs. C. C. Bovey, Mrs. George C. Christian, F. M. Crosby, George D. Dayton, G. Nelson Dayton, Frank T. Heffelfinger, F. E. Murphy, Alfred Pillsbury, Charles S. Pillsbury, John S. Pillsbury and Frederick B. Wells. Dr. Jenks directed the research until 1938, and since that time it has been under my direction.

During the past ten years 43 archeological sites have been investigated, of which 31 were burial sites, and 12 were habitation or village sites. The 31 burial sites include 11 sites at which only one

mound was excavated, 18 sites at which two or more mounds of a mound group were excavated, and two burial sites not associated with mounds. The 12 village sites include two caves. All of these sites are in Minnesota except two mound groups across the Red River in North Dakota.

Two of these sites can definitely be stated to be much older than the others. These are the two burials not associated with mounds, and they preceded the mound building era. The first of these was the famous Minnesota Man found north of Pelican Rapids in 1931. It is the skeleton of a girl, 15 years of age, found in a glacial deposit, 10 feet below the original ground surface. The skeleton is believed to have been laid down in this deposit when it was formed 20,000 years ago, in which case this is the oldest human skeleton in the New World. The second burial was that of a man definitely buried in a gravel pit at Brown's Valley. Associated with the skeleton were beautifully chipped stone implements similar to points found in the Western Great Plains in association with the bones of extinct animals. These implements have been named Yuma and Folsom points and are generally agreed to be as much as ten or fifteen thousand years old. The Brown's Valley skeleton is the first to be found associated with points of this type. Other finds of considerable antiquity in Minnesota are the Sauk Valley Man, recovered by Reverend Henry Retzek of West Union, and the village site at Little Falls which was an ancient workshop for the chipping of quartz implements.

Most of the archaeology of the middle portion of the United States is concerned with the more recent prehistory of the Indian, the period of mound building and of the introduction of agriculture and pottery. Not all of the people of this area built mounds and we do not know the relative order in which mound building, pottery, and agriculture were introduced. It may be that pottery has been here for a long time. We do not know when mound building began, but it is certain that it began a few hundred years ago and had ceased by the time of European contacts.

The archaeologists of the Mississippi Valley and Great Lakes areas agree that the cultures of this more recent period can be divided into two main divisions, which are designated as patterns. These two patterns are named the Woodland Pattern and the Mississippi Pattern respectively. In general the Mississippi Pattern is more recent than the Woodland and shows a higher degree of advancement in civilization, with better developed agriculture and more permanent villages. There are some striking differences in the pottery and arrowheads of the two groups, also. Woodland pottery vessels have simple shapes, with rounded bodies, rounded or pointed bases, and wide mouths. Mississippi pottery vessels often have angular shoulders, necks and rims, and commonly have handles. In some areas the Mississippi vessels have a wide variety of shapes, such as bottles and beakers, and effigy vessels representing human

beings, animals and birds, but these shapes are not found in Minnesota. Mississippi vessels are usually decorated with designs made by drawing patterns or figures in the soft clay before firing, and some are even painted in colors, though Minnesota has no painted ware. The simpler Woodland vessels are decorated by impressing into the soft clay objects such as strings, or sticks or paddles wound with string, or notched sticks, or the ends of sticks. The arrowheads of the Mississippi Pattern are small triangular points. Those of the Woodland Pattern are stemmed, but in late Woodland sites triangular points are present showing that the Woodland people were adopting the newer type.

The Woodland Pattern is very extensive. It is found in most of the eastern half of the United States from the Atlantic to the Rocky Mountains. It is found everywhere in Minnesota. The Mississippi is also very extensive. It is found in most of the United States east of the Rockies, except for the northeast coast and the northern parts of Michigan, Wisconsin, Minnesota, and North Dakota. Where it is found in association with Woodland objects it is seen to be more recent than the Woodland, as at the Tudahl Cave near Peterson, Minnesota, where Mississippi pottery was found on the floor of the cave, while in the dirt below the floor the pottery was Woodland.

In Minnesota the area of the Mississippi Pattern is restricted to the three southern tiers of counties, or roughly a line from Red Wing through Marshall, and only isolated objects of Mississippi type are found north of this line. However sites of the Mississippi type have by no means been found in all parts of this southern area. Three distinct cultural divisions of the Mississippi pattern can be recognized in Minnesota. These divisions are known as aspects and have been named the Oneota Aspect, the Cambria Aspect, and the Great Oasis Aspect. All three are alike in having villages that show a degree of permanency, in that all of them have within the village many circular depressions or pits dug down into the subsoil, which served as storage pits for corn. They are also alike in having pottery decorated with drawn lines. No house remains have been found as yet.

The best known of the three aspects is the Oneota Aspect. Oneota sites are found thus far in two rather distinct localities, one in the southeastern corner of the state in Houston and Fillmore counties, the other along the Blue Earth River south of Mankato. The Oneota people built a few mounds, low rock-covered mounds erected over graves in which the bodies were placed at full length, as in a modern Christian burial. Oneota pottery has one distinctive feature in that the clay of which it is made is tempered by being mixed with crushed shell, whereas the wares of the Cambria and Great Oasis Aspects and of the Woodland Pattern are tempered with grit or sand. Hoes made of the shoulder blades of bison are common, and the arrowpoints are triangular. The Oneota Aspect

is known in several other states, notably Iowa, Wisconsin, Nebraska and Missouri.

The Cambria Aspect is best known from a very extensive village on the Minnesota River between Mankato and New Ulm, east of the present village of Cambria. The pottery is quite distinctive from Oneota, both in its tempering and in its designs though it too has handles. One minor type of pottery has rolled rims and designs drawn in curved lines, very much resembling the pottery of the famous Aztalan site in southern Wisconsin. Hoes of bison shoulder blades, and triangular arrowpoints are both present. Burials were not found. A smaller village site of this aspect is a few miles east of it near Judson, and a third site lies upriver west of Cambria. This particular culture has not yet been reported from any other state.

The Great Oasis Aspect is so named because the only site thus far investigated is on the shore of Great Oasis Lake in Murray County northwest of Slayton. The pottery is decorated with drawn lines, as are the vessels of the Oneota and Cambria Aspects, but it lacks handles. The village has storage pits, but no shoulder blade hoes were found. The arrows are stemmed like Woodland arrowpoints, rather than triangular. No burials were found. This culture is known only in southwestern Minnesota, and there are apparently villages of this aspect south of Slayton and at Lake Benton. The only other pottery known to have the distinctive decoration of this aspect is found in the Mill Creek culture of Iowa, which, however, differs from the Great Oasis culture in many other respects.

The Oneota Aspect is believed to be the culture of a division of the Siouan speaking peoples known as the Chiwere group, which includes the Winnebago, Iowa, Oto and Missouri tribes. The Iowa and Oto are known to have lived in Minnesota between 1650 and 1700. We as yet have no clue as to who were the vanished peoples responsible for the Cambria and Great Oasis cultures.

To turn to the more primitive Woodland Pattern, we find that all of Minnesota has been occupied by people who built mounds and made pottery with impressed decoration but whose villages never contain storage pits or hoes, and who therefore depended more upon hunting and fishing than farming. Brower dug some mounds at Mille Lacs Lake and found that at the bottom of each mound near the center on the original ground surface were the remains of one or more individuals. These individuals had not been buried in the flesh at the time of death, but the bodies had been kept for a long time until the flesh disappeared and then the bones were assembled in a neat little pile on the ground and a mound built over them. A burial in the flesh is called a primary burial and a burial of the bones only is called a secondary burial. A secondary burial in which the bones are arranged in an orderly pile is called a bundle burial. Brower collected many pieces of broken pottery, called potsherds, and noted the impressed decoration. He knew that Mille Lacs was the historical home of the Sioux or Dakota Indians,

and that the Dakota exposed dead bodies on scaffolds and later buried the bones. He concluded that these mounds and the pottery were the remains of the Dakota and in this he was correct. He also thought that all mounds in Minnesota associated with impressed pottery were Dakota, but in this he was mistaken. Not all of the mounds contain bundle burials, and a detailed examination of the impressed pottery, shows that there are several varieties of decoration. Not to go into too much detail, it may be said that these decorations fall into a few principal types and we may here ignore the minor types. At Mille Lacs the outer surface of the vessel is occasionally smooth, but usually it has been roughened by patting it with a paddle around which strings have been wound. The impression of the strings can be clearly seen and we speak of this as cord-wrapped paddle decoration. The next step was to give a special decoration around the rim. Commonly this area was smoothed and then impressions of straight lines were made obliquely or horizontally across it. These impressed lines were of two kinds. The first was made by pressing down a slender stick around which strings had been wound. This is called the cord-wrapped stick decoration and is not to be confused with the cord-wrapped paddle decoration which was given to the body of the vessel. The second type of impressed line was made by cutting notches across one side of a narrow stick and pressing it in. The resulting impression looks as though a small cog wheel had run over the clay, and is called roulette. Some of the rim areas were not given either type of extra decoration but were simply plain or with cord-wrapped paddle markings.

Mounds in other parts of the state have pottery which differs in details from that of Mille Lacs and on the basis of these differences and of differences in burial customs, I have distinguished five divisions or aspects of the Woodland Pattern. Mounds with bundle burials and with pottery of the Mille Lacs type belong to the Mille Lacs Aspect. These mounds include by far the greater number of mounds in the state and stretch in a wide belt across the middle of the state from east to west. The arrowpoints from the older mounds are stemmed points, but in the later mounds and villages there are many triangular arrows.

The second Woodland Aspect is the Headwaters Lake Aspect which is found in North Central Minnesota extending from the large lakes at the headwaters of the Mississippi River northward to the Rainy River. It is best known from a village site on Blackduck Lake near Blackduck and from the Osufsen Mound on the Bowstring River. The burials are in mounds but they are primary burials, and there are many in each mound. The bodies are placed in graves under the mound, and on the floor of the mound and in the dirt of the mound. They are tightly doubled up and sometimes are found in a sitting position. The pottery vessels have distinct necks and wide thickened lips. The bodies have cord-wrapped pad-

dle decoration and the rims and lips are decorated with deeply impressed cord-wrapped stick lines, never with roulette. It is the most attractively decorated pottery of the Woodland Pattern that I know of. The arrowpoints are triangular, which indicates that this culture is of the same period as the late Mille Lacs Aspect sites.

The third Aspect, the Rainy River Aspect, is represented by large mounds along the Rainy River in both the United States and Canada, but there is also one large mound at Lake Vermilion, and there may be others not on the Rainy River. The largest mound in the state, the so-called "Grand Mound" at Laurel is of this culture. Burials are secondary, but of a very peculiar sort. The body was not exposed at death, but was dismembered and the flesh taken from the bones. The bones were then opened to remove the marrow, and the backs of the skulls were broken out to remove the brains. The bones were then buried as bundle burials. The pottery is distinctive, the bodies are not roughened with the cord-wrapped paddle and the rims are decorated with roulette only, not with cord-wrapped stick. The roulette is of a peculiar type in which the stick used for the impression was notched first on one edge, then on the other instead of being notched straight across as at Mille Lacs. The arrowheads are all stemmed — the older type. Most of these mounds are so old that the bones buried in them have entirely disappeared. But in every mound investigated the peoples of the Headwaters Lakes Aspect have buried their own people in the tops of the mounds. The latter people clearly succeeded the Rainy Lake people in this area and made use of the mounds they found already built there.

The fourth aspect, the Red River Aspect is found in the Red River Valley. The mounds are very low because no bodies were buried in the mounds, but were in graves below the mounds. Some of the mounds are round, but usually they are rectangular, about 20 feet wide and 100 to 200 feet long, and from 6 inches to one foot in height. The mounds are usually placed on the old sand beaches of Glacial Lake Agassiz, where the digging was very easy, but there are some mounds close to the river. The mounds usually cover more than one pit, and each pit may contain several burials. Burials are primary, sometimes at full length, but usually doubled up and in a sitting position. The skeletons are often accompanied by objects of copper, bone or shell. Little is known of the pottery of this aspect, other than that it is Woodland, but the culture is characterized by the abundance of objects of bone, antler and shell. A certain type of shell bead made from conch shells from the Gulf of Mexico is common here, but not in other Minnesota aspects.

The fifth division has no definite name as yet. It includes all the Woodland cultures of southern Minnesota, and may later be divided more definitely. The mounds contain both primary and secondary burials in a single central pit below the mound. The pottery is characterized by having some drawn lines and some impres-

sions of single twisted string in addition to the usual Woodland impressions. Arrowpoints are stemmed, showing this culture to be relatively old. Along the Mississippi River in southern Minnesota are some mounds formed to represent birds and animals. These are called effigy mounds. The center of the effigy mound complex is in south central Wisconsin. No effigy mounds have been excavated in Minnesota, but those that have been investigated in Wisconsin have been shown to be burial mounds of the Woodland Pattern. A cave excavated south of Winona near La Moille had very thick pottery with cord-wrapped paddle markings in the upper seven feet of fill, but had no pottery in the lower six feet. This probably represents a very old Woodland site.

Thus far only a beginning has been made of the study of the various archaeological complexes of Minnesota. The Cambria Aspect was not known to us until 1938, and not recognized as distinct from the Oneota Aspect until 1940. The Great Oasis Aspect was not known until 1941. It is probable that other Aspects now unknown to us will yet be found. One difficulty in reconstructing the prehistory of the state is the fact that so very many of the mounds have already been destroyed. Working with a mutilated mound is like trying to read a book with most of its pages torn out. The remaining mounds are now protected by state law. The village sites resist destruction better than the mounds and much of the future archaeological research will concern itself with village sites.

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THE PRESENT STATUS OF THE SOIL SURVEY IN MINNESOTA¹

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The soil survey is essentially an inventory of the soils of an area. It is a fundamental investigation of our soil resources on which all systems of agriculture must be based. The primary objective, therefore, of a soil survey is to classify and evaluate the land resources. This is of first importance for the state and federal agencies which are entrusted with the responsibility of seeing that this important natural resource is utilized to its greatest efficiency. Further, the soil survey provides information on which soil management and soil conservation activities on individual farms may be based.

In actual practice the work of the soil survey consists of field observations to determine the location, distribution, and general character of the various types of soil. The different soils are shown

¹ Paper No. 461, Miscellaneous Journal Series, Minnesota Agricultural Experiment Station.