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# ARCHAEOLOGICAL INVESTIGATIONS IN MEDICINE CREEK RESERVOIR, NEBRASKA

MARVIN F. KIVETT

THE Medicine Creek Valley of south-central Nebraska has for many years been known to contain within its limits important archaeological materials representing various periods of man's occupancy in the Central Plains. The region is climatically near the western limits of successful general farming. While the yearly precipitation averages about 23 inches, records show a variation in total from 11 to 38 inches. (Bason and others, 1939, pp. 4-6). This wide fluctuation in precipitation, often combined with extremely high temperatures during the growing season, makes the area one of agricultural uncertainty. Early White settlement in the valley was often retarded and in some instances completely checked as a result of severe but usually short-period droughts. Prehistoric horticultural groups subsisting in this region were undoubtedly subjected to the same unfavorable conditions. They, like the early White settlers who were to follow, may have been forced at times to abandon the area temporarily and withdraw to a more favorable one. Or perhaps they, like the Whites, eventually adjusted their farming or gardening practices to local conditions and were able to maintain their subsistence during drought periods by a greater dependency upon hunting, an increased storage of foodstuffs, or possibly the adoption or development of more drought-resistant crops.

Within historic times there were no permanent aboriginal villages in the immediate vicinity of Medicine Creek. The Pawnee, however, hunted over much of the area and during the early nineteenth century occupied a large earth-lodge village on the Republican River less than 100 miles to the east. Further to the east and north were other sedentary horticultural groups such as the Omaha, Ponca, and Oto. To the north and west of the Medicine Creek area were the more nomadic peoples including the Comanche, Arapaho, Cheyenne, and Teton Dakota, who were dependent largely on the results of the chase. Thus, during the historic period, the Medicine Creek Valley lay in that area of borderland between the horticultural groups to the east and the hunters of the west.

Previous work in the Medicine Creek Valley

includes excavations by the Nebraska State Historical Society during the summers of 1933 and 1934 (Wedel, 1934*b*, 1935*b*). These investigations at four sites near the present upper limits of the Medicine Creek Reservoir resulted in the excavation of seven house floors with associated materials attributable to a variant of the Upper Republican Aspect. Archaeological attention was again directed toward a portion of the area during the summer of 1946 when River Basin Surveys personnel made a brief preliminary reconnaissance of the proposed Medicine Creek Reservoir. Some 14 archaeological sites were located as a result of this brief investigation and recommendations were made for the excavation of several. During the summer of 1947 the Nebraska State Historical Society, a cooperating agency, and the River Basin Surveys conducted an intensive survey in the reservoir, including the excavation of seven house floors in four village sites assignable to the Upper Republican Aspect.

In March, 1948, through a cooperative agreement with the Bureau of Reclamation and the National Park Service, the Smithsonian Institution began large scale excavations in the reservoir area.<sup>1</sup> With construction work for the dam already under way, attention was first directed toward two village sites (25FT16, 25FT17) on the west dam axis which were shortly to be destroyed (Fig. 69, A). One large village site (25FT13) lying within a proposed borrow area just above the east dam axis was also in danger of destruction. Upon the completion of excavations in these three areas, investigations were continued along the west bank of the stream to the mouth of Lime Creek slightly less than two miles above the dam site. A total of 28 house floors, more than 20 midden areas, and various other features, including storage pits and burials, were excavated during the summer by the River Basin Surveys in six Upper Republican village sites. In addition,

<sup>1</sup> Grateful acknowledgment must be made here for the assistance and excellent cooperation extended by the Bureau of Reclamation, its officials, and various employees. We desire especially to express our thanks to Mr. Avery A. Batson, Regional Director; Mr. H. E. Robinson, District Manager; and Mr. C. L. Mutch, Construction Engineer.

two small village areas apparently attributable to a single variant of the Woodland pattern were completely excavated.

Two cooperating agencies, the Nebraska State Historical Society and the University of Nebraska State Museum, also conducted excavations within the reservoir. The work of the Historical Society was, for the most part, directed toward the excavation of 14 earth-lodge floors in six Upper Republican village sites near and above the mouth of Lime Creek. The work of the University of Nebraska State Museum involved chiefly an early lithic site, which is the subject of another paper in this issue (pp. 260-6).

Most village sites in the area, when not subjected to intensive cultivation or erosion, are overlain by a sterile windblown soil deposit varying from 6 to 18 inches in thickness. Beneath this deposit occurred the village level, a dark cultural zone from 6 to 20 inches in thickness. Power machinery, consisting of a small bulldozer and road patrol, was utilized primarily for the removal of the sterile overburden, cutting exploratory test trenches, and disposing of refuse earth. Careful dissection and removal of the dark cultural zone, mainly by hand labor, revealed the various village features such as house floors, storage pits, and midden areas.

#### UPPER REPUBLICAN SITES

Upper Republican sites in this area are situated on terraces of variable size which rise from 20 to 40 feet above the floodplains. Erosion and cultivation have modified some of the terraces to produce a somewhat rugged terrain but the majority, when grass covered, are flat and level. Some evidence of aboriginal occupancy can be found on virtually every suitable terrace. It is very difficult in some cases to determine the exact boundaries between sites and a cultural analysis of the material from the various features will be necessary before the limits can be accurately estimated. There was no evidence of fortification or attempt at concealment for the villages.

House sites were generally grouped in clusters of two to four structures with a considerable distance often separating the groups. The house floors had been excavated, in some cases, to a depth of 6 to 20 inches below the general village level. In other instances the house had been constructed on or only slightly below the old ground surface. The floors as outlined by the post molds were in all cases rectanguloid in

form. Scattered midden areas were usually present at the end and around either side of the entranceway. At one site the occupants of three houses appear to have shared a common midden. In a few instances debris may have been disposed of by dumping it over the steep terrace front.

A limited number of outside storage pits were found near the entrances and beneath the midden areas but they were more commonly located beneath the house floors. Storage pits were much smaller than those generally found in later villages of such sedentary horticultural groups as the Pawnee. The maximum depth was usually 4 to 5 feet with a somewhat greater diameter at the base than at the top. These were used for the storage of corn, beans, sunflower seeds, and other foodstuff. When no longer suitable for such purposes they were utilized for the disposal of refuse. The most common type of refuse filling many of these pits at Medicine Creek was mussel shells which occurred in large quantities throughout the sites.

The entranceways ranged from 8 to 10 feet in length and 2 to 4 feet in width and usually extended outward from a point near the middle of one wall. Most of the entranceways opened to the south, although there were entrances to the east, southeast, and southwest as well. The floor of the entrance was, in most cases, constructed on the same general level as the house floor. In two structures, however, the floor of the entrance had been excavated to a depth of 12 to 24 inches below the general floor level, probably to facilitate drainage.

A single central fireplace was most common. One long rectangular house floor, however, departed from the usual pattern in having two fireplaces, near the center in either half of the floor area. The entranceway extended from near the midpoint of one long wall.

The house floors were not burned or puddled before use as in many historic village sites but were only leveled. The fireplaces were well marked by a shallow unlined basin generally filled with white ash and burnt earth 6 to 12 inches below the general floor level. Central supports for the structures included most commonly four and occasionally six large posts set at approximately equal distance from the fireplace. The outer post molds marking the walls of the houses were smaller in diameter and were more closely spaced. Rafters presumably extended from the smoke hole above the fireplace

to the outer walls. A covering of brush, grass, and then sod appears to have completed the roof. Short vertically placed poles may have rested on the ground to close in the outer walls. Of this, however, there was no direct evidence and it is equally likely that interwoven willows and grass may have enclosed the walls.

Middens were in most cases situated close to the houses, usually occurring near the entrance; they were generally rather thin and scattered. Their depth seldom exceeded 12 to 16 inches and there were no surface elevations to mark their presence such as is common at many later sites in the Plains area. In several instances cultivation and erosion had actively reduced the debris but in many cases the midden had been preserved by the sterile overlying windblown deposit.

Specimens from the various sites number more than 30,000 and include large amounts of pottery, objects of stone, bone, shell, and various vegetal materials. The pottery from the Upper Republican sites include several thousand body sherds, hundreds of rim sherds, two small complete vessels, and perhaps 25 restorable vessels. They include large full-bodied vessels measuring up to 40 cm. in diameter, a limited number of bowls, and some miniatures. Handles, lugs, and similar appendages were not found. The bulk of the ware is medium to dark gray in color but some of the more highly fired sherds are buff to red in color. The majority of the sherds are moderately tempered with fine sand but in others the tempering is very coarse. A very minor number were tempered with finely crushed shell. The exteriors of the vessels have been roughened with a cord-wrapped paddle. The impressions on many have been partly smoothed while still moist to produce a slight degree of polish. Impressions are often in a vertical pattern but in other instances may be horizontal or even criss-cross, particularly near the rounding base of the vessels. Interior surfaces are commonly smooth but some striae may be present from the use of a smoothing tool. While considerable variation occurs in the thickness of the sherds, the bulk are from 4 to 6 mm.

Rim shapes are of two general types. The most common rim is a collard or thickened

form with which several geometric patterns of incised lines are most commonly associated (Fig. 69, B). The second type is a simple direct unthickened rim which may curve, flare, or rise nearly vertically. This type is rarely decorated except for the occasional occurrence of small diagonal incised elements on the lip. A limited number of sherds, some of which are from rather deep bowls, have a bright red stain on the inner surface which does not rub off easily (Fig. 69, B).

The bulk of the stone specimens are fashioned from a variety of brown to yellow jasper obtainable from nearby outcroppings; local exposures of chalk and sandstone were also utilized for artifacts. Chalcedony, moss agate, cairngorm, amazonite, and obsidian had a very limited use.

Artifacts of stone are generally well made and consist of numerous forms. They include well worked triangular projectile points, usually side-notched; diamond-shaped, four-bladed knives; thin ovoid blades; side and end scrapers; several types of drills, including a T-form; chipped celts or axes; various types of sandstone abraders; stream pebble pecking stones; polished celts; stone pipe bowls, on many of which various animal forms have been incised; carved human heads and faces; mealing and grinding slabs; and small stone pendants. Hematite, limonite, and various colored chinks were apparently used for paint.

Objects of bone and antler include scapula hoes, various types of awls, eyed needles, fish-hooks, slotted knife handles, shaft wrenches, perforated toe bones, antler clubs, antler cylinders, ulna picks, bison spine beamers, and deer mandibles well polished on the broken or worn diastema.

Specimens of worked shell were rare; they include perforated clawlike pendants, disk beads, and olivella shell beads.

Conditions of preservation were particularly good at most of the sites and many sizable wood sections came from some of the post molds. Although all of the wood has not been identified, considerable juniper and elm are represented. Charred corn kernels were plentiful at all of the sites and some short cobs bearing 6 to 12 rows of kernels were found. Other

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EXPLANATION OF FIG. 69. A, Upper Republican site on west dam axis: *lower right*, three house floors with associated middens; *upper center*, two house floors. B, Upper Republican specimens: *left*, restored vessels; *right*, various artifacts (not to scale). C, specimens from two Woodland sites.

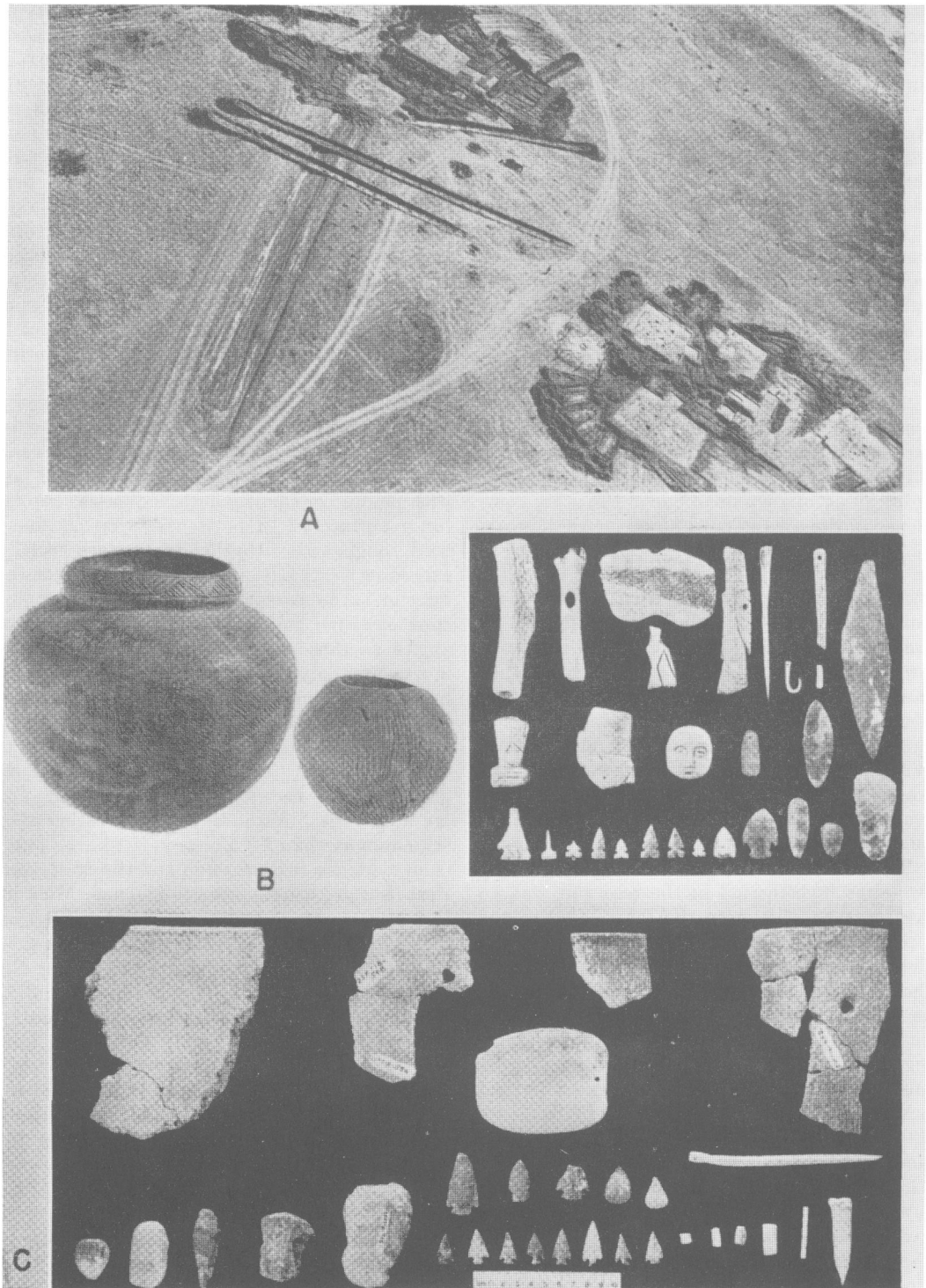


FIG. 69. Excavations and artifacts, Medicine Creek Reservoir, Nebraska. (See facing page for explanation.)

charred vegetal materials include sunflower seeds, charred nuts, and squash or melon seeds. No basketry, cordage, twisted fiber, or similar materials were recovered.

Although scattered human bones were occasionally found in the houses, storage pits, and middens, only one articulated skeleton probably attributable to the Upper Republican peoples was found. This was a single adult male buried in an extended position in the flesh. The remains were found on top of a high hill overlooking village site 25FT13. Associated materials included several small pottery sherds, projectile points similar to those in the village, olivella shell beads, end scrapers, one small pendant, and three cylindrical bone awls or bodkins.

The cremated remains of a young individual found near one of the sites had no grave goods except for three olivella shell beads. Whether this burial is attributable to the Upper Republican occupancy or to one of the other complexes in the area is not known.

#### WOODLAND SITES

Although village sites showing Woodland affinities occur in the Medicine Creek Reservoir area, they are much less common and smaller in size than those occupied by the Upper Republican peoples. They are usually situated on low terraces or ridges well below the general level of the more extensive Upper Republican sites. Whether this placement reflects climatic differences at an earlier period, is an attempt at concealment, or had some other basis cannot now be determined.

The depth of the sterile overburden at the two sites investigated in the reservoir was no greater than that occurring at several of the Upper Republican sites. The depth, however, of the dark cultural zone was somewhat greater at the Woodland sites. Earth-covered houses such as were constructed by the Upper Republican peoples do not appear to have been in use during the Woodland occupancy. Habitation areas are in some cases marked by a circular to oval basin, excavated to a depth of 12 to 18 inches into the sterile soil below the village accumulation. Near the center of almost every basin is usually a rather poorly defined fireplace on the same general level as the basin floor. There is no evidence of a fireplace basin such as occurs near the center of the Upper Republican structures. Post molds and shallow pits often containing refuse occur without regard to a discernible pattern both within the basins and throughout the general village area.

Fragments of hard baked clay were present but there were no imprints of grass or other materials ordinarily used in constructing the roof of an earth-lodge. Small charred twig fragments were quite common throughout the basin fill and it seems likely they may have played a part in the roof construction. The size of many post molds suggests a fairly permanent roof, perhaps of brush with a grass and bark or skin covering. The semi-subterranean structures appear to have been grouped rather closely with a maximum perhaps of four to six at a site.

Artifacts, though not so varied as at Upper Republican sites, are, in general, well made with an emphasis on implements for hunting and gathering (Fig. 69, c).

Pottery is not plentiful and appears to represent a very simple type. No complete or restorable vessels were recovered but several sizable sherds suggest large wide-mouthed jars with pointed or slightly flattened bases. The exterior surface is, in most cases, rather finely cord roughened with the impressions usually extending vertically and parallel. Many of the interior surfaces of the sherds show very fine cord or fabric impressions extending at right angles to those on the exterior. The color is most commonly dark gray but a few sherds are buff in color; many are blackened by fire and are soot-encrusted. The sherds are characteristically tempered with an abundance of crushed calcite. The texture is particularly granular and the sherds tend to split and crumble. The bulk of the ware is rather soft, seldom more than 3 (calcite) in hardness. There is no evidence of decoration and the direct vertical rims are usually cord roughened. Most lip forms are flattened and beveled on the exterior. The thickness of the sherds varies but is considerably greater than that of the Upper Republican ware. Several have a thickness of 17 mm. and the majority are more than 9 mm.

Bone beads, the majority fashioned from bird bones, were very common. Several types not generally found in other complexes in the Central Plains are represented. They include undecorated tubular bone beads, shorter tubular beads decorated by incising, and a small barrel-shaped type seldom decorated.

Other specimens of bone include well made awls, some apparently fashioned from the metapodial of deer. Others are made from thick bone splinters, perhaps of bison bone.

Two small worked scapula sections appear to have been used as knives or scrapers. The scapula hoe or spade characteristic of later hor-

ticultural groups has not been recovered thus far from Woodland-like sites in Nebraska.

Stone work, while not as varied and abundant as from the Upper Republican, was moderately well represented. Materials available locally were, for the most part, utilized for making these specimens. However, a limited amount of obsidian, chalcedony, and various cherts not available in the immediate area were also used.

Chipped stone specimens include projectile points, end scrapers, flake scrapers, and knives. Small crudely flaked triangular specimens were common and may have been used as projectile points or knives. Small corner-notched or stemmed projectile points of excellent workmanship are of the SCb1, SCb2, and SCb3 types as defined by Strong (1935, pp. 88-9). The edges of several points of these types are delicately serrated.

End scrapers, although not common, are represented by a number of well made specimens. Numerous flakes have been retouched on one or more edges for use as scrapers or knives. Small chipped celts or scrapers, similar in shape but much smaller than those found in Upper Republican sites, were common. Somewhat less common were rather coarsely chipped knives ovoid in form with a tendency for one or both ends to be rounded. The four-bladed diamond-shaped knife has not yet been reported from Woodland sites in Nebraska. Objects of pecked or polished stone include irregularly shaped sandstone abraders, stream pebble pecking stones, and cupped mealing slabs.

Work in shell includes small disk beads, rectangular to oval shell pendants, mussel shell finely serrated on the outer edge, and a marine shell ornament.

The remains of materials probably utilized for food include mussel shells (somewhat less common than at Upper Republican sites) and various animal bones, many of which have not been identified. The remains of deer and antelope appear to be somewhat more common than bison. The presence of rather large numbers of bird bones suggest a greater dependence upon small game. They include grouse, quail, prairie chicken, hawk, magpie, and bald eagle.

Two disarticulated secondary burials were recovered from each of the two Woodland areas. At one site (25FT70) the remains were those of two very young individuals, while at the second site (25FT18) two adult skulls with other skeletal parts from only one individual occurred in a small shallow pit within the village area. Grave goods associated with the two

adolescents included three shell pendants and hundreds of small bone beads representing all types found throughout the remainder of the two village sites. With the adult remains from 25FT18 were found pottery sherds, bone beads, fragments of worked shell, one marine shell bead, worked stone, and various unworked mussel shells.

#### DISCUSSION

Certain comparisons can be made as to the subsistence economies and material cultures of the two prehistoric pottery-making groups here represented. The Upper Republican village sites are larger and more numerous with rather extensive midden areas, and they have many pits of sufficient size for the preservation of considerable quantities of foodstuff. No direct or reliable inferential evidence of horticulture was found at either of the Woodland sites; at the Upper Republican sites there were corn, beans, sunflowers, and possibly squash remains.

The earth-covered house of the Upper Republican Aspect appears to have been much better constructed and better adapted to the local environment than does the small irregularly-shaped structure of the Woodland peoples. There was no evidence of fortifications or defensive placement of the house structures at any of the various sites.

Relatively the pottery from the Upper Republican sites is more varied and appears to have been made in much larger quantities. One Upper Republican village site of nine houses yielded rim sherds representing slightly more than 300 vessels while the larger of the two Woodland sites with three or four houses yielded rim sherds representing only 14 vessels. All this suggests a more permanent occupancy in Upper Republican than in Woodland times. Refuse from the Woodland sites seems to indicate primarily a hunting and gathering complex with an emphasis upon deer, antelope, and smaller game. Bison bones were more common at the Upper Republican sites, although small game was also well represented. Fish, crawfish, and fresh water mussels also appear to have made up an important part of their diet.

No certain evidence was found of specialized ceremonial structures or of ritualistic practices. Stone pipes, some of them elaborately carved or incised with figures of animals, carved human faces, incised human skull fragments, and various other artifacts of unknown but probably non-utilitarian function suggest a somewhat

more elaborate ceremonial life for the Upper Republican groups.

The two semi-sedentary groups briefly described above do not represent the full range of archaeological complexes known to be present in the Medicine Creek Valley. At least one site representing the Dismal River Aspect has been investigated near the upper reaches of Medicine Creek (Wedel, 1935, pp. 180-2). This complex, which has since been more intensively studied in other localities, appears to represent the late prehistoric and early contact period (Hill and Metcalf, 1942). No materials attributable to this complex were found in either the Upper Republican or Woodland sites investigated within the Medicine Creek Reservoir. The distribution of the Dismal River peoples, who apparently combined hunting and horticulture, was in general to the west of the Upper Republican area. There was, however, considerable overlapping of their ranges and any simultaneous utilization of an area by the Upper Republican and Dismal River peoples would probably be reflected in some of their cultural materials.

Pre-pottery groups, who preceded the Upper Republican and Woodland peoples into the area by a considerable period of time, left remains described elsewhere in this journal (pp. 260-6). Materials representing the rather considerable period between such relatively early lithic complexes and the earliest pottery-making groups in the area have not been defined.

No direct stratigraphic evidence was found for the relative age of the Woodland and Upper Republican materials in the Medicine Creek Reservoir. Elsewhere, however, it has been demonstrated that when found occurring on the same site the Woodland materials underlie the Upper Republican (Champe, 1946, pp. 83-98). Of the several Woodland variants known to occur in the Central Plains there is as yet no conclusive indication as to a possible chronological sequence.

Despite the rather complete inventories for twelve village sites attributable to the predominating complex in the area, the Upper Republican, the chronological picture remains rather uncertain. Pottery from the various sites show striking variations which may indicate temporal differences. A relative date based on dendrochronology may enable us to inject time perspective into the local Upper Republican picture. It is noteworthy that despite the com-

prehensive nature of the excavations and the relative nearness of the Medicine Creek locality to the Southwest, no Puebloan sherds or other artifacts were found.

As to wider relationships in the Plains area, the Upper Republican sites may prove to be assignable to the Lost Creek Focus or perhaps to an as yet undefined focus. In general the group of sites shows little evidence of influence from the Nebraska Aspect of eastern Nebraska which is believed to be contemporaneous with some Upper Republican groups.

The less well known Woodland variant represented by two sites in the reservoir cannot at the present time be identified with any heretofore designated types.<sup>2</sup> Superficially the ware is suggestive of the Valley Focus (Hill and Kivett, 1941, pp. 143-243). Similar calcite-tempered ware has been found underlying an Upper Republican occupation zone in western Kansas (Wedel, 1940a, pp. 83-8). It also occurs in small village sites to the east of Medicine Creek in Harlan County, Nebraska. The same type of ware has been recovered from several prehistoric ossuaries along the Republican Valley, which were characterized by the presence of large quantities of shell disk beads fashioned from fresh water mussel shells. It has been amply demonstrated, however, that other mass burials of somewhat different type with accompanying grave goods are attributable to the Upper Republican Aspect (Strong, 1935, pp. 103-14). Thus it appears that both Woodland and Upper Republican peoples practiced secondary burial and that shell disk beads were commonly used as mortuary goods.

The projectile points and incised bone beads are of rather unique types. Similar types have, however, been recently reported from a burial site with Hopewellian affinities from the Lower Republican Valley in Kansas (Schultz and Spaulding, 1948, pp. 306-13).

Further conclusions and correlations regarding the Medicine Creek area must await completion of a detailed analysis now underway, of the data collected.

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<sup>2</sup> In the author's opinion the calcite-tempered ware found here is a marker for one of several Western Woodland complexes, which is tentatively designated the Keith Focus.