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Article Summary: Wedel presents reactions to and questions regarding a 1969 study by University of Missouri archeologists of two prehistoric Plains Indian house sites. The sites represent poorly known Nebraska and Upper Republican cultures.

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House Sites: Mowry Bluff, Frontier County, Nebraska; Nuzum site, White Cloud, Kansas

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Photographs / Images: map of archeological sites in the Medicine Creek Reservoir, Nebraska; Medicine Creek Dam site from the south, looking upstream in 1948 prior to construction of the dam; view to east showing excavations with start of dam construction; excavated house floors and refuse area at Site 25 FT 17; section of an earthlodge floor with pottery remains

Some Observations on

TWO HOUSE SITES IN THE CENTRAL PLAINS: AN EXPERIMENT IN ARCHAEOLOGY

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THE MONOGRAPH (Wood, editor, 1969) toward which this critique is directed rests largely on data gathered by a team of University of Missouri archeologists during a two-weeks "vacation" period in September 1967. Two prehistoric Plains Village Indian house sites representing "two relatively poorly known manifestations: the Nebraska and Upper Republican complexes" were intensively investigated using "new near-total recovery and analytical procedures." The basic data, "limited to the inventories from one house site in each complex," became the focus of a university seminar where they were "analyzed in depth and collated with presently available information from published and unpublished sources."

The published report, like the field work and seminar, is a team endeavor. Participants in the seminar have prepared statements on specific topics: Wood on excavations and architecture; Sigstad on pottery; Klippel on chipped stone; Calabrese on ground stone; Falk on bone artifacts and faunal remains; and Smith on daub and vegetal items. In addition, Baerreis of Wisconsin reported on land snails and their possible climatic significance, Weakly of Tulsa on wood Identification, Cutler and Blake of the Missouri Botanical Garden on maize samples, Stansbery of Ohio State on freshwater mollusks, and various other consultants on special problems not otherwise covered.

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The two cultural complexes thus analyzed differ from one another "primarily in subsistence and aspects of culture related to the fact that they exploited distinct physiographic provinces in their separate developmental histories." By the new techniques applied and the approaches followed, it was hoped that the work would contribute to a "deeper and more meaningful understanding of the role played by these complexes in the history of the Plains Village Pattern." All of the major goals are said to have been realized in varying degree (p. vi), an especially important one apparently being "to provide empirical data supporting some assumptions which were largely intuitive or impressionistic in the past." A stimulating re-examination of past cultural taxonomy has resulted in promulgation by Krause of a new scheme for the Central Plains, and there is an equally provocative ethnographic reconstruction by Wood from the archeological data collected.

The application of new and advanced techniques, the presentation of data "in ways that are new to Plains literature," the revised taxonomic and ecologic interpretations offered despite the limited new data involved, and the very short time period in which the basic data were collected in the field and processed, all give the final report something of the qualities of a pilot study. In this light the procedures followed and the conclusions set forth merit close examination and evaluation by other workers with regional or methodological interests congruent to those here involved. With the current enthusiasm for the "new" archeology to which this memoir has been attributed by some, the papers will undoubtedly attract considerable attention. Since no adequate critique of the study in all of its many ramifications is possible here and because my personal bias and deepest involvement center around human ecology in the Plains rather than in taxonomic matters, I shall here stress certain substantive and methodological considerations whose handling in the report leaves troublesome questions in my mind about the project and some of its implied contributions to our understanding of Plains prehistory.

It is perhaps unnecessary to observe that there is a wide variation in the quality and completeness of the various papers. Most offer welcome substantive data or new interpretations, or both, in particular segments of knowledge. One or two, including notably Baerreis' treatment of the snail shells, are done with high competence. In a few, unfortunately, one finishes reading with an uncomfortable feeling that undue haste, slipshod editing and proofreading, and failure to consult qualified specialists in fields where the authors lacked competence or were not properly guided

by their professorial colleagues, have marred the presentations and weakened the substantive base on which the reconstructions and interpretations ultimately rest.

Of the two house sites from which the title of the paper derives, a well-defined and relatively productive subrectangular pithouse at Mowry Bluff in Frontier County, Nebraska, represents the Upper Republican complex. Mowry Bluff is in the western Loess Plains province about six miles north of Cambridge and a half mile below Medicine Creek dam and reservoir. In this locality, some 45-50 Upper Republican house sites and numerous other archeological features have been excavated previously, mainly in 1947-1948 by the Smithsonian River Basin Surveys and the Nebraska State Historical Society (Kivett 1949). More than 250 miles nearly due east, the Nebraska culture is represented by investigations at the Nuzum site near White Cloud, Kansas. Evidence described as circumstantial identifies this as a probable pithouse although no fireplace or posthole pattern could be detected and the exact form and architectural features remain unknown.

The house on Mowry Bluff is, among other things, almost certainly the most fully recorded house site in the entire Plains region. No less than 14 pages of description include, among other pertinent details, the itemized feature number, identification, dimensions, contents, and various comments for each of 103 postholes and pits. Before excavation this house was marked by a low mound; nearby were four shallow depressions which were not tested but which there is "every probability" marked the location of other houses. Then, in a single sentence (p. 3; cf. p. 48) these untested depressions are transformed by the investigators into houses in which the "differences in architectural form suggest they may not be contemporaneous" with the excavated house mound.

There are three assumptions here piled one atop another: *(a)* that the depressions indicate house sites, *(b)* that the postulated houses in the depressions differ architecturally from the one excavated beneath the mound, and *(c)* that because they differ architecturally they may also have been built at a different time. It is entirely possible that all three assumptions are valid. On the other hand, in the absence of evidence from excavation, how can the investigators, as scientific observers, dismiss without comment the possibility that one or more of the depressions was the ruin of a homesteader's dugout, outhouse, or other appurtenance, or indeed, that it or they are of non-cultural origin? Moreover, even if assumptions *(a)* and *(b)* are valid, why does the architectural difference

necessarily connote chronological disparity? Has it been established anywhere that Upper Republican peoples built only one style of house at any given period? If this seems like carping criticism against an honest attempt at archeological plausibility, let it be noted that on page 51 the faunal remains are discussed in relation to a proposed occupancy at Mowry Bluff by a "relatively independent extended family unit," inferentially living in a single-house "homestead" in recognition of the "fact" or probability that Medicine Creek would not have had the resources to support a series of house clusters or hamlets the year around. The postulated architectural and therefore chronological differences are basic, I judge, to the interpretations offered.

It is further suggested (p. 16) that the house on Mowry Bluff was occupied for not more than 3 to 5 or 6 years—among other reasons, because it was of lighter construction than the historic Hidatsa earthlodges so meticulously recorded by Wilson (1934). The walls, we are told, were vertical, of wattle-and-daub (ergo, all Upper Republican surface houses were wattle-and-daub: p. 105), and the only "plausible means of providing a roof for such a structure" was radially placed rafters with an apical smoke hole. With respect to construction details it is perhaps worth noting that the lodges described and platted by Wilson were large structures from 40 to 55 feet in diameter and with floor areas of 1,400 to 2,200 square feet. The house on Mowry Bluff measured 25 by 29 feet with an area of 725 square feet. In the Hidatsa lodges 80 to 100 rafters from 11 to 22 feet long were required, and their butt diameters ranged from 4 to nearly 7 inches; at Mowry Bluff the roof could have been adequately spanned with far fewer, smaller, and lighter 10 to 15 foot rafters. The heavily wooded bottomland "points" along the Missouri would have provided an abundance of good structural timbers suitable for framing the larger houses and more populous communities of the Hidatsa and their semi-sedentary neighbors; in the Medicine Creek locality, where trees were smaller, sparser, and often less regular in growth habit, the native builders must have learned quickly that less pretentious houses were a more practical adaptation to the shortages of good building material. In this light the size differential would seem to be a reasonable explanation for the lighter construction noted at Mowry Bluff. The less regular lines of wall posts not uncommon in western Upper Republican houses could also reflect use of second-rate timbers on a make-do basis as contrasted to house-building by the Nebraska culture people and other groups living in a more heavily timbered area.

Nor is it clear why a peaked roof is the only plausible covering for the sort of structure inferred at Mowry Bluff. Wilson (1934, p. 364) describes a flat roof which was not uncommon among the Hidatsa, though the peaked form was preferred. It seems pertinent to point out here that the Nebraska State Historical Society's investigation in 1934 on the lower Solomon near Minneapolis, Kansas, showed (Wedel 1935, p. 223) that in three large subrectangular surface houses, thick flat masses of burned clay daub carrying pole impressions on one surface and possibly like the daub chunks reported at Mowry Bluff (p. 11), were most plentiful in the fill within the central four-post roof support and diminished in abundance toward the side walls. It was there proposed that the structures may have had a flat central roof area, with a sod or earthen covering elsewhere. Whether this was the correct or best explanation, I obviously cannot say. But neither can it be categorically asserted that there is only one plausible way to roof such a structure as can be inferred from the evidence at Mowry Bluff. Further, until we have a more penetrating analysis of still unpublished data, combined with the published, I think it is premature to conclude that Upper Republican surface houses (p. 105) "were (like the Mowry Bluff house) wattle and daub structures." Some may have been so; but there is certainly no present evidence that *all* were. Finally, the platted concentration of daub (p. 13, fig. 4) at Mowry Bluff leaves me still wondering about the possibility of a flat roof comparable to that I postulated for the Minneapolis houses.

A key point in the ethnographic reconstructions offered in this memoir is the inferred divergence in subsistence economies and environmental exploitation between Upper Republican and Nebraska culture peoples. Both were semihorticultural, "depending on the familiar American Indian triad of cultigens: corn, beans, and squash" (p. 104). One wonders why sunflowers were not added to this list for the Upper Republicans instead of being included among the wild foods gathered (p. 103). Stressed repeatedly (pp. 104, 105, 107, 110) is the thesis that "Nebraska communities were more sedentary than those of Upper Republican." This becomes somewhat more specific in the further observation (p. 105) that the "faunal data at Mowry Bluff hint that Upper Republican lodges were not occupied in the summer. Campsites in western Nebraska and in Colorado provide clues that some of them *(sic)* hunted on the High Plains during that time." It is not made clear at this point which faunal data at Mowry Bluff hint at seasonality of residence or how they do so; but there is a possible clue on page 48 where we read that "the variety of avifauna is interesting in that it attests to the presence of the group during the fall or

spring when several of these migratory species pass through the area." The reader is left to conclude for himself that the migratory species probably include the Canada goose, mallard, blue-winged teal, hooded merganser, and the unidentified duck, all listed on page 49. These four (or five?) forms furnished 17 of the 50 bird bones recovered.

The relevant technical literature on the waterfowl of Nebraska and Kansas indicates that, with possible exception of the hooded merganser, all of these species nested in the region in recent years, as some still do in diminishing numbers as man alters the landscape and the bird populations decrease. Even the Canada goose "formerly bred in the Sandhill lakes and along some of the larger rivers [in Nebraska]" (Rapp et al 1958, p. 4). The mallard and blue-winged teal are reported as common summer residents and as nesting widely throughout Nebraska (Bruner 1896, p. 64; Rapp et al 1958, p. 2). The mallard "breeds wherever there is suitable habitat, especially the Sandhill lakes region. Winters in large numbers wherever there is open water" (Rapp et al 1958, p. 3).

In the 12th century A.D., when Mowry Bluff is believed to have been inhabited, the Medicine Creek valley provided a very different wildlife habitat than it did in 1967. The archeological record strongly suggests, for one thing, that beaver and muskrat were plentiful in Upper Republican times. Prior to straightening and deepening of its channel and the clearing of timber and brush from the bottoms, all by the white man, the meandering creek with its indicated beaver ponds and the main Republican River valley less than 10 miles to the south, could well have provided both wintering grounds and summer nesting places for most, if not all, of the waterfowl species listed for the house on Mowry Bluff. Even apart from its quantitative inadequacies as a fair sample, the avifauna reported provide shaky ground for inferences on seasonal residence. It appears to have led the investigators to apply their 1967 views on faunal distribution patterns to a 12th century situation without making discernible allowance for changing environmental conditions and related faunal adjustments. All that the 17 waterfowl bones safely show is that two geese and a few ducks were somehow involved with the occupants of the house at a time of year that still remains conjectural from such evidence as is now available. The Mowry Bluff avifauna, incidentally, compares interestingly with the more extended and more abundant sample of bird bones collected during the 1948 salvage operations at Medicine Creek, where the remains of such locally characteristic terrestrial forms as grouse and prairie chicken, unreported from Mowry Bluff, were also recovered in some numbers.

Another facet of the postulated seasonality of residence is the repeated suggestion (pp. 104, 108, 110) of "long-ranging hunts for herd animals by Upper Republican," as indicated by "campsites in the High Plains [which] testify that hunting parties ranged far west of their homes and gardens in the Loess Plains" and which are interpreted as evidence that the people "did not remain in their homes the year around (p. 107)." This is an intriguing problem indeed and one which cannot be satisfactorily answered from currently available evidence. That putative hunting parties ranged into the Nebraska panhandle, southeastern Wyoming, and northeastern Colorado is probably a legitimate inference; that they originated at Mowry Bluff or elsewhere on Medicine Creek or on other tributaries of the Republican River and signaled abandonment of the more easterly villages for the summer hunting season is still conjectural. We know that the Upper Republican settlements were many and widespread, and it is probable that west of the 100th meridian they were at or near the fringe of "permanent" settlement by semihorticultural Village Indians; but there are no reliable distributional data which will tell us where the "permanent" or gardening villages left off and the putative hunting camps began, or from which localities the putative hunting parties came. Some of the so-called hunting camps may represent pioneering attempts at settlement beyond the frontier in favorable years; others may have been used by small parties of young men or young people seeking adventure as well as food, perhaps responding to generation crises in their home communities. That they involved assemblages for communal bison hunts, complete with hunt police, trains of dogs with travois, etc., is plausible but cannot be demonstrated by any evidence yet put forward.

Implicit in the above thesis is the view that in summer the bison population along Medicine Creek and in adjacent districts for some reason became scarcer or moved away, thus compelling the local Indians to travel perhaps hundreds of miles west in search of meat. Thus (p. 110), the "residential patterns of Upper Republican were probably more flexible (in response to seasonal habits of bison and other less certain resources) than that of Nebraska variant peoples . . . " The "seasonal habits" are not further specified, but one may perhaps infer that they pertain to assumed herd movements from time to time. If so, it seems fair to ask just what we really know about such movements in pre-horse days, before the animals were harried by highly mobile and wide-ranging hunters on horseback. In the heat and dryness of advancing summer, it seems to me an open question whether the bison and the Indians pursuing them would undertake extended movements westward into an even drier region from a

habitat centered on spring-fed streams which must at all times have been a prime attraction to the game herds grazing on the surrounding upland plains.

In historic times the Republican River drainage as part of the "Republican country" was widely renowned as "the chosen home of the buffalo" (Dodge 1877, p. 131). It was included in an extensive natural feeding ground lying between the South Platte and Arkansas rivers. The rolling to deeply dissected grasslands bordering the Medicine Creek valley, as also the Red Willow and other perennial creeks emptying into the Republican at frequent intervals along virtually its entire length in Nebraska, were noted for their plentiful bison, on which explorers and early white settlers drew frequently for their meat supplies. The Republican is, or once was, supplied by numerous spring-fed tributaries originating at the contact zone between the Tertiary Ogallala formation and the less permeable underlying Cretaceous beds, chiefly north of the main stream. Before their diversion for irrigation, these supported an unsurpassed system of unfailing streams of excellent water, bordered by extensive and well-grassed upland areas for summer grazing, centered on timbered valleys offering winter shelter, and with ravine-cut valley margins where foot hunters could stalk or ambush their quarry. That the bison in such a habitat moved from time to time as the grazing was used up is certain; that these movements were of such magnitude that the local Indians had to abandon their creek-side villages and resort to seasonal peregrinations to the Nebraska panhandle and elsewhere in the High Plains far to the west is perhaps plausible but still lacks any sort of convincing supporting evidence.

Certain historical data are of direct interest in this connection. Eye-witness accounts attest the abundance of bison in the Republican country as recently as the middle of the last century, when the upper Republican-Solomon river region was under very heavy hunting pressure from the mounted Plains Indians. Traveling westward a few miles south of the Republican in 1843, for example, Fremont crossed the divide west of Prairie Dog Creek in late June and spoke of the "buffalo in great numbers, absolutely covering the face of the country" (Fremont 1845, p. 109). This was not far south of the Medicine Creek locale. More pertinent is the journal of Lt. Francis T. Bryan (1857, pp. 474-475) of the Topographical Engineers returning down the Republican from his reconnaissance for a wagon road between Fort Riley and Bridger's Pass. On October 2, Bryan noted his arrival at Deer Creek, now Medicine Creek, as follows:

> Arrived at the banks of a large creek: water about 3 feet in depth and 20 feet in width. It is reported to be a very long stream, having plenty of timber on its banks . . . For the last four days [since passing the Frenchman Fork] our progress has been much retarded by the almost total absence of grass, a want which tells seriously on our animals. The soil is good and produces abundantly, but the number of buffaloes which have pastured here during the summer months have left very little for the animals of travellers.

Next day, still descending the Republican, Bryan wrote further:

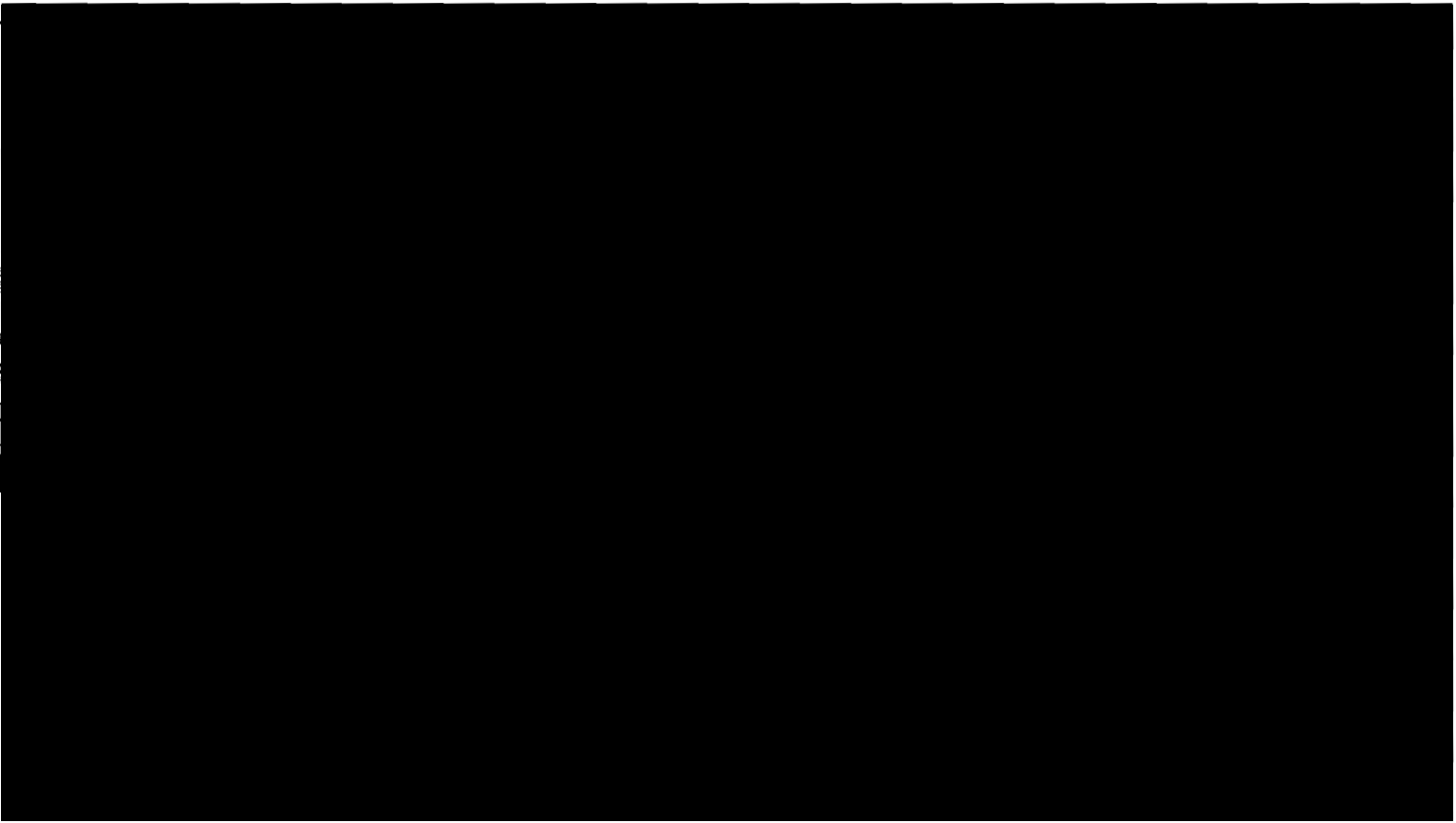
> The bottoms on this river afford subsistence to immense numbers of buffaloes and elks. The Cheyennes, Comanches, and Kiowahs make it their favorite hunting grounds.

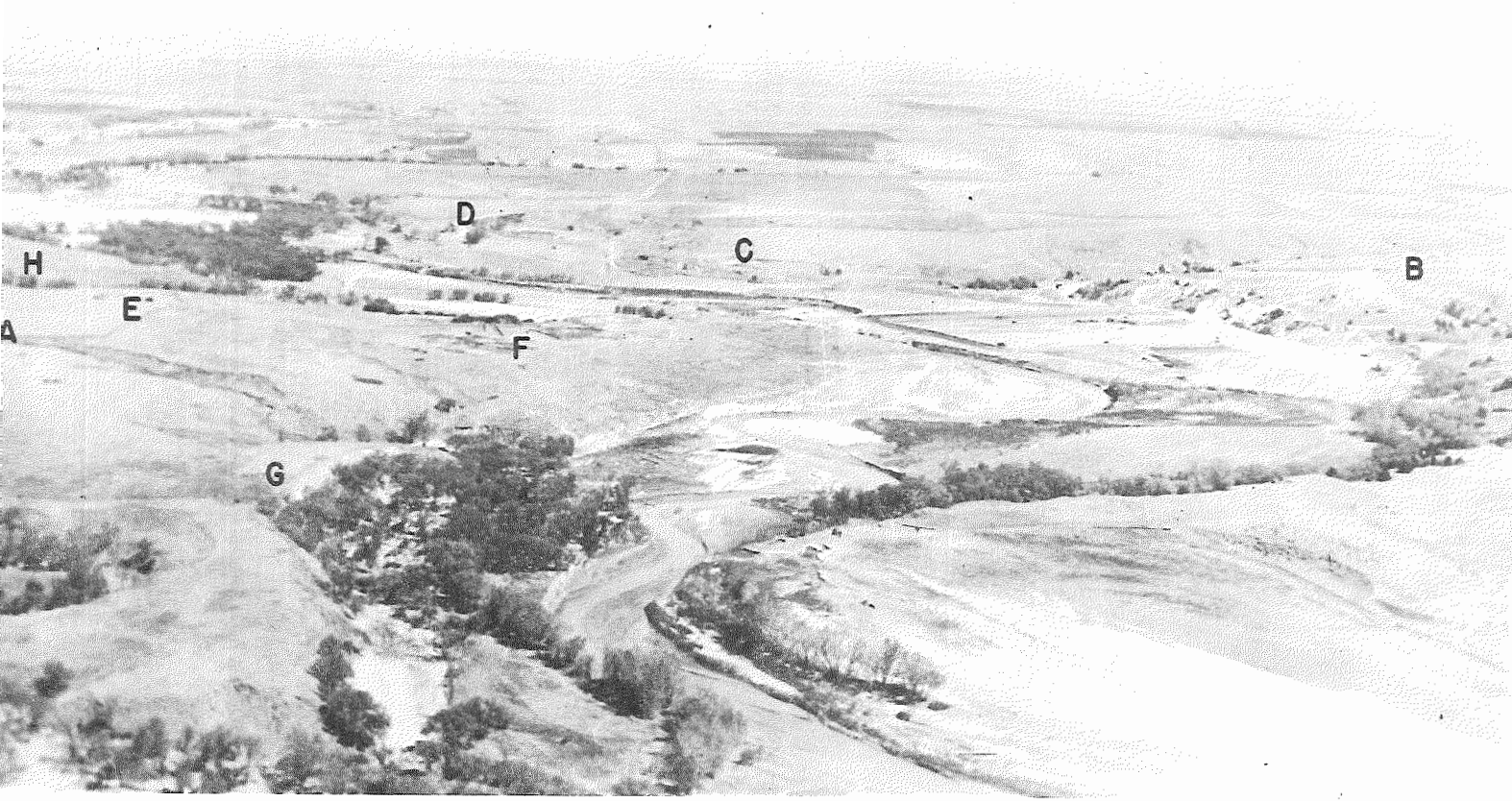
The historical record also indicates that the bison were notoriously erratic and unpredictable in their movements, both seasonal and annual. Such movements reflected the adequacy or inadequacy of the grazing, climatic and weather conditions, hunting pressures, and many other circumstances. But this does not necessarily imply that the region as a whole experienced an *en masse* exodus of the herds. Except perhaps in times of widespread and prolonged drought, it seems more reasonable to suppose that the animals shifted locally in accord with upland and other water supplies, range conditions, and so on, and that the Republican and its tributaries would have functioned as a strong warm-weather attraction to keep the herds somewhere within reach of its lifegiving resources. This is suggested in Dodge's (1877, p.131) further observation that hundreds of thousands of animals moved south out of the Republican country each year but other hundreds of thousands remained. In summer the grass and water would have held the animals locally, perhaps usually in scattered groups; in winter, as in historic times, the timbered stream valleys would have furnished much needed protection as well as sustenance. This sort of behavior made it possible for the Upper Republican peoples, like their Indian and white successors six or seven centuries later, to rely so heavily on the local bison herds and other Plains fauna. That this was probably the case is indicated on the archeological level by the finding of abundant bones of bison, pronghorn, and other typical Plains forms in and around the more than two score house sites and associated middens excavated during the salvage operations in Medicine Creek reservoir one to five miles upstream from Mowry Bluff. The faunal evidence from the single house opened at Mowry Bluff, in my judgment, falls far short of establishing that the Indian inhabitants of the valley were forced into seasonal mobility and long-ranging bison hunts to avoid a "dysfunctional" year-round exploitation of the local micro-environments (p. 51); and the less rigorously

collected earlier data likewise furnish no support for the postulated long-range seasonal hunts.

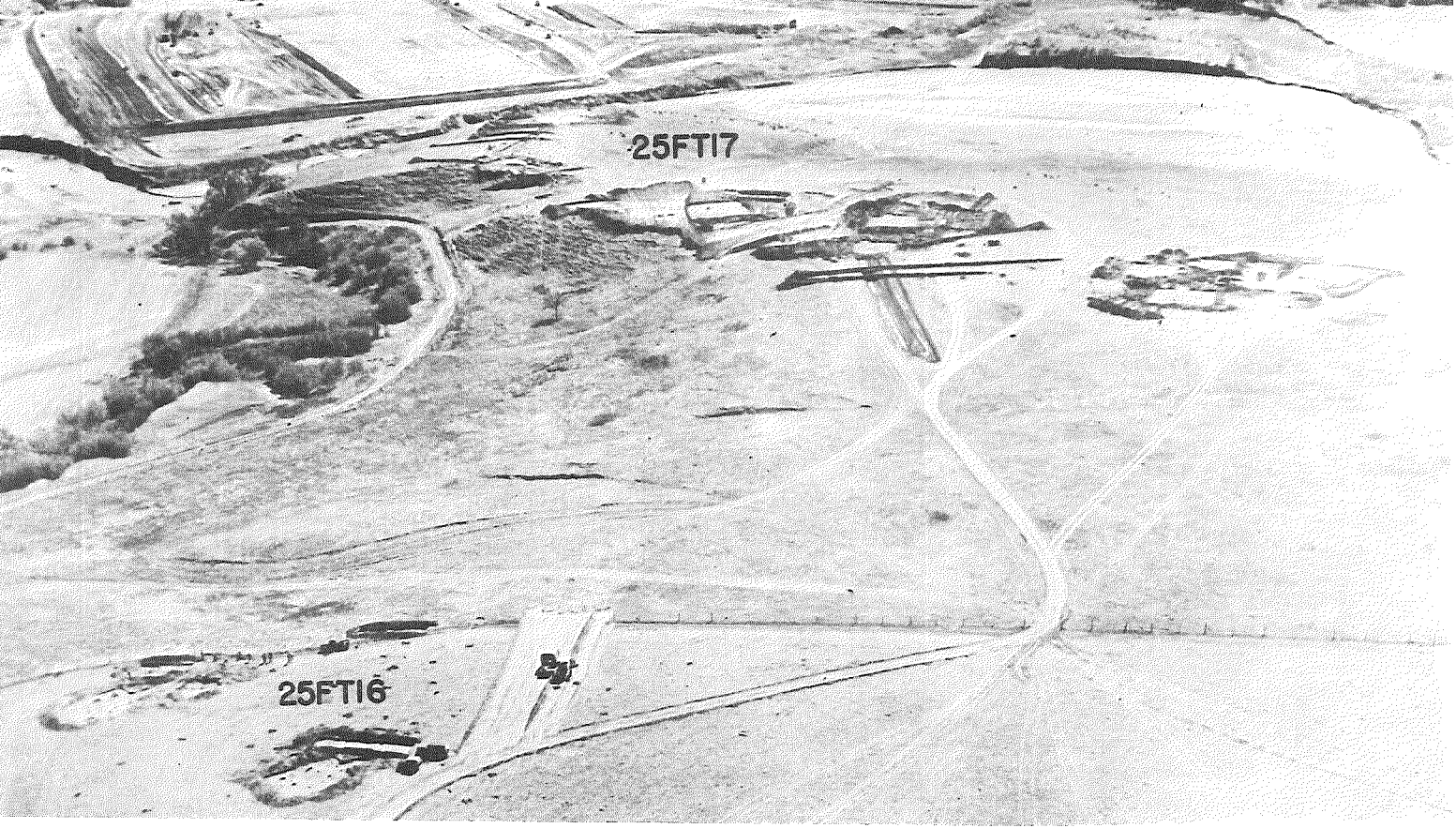
The interpretations placed on the faunal remains from the two subject houses have other puzzling aspects. At neither site, we are told (p. 102), "is bison much in evidence, beyond the use of their bones for implements. Also, in each case, we have evidence of exploitation of the local habitat and its particular faunal (and floral) associations . . . Upper Republican peoples seem to have utilized a variety of micro-environments within the immediate site areas: stream bottoms and flood plains, wooded stream banks and stream valleys, and marginal prairie areas . . . " Previously, there appears the statement (p. 46) that at Mowry Bluff "Plains species are not heavily represented . . . An occasional bison or antelope was taken, but our evidence does not point toward heavy dependence on these species during the actual occupancy. Instead, we note heavy utilization of the local environment . . . " In this somewhat turgid verbiage, the term "local" appears to mean stream valley as contrasted to upland plains. In the Medicine Creek valley, nowhere more than two to three miles wide and perhaps 200 feet deep, where an able-bodied hunter or the game he was after would never have been more than 10 to 15 minutes walk from grassy uplands or streamside woodlands–two of the "several major ecological zones (p. 46)" available–I can find no appreciable enlightenment in the distinctions attempted in this paper between "local" and "non-local" and/or "plains" fauna, micro-environment, and so on. The terminology here ineptly employed, instead of conveying to the reader the ecologic insights it supposedly imparted to the seminar participants, seems rather to obscure the simple truth that the Upper Republican people, either from necessity or choice, utilized whatever game and other wild food they could get their hands onto, in addition to the maize, beans, squash, sunflowers, and such other domesticates as they may have produced in their gardens.

According to Tables 8-9, seventeen mammalian species listed for Mowry Bluff are represented by 466 bones. (The text gives other numbers for several of the tabulated species, including cottontail rabbit, jackrabbit, pocket gopher, and kangaroo rat). Of the 466 tabulated elements, 364 (c. 78%) are from species that can be safely classed as locally abundant Plains forms. In terms of individual animal units, they represent at least five bison, one pronghorn, six jackrabbits, two prairie dogs, three ground squirrels, one swift fox, four pocket gophers, two kangaroo rats, one grasshopper mouse, and seven prairie voles. Woodland or "non-Plains" forms probably taken in the timbered and brushy Medicine Creek bottoms





Medicine Creek Dam site from the south, looking upstream in 1948 prior to construction of the dam as indicated, A-B axis. C, Site 25 FT 13; D, Site 25 FT 14; E, Site 25 FT 16; F, Site 25 FT 17; G, Site 25 FT 35; H, Site 25 FT 70. Site 25 FT 35 excavated by University of Missouri, all others by Smithsonian Institution and Nebraska State Historical Society. (Courtesy, Smithsonian Institution)



View to east showing excavations at 25 FT 16 and 25 FT 17 with start of dam construction in Medicine Creek Valley. (Courtesy, Smithsonian Institution)

Medicine Creek Dam site showing excavated house floors (A, B, C) and refuse area (D) at Site 25 FT 17. (Courtesy, Smithsonian Institution)

Section of an earthlodge floor with pottery remains. (Courtesy, Smithsonian Institution)

contributed 59 bones (12%) representing at least two whitetailed deer, six cottontail rabbits, and one each of beaver, muskrat, and wood rat. The remaining bones of two dogs and one white-footed mouse could go either way. In light of these figures, I fail to understand the statement that Plains forms are not heavily represented. The "occasional bison" said to have been taken would have provided more animal protein than all of the identified Woodland animals combined. If ten bison scapulae were recognized in the refuse bone, we can infer that no less than five animals died to furnish the hoe-makings. Are we then to assume that only the scapulae were utilized and the meat was ignored? It would seem likelier that the animals were butchered at a watering place in the nearby creek valley and only the wanted meat, plus such bones and other parts as were desired for tool-making and other specific aims, were carried back to the house on Mowry Bluff.

At the Nuzum site the faunal remains were much more limited in number and variety, and so greater reliance is placed by the investigators upon comparative material from other relevant sites. One such lot of comparative bones is from the Doniphan site, 22 miles southeast of Nuzum and "in the same general environmental setting." The Doniphan material, we learn (p. 81) clearly indicates "heavy exploitation of the Woodland association . . . with deer, bear, and beaver comprising the bulk of the material . . . " I agree; but the author of the words quoted seems to have overlooked the fact that Doniphan is a two-component site in which two excavated pithouses were assigned to the prehistoric Nebraska culture whereas the burials and most of the outside cache pits were attributable to an early historic occupation, probably by an 18th century Kansa Indian group. As I specifically noted in the site report (Wedel 1959, p. 118), the identified and counted animal bones came mostly from the cache pits; and since at least 11 of the 15 cache pits opened contained metal and/or glass *(Ibid.,* p. 104), I regarded the material taken from them as probably historic Kansa. I very strongly suspect that the earlier Nebraska culture residents of the locality probably drew on much the same list of animal species and perhaps in roughly similar proportions; but this supposition I cannot support by any evidence I observed at Doniphan. In the interests of reportorial accuracy and the proper use of comparative data, I therefore emphasize here that the material cited from Doniphan with respect to use of local mammalian fauna at Nuzum are not really relevant to the inferences drawn.

Since this volume is the first in the Central Plains, so far as I know, to make explicit its use of "near-total recovery and analytical techniques" in

the project with which it is concerned, a more detailed exposition would have been helpful regarding what is meant by "heavy utilization" of the local micro-environments as reflected in the archeological findings. It is probably true that the small rodents identified from Mowry Bluff will extend the list of mammalian species now known to be associated with Upper Republican materials. But just how does this involve human utilization of resources, other than to re-emphasize the catholicity of Upper Republican subsistence practices? The ground squirrels, kangaroo rats, mice, and voles are not likely ever to have been major dietary items, since these animals weigh but a fraction of a pound each and could not have been gathered in numbers except at great cost of time. Are they to be regarded, then, as substitutes gathered perhaps in time of food shortage when anything edible and available would be eaten? Or were they incidental supplements to other more important foods, eaten when and as they could be picked up? Could some have been fortuitous victims of open cache pits, as individuals of the same species still often are in archeological excavations in the western plains? Which, if any, might have been drawn to the human habitation by the prospect of seeds or other food stored about the premises, as mice and rats today commonly gather about granaries and farmhouses? Do any of them, or the non-mammalian vertebrate forms, offer new insights into contemporary environmental or climatic conditions? What comparative data are available regarding use of gophers and other small mammals by historic peoples of the region? Among the historic Comanche prairie dogs and ground squirrels were often the first wild game sought by small boys learning the use of bow and arrow and developing hunting skills such as stalking; and the animals were eaten only under extreme stress. Wilson (1924, p. 165) describes the capture and consumption of gophers by Hidatsa boys herding horses. Are there comparable data for other Plains tribes, either village Indians or bison hunters? The surprising abundance of prairie dog bones at Medicine Creek reservoir sites suggests that the animal may indeed have been a regular and accepted supplemental food item, along with pocket gophers and jackrabbits. The abundance of molluscan remains at Mowry Bluff, paralleling the much more extensive and more varied collections from the 1948 salvage program at Medicine Creek, draws no comment whatever as regards cultural significance, and this in a geographical area where the historic Indians conspicuously avoided the consumption of such forms of life.

New archeological data of considerable promise from the Solomon River basin of north-central Kansas are another feature of the memoir.

They are in tantalizingly summary form. They provide one of the points of departure for a penetrating critique of Central Plains taxonomy, leading up to a revised system of classification and nomenclature. One wishes that the data had been quantified further so that the reader could determine how many sites were examined and on what scale of completeness, how many house ruins were opened, and so on. This sort of information is particularly relevant in light of the statement (p. 88) that there were "three different kinds of Upper Republican settlements . . . which when combined with radiocarbon dates and an assessment of trends to change in material culture and settlement pattern, can be placed in an interesting developmental sequence."

The earliest of these settlements are described as "small farming hamlets" of from 6 to 10 or more substantial earthlodges, each from 25 to 35 feet long, 20 to 30 feet wide, with four to six center posts and a long covered entryway, conspicuously situated "in full view of any incidental passerby" and associated with "sizable heaps of freshwater mussel shells." For these sites, "seven Carbon-14 determinations . . . suggest that an occupation between the 9th and 13th centuries is a reasonable estimate . . . (p. 89)." Later in the sequence came scattered houses along feeder creeks, which were "smaller and of lighter and less regular construction . . . only 12-15 feet wide and 12-15 feet long . . . built of less substantial timbers . . . " These are said (p. 90) to be more like the Nebraska Upper Republican sites and "a time span encompassing the 11th to 15th centuries A.D. . . . " is deemed practicable.

In the absence of more complete architectural details for the Solomon River earthlodges, it is impossible to judge how these remains compare or contrast qualitatively with the quantitatively comparable bodies of data from Medicine Creek reservoir and from Davis Creek in the Loup River drainage. The Medicine Creek lodges may have averaged somewhat smaller than those in the earliest settlement type postulated for the Solomon; but they include some ridge-top house clusters that were probably as conspicuously sited as those on the Solomon, and large quantities of freshwater mussel shells were a characteristic associated feature of the community pattern. I have the impression that houses as small as those of the second Solomon River settlement type are not characteristic of the Nebraska Upper Republican communities as these are now known where large scale excavations have been carried out.

We are nowhere informed as to the total number of radio-carbon determinations made on samples from the Solomon River sites, or the

number available for any particular house unit or hamlet, or the spread in years of the determinations. For Nebraska Upper Republican communities, there are now upwards of 25 published radiocarbon dates, ranging from c. A.D. 460 to "Modern" and the majority on material from the Medicine Creek district. At either end of the range the dates are unacceptable on archeological grounds. There still remain some uncomfortably wide spreads on multiple samples from particular sites, where from three to five dates per site have been reported. But, in these instances the site averages have usually given age determinations that lead to an interesting clustering of sites within a two-century span at c. A.D. 1050-1250. Baerreis and Bryson (1965, p. 71) have called attention to this as it relates to sites 25FT17, 25FT39, and 25FT70 at Medicine Creek, and noted single dates in the same time range from the Coufal site in Howard County, Nebraska, and the Woods site in Clay County, Kansas. To this series can now be added other Republican valley sites with multiple dates in the same time range: 25FT13, 25FT16, and 25FT36 on Medicine Creek, and 25HN36 in Harlan County reservoir.

All of this has possible implications for the proposed Solomon River sequence, if one accepts as reasonable the A.D. 1050-1250 period for the principal Upper Republican occupation of Medicine Creek and the nearby Republican River valley. The second kind of settlement recognized on the Solomon can then perhaps as logically be allocated to A.D. 1050-1250 (instead of 11th to 15th centuries) on the basis of site averages, and this would place them comfortably within the 9th to 13th century period to which the earliest Solomon River sites have been assigned. Whether the ceramic and other variations discernible in the postulated Solomon River sequence would be consistent with such a re-allocation it is not now possible to judge independently. In any case one must hope that the Solomon River culture historical interpretations rest on a sufficiently broad and secure base, in terms of multiple dates from appropriate house sites or communities, to support the reconstructions set forth. As here presented the dates are rather too sketchily discussed to do more than whet the reader's interest.

Earlier workers in the Central Plains are certain to view with keen interest the present efforts at taxonomic revision and improved cultural classification and nomenclature; but these are matters for whose adequate consideration there is neither time nor space here. The establishment of three phases for the Upper Republican culture or "variant" and two phases in the Nebraska "variant" are moves not readily appraised in the absence of more complete evidence. The distinctions proposed are nowhere

supported by statistical data nor are they quantified. They may have theoretical validity or usefulness; to me, it appears that the data are still being manipulated and re-classified by fiat rather than in consequence of empirical evidence presented in graphic or quantitative form. When to this is added the still poorly controlled time factor, involving notably few and areally limited radiocarbon dates, one wonders whether or to what extent intuition, past and present, has really been replaced here by new empirical data or by new and valid analytical and integrative tools.

Some reservations are in order, too, with respect to certain chronological revisions suggested or implied in the ethnographic reconstructions. That there may have been a direct displacement of a Woodland population by the westward-spreading ancestral Upper Republicans is possible but cannot be demonstrated by any evidence presented in this memoir. I find unconvincing the argument (p. 103) that "contacts of some sort, if not trade, are implied by a Woodland vessel on the floor of a house at Red Cloud 3," on Reams Creek southeast of Franklin, Nebraska. At the time of its finding, this vessel was regarded as intrusive to the Upper Republican culture in which it was found (Wedel 1935, p. 188); and it has since been identified as Harlan Cord-Roughened ware assignable to the Keith focus Woodland culture of c. A.D. 600 or earlier (Kivett 1953, p. 132). One wonders on what basis the present investigators class this find as evidence of possible trade. I see no reason to infer direct contact in this situation between Woodland and Upper Republican, any more than I would infer direct contact and coexistence from the discovery of Archaic and Woodland type projectile points in post-White contact Little River sites in Rice County, Kansas. Until artifacts diagnostic of the putatively later culture in such a situation are found indisputably in situ in a habitation or burial site clearly belonging to the putatively earlier culture, coexistence seems a debatable explanation.

The ethnographic reconstructions in which the Central Plains archeological data are interpreted by analogy with what is known of historic tribes in the Plains region, offer much additional material for discussion and testing. They also lead to the hope that the promised (p. 107) "sophisticated ceramic and other analyses now being developed" to determine the social composition of prehistoric groups and their subsistence patterns may soon be unveiled for review and evaluation. That such analytical approaches, if they can be validated, would be of great interest and usefulness, is evident; but they should have a sounder basis in logic than we are offered in some of the basic assumptions that underlie the ethnographic reconstructions set forth in the present set of papers. For

example, we learn (p. 104) that the "larger areas of tillable lowland soil available to the Nebraska populations along the Missouri River suggest that their horticultural practice was more extensive than that possible in the generally smaller river valleys occupied by Upper Republican peoples." It is not at all clear why the greater amount of cultivable ground available implies a more extensive practice than that of the western peoples. The potential may have been there; that it was ever realized is not demonstrable from any evidence here presented or cited. That the Missouri River bottoms were far more extensive than those on Medicine Creek is obvious; that the more restricted areas on Medicine Creek seriously inhibited the prehistoric gardeners or held down the native population numerically does not follow, though it may well have encouraged a different and more diffuse pattern of settlement than that in the east.

In the 40 miles or so of its course through Frontier County, Medicine Creek has a valley bottom roughly 400 to 800 yards wide, with occasional broader enclaves at the mouths of some of its tributaries. This should have provided a minimum of 60 to 100 acres of bottomland per mile—admittedly a very rough figure but one which could be easily verified or corrected by planimeter and large scale maps. In historic time Plains Village Indian gardens varied in size from ½ to perhaps 3 or 4 acres per family (Wilson 1917, p. 24; Will and Hyde 1917, pp. 97-103). At the maximum figure 15 to 25 homesteads per mile with up to 5 to 10 persons each might have been feasible along Medicine Creek; with smaller plots more homesteads and even hamlets and small villages could have been supported. Additional cultivable land might have been available on tributaries and perhaps on neighboring creeks with no more walking required than is historically attested for the garden-bound women of the Pawnee towns on the lower Platte and Loup rivers in the 19th century (Oehler and Smith 1914, p. 29; Irving 1835, vol. 2, p. 45). Thus, a clustering of dwellings and even of hamlets along a favored stretch of creek valley, such as that now submerged by Medicine Creek reservoir, with horticultural support drawn from gardens scattered for some miles above and below, seems a likely pattern of settlement. The gardens, worked on such an absentee basis and located at some distance from the homestead or hamlet, would have been extremely vulnerable to animal predation if not closely watched; but this would probably have been an even greater hazard in the Nebraska culture habitat with its much heavier forest cover, its larger deer and small mammal population, and the much greater area of operations. Until we have some more substantial figures regarding arable land areas, the number and size of dwelling units inhabited simultaneously

or approximately so, and the overall distribution of native populations along some representative streams, such arithmetical exercises as the foregoing have, of course, minimal usefulness.

Partly because of the limited extent of the field work represented in "Two House Sites . . . ," and to give added perspective, there is frequent recourse in the memoir to previous work in these two cultural complexes. Here we find regrettable lapses, omissions, and misinterpretations that suggest too-hasty reading and insufficient regard for previously published matter. Sweetwater is *not* the only Upper Republican site from which ground stone celts have been reported (p. 38), if Red Cloud 2 (Wedel 1935, p. 199), Minneapolis 1 (*Ibid.*, p. 231), the Lehn site (Hill 1932, p. 174), and the St. Helena focus sites (Cooper 1936, p. 47) are properly allocated to this culture; and indeed, Kivett (1949, p. 280) lists "polished celts" among the artifacts gathered at Medicine Creek in the 1948 salvage operations. In concluding (p. 38) that "the material from which pipes are made can thus be used to help distinguish between Nebraska and Upper Republican sites . . . ," the investigators give no indication that this distinction has been recognized repeatedly in the Central Plains literature during the past 35 years (Strong 1933, pp. 279-280, and 1935, p. 267; Wedel 1940, pp. 311-312, 1959, pp. 560-561, and 1961, p. 96). In a curiously oblique statement (p. 38) we are told that "Recently, Brown (1967, p. 46) has reported stone pipes (probably of catlinite) from Nebraska complex sites." In this particular Brown is a secondary source and his information, so far as I can determine by consulting the readily available original sources, derives from finds made and reported in the 1930's by Bell and Gilmore (1936, p. 322) and by Hill and Cooper (1938, p. 309) at the Table Rock and Fontenelle Forest sites, respectively.

This tendency to disregard certain earlier work on Nebraska culture is manifested elsewhere in the memoir, for example, in the selection of comparative data in the discussion of Nuzum site work in bone and antler (pp. 79, 102). That bone artifacts are less plentiful in Nebraska culture sites than in Upper Republican is probably true; but it has not yet been shown that the range of artifact types in the complex as a whole is also more limited. The information published some 30 years ago by Hill and Cooper (1937, 1938) and by Cooper (1940) includes, with illustrations, most or all of the artifact types reported by Brown in 1967 from Pony Creek in Iowa; and that information provides acceptable first hand evidence that the materials from the Pony Creek district conform in general to the bone and antler artifacts recovered from Nebraska culture sites widely spread along the Missouri River. Here and elsewhere the record

suggests that not one of the student contributors to the discussions of Nuzum site and other Nebraska "variant" material culture troubled himself to consult the published papers reporting on Nebraska State Historical Society explorations in eastern Nebraska from 1935 through 1938. In part these are condensed general survey reports; but others include quantified data for artifact samples that are substantially larger than those from Nuzum. How a current study that presents the results of new techniques and approaches, and professes to have collated those results with "available information from published and unpublished sources" can ignore such a body of data, and the better perspective its use would give to understanding and interpretation of regional materials, is far from clear. Equally unclear, in light of the above profession, is the apparent failure of any member of the seminar to take serious note of the extensive and well documented Nebraska culture materials in the state historical society museum (cf. fn 5, p. 91).

The published record seems not to have been very perceptively utilized in a number of places. For example, in the discussion of the external relationships of the two cultures studied, it is stated (p. 107) that "exotic or extralocal goods are thus rare in Nebraska sites; they are all but lacking in Upper Republican contexts." Specifically listed are the copper-coated wooden disk or disks from the Graham ossuary near Republican City, Nebr. (Strong 1935, p. 114), here designated "the most esoteric item yet reported for the Classic Republican phase"; and as "another esoteric item," the Crockett Curvilinear Incised sherd from the Whiteford site on the Smoky Hill River. The context does not make clear in what sense these two pieces are "esoteric." If this means non-local, it seems strange that the discussion makes no mention of some 25 or more other items from the Graham ossuary, which, though presumably less "esoteric," are also of exotic origin or at least were fashioned from exotic materials. Thus, Strong (1935, pp. 111-114) reported artifacts made of Gulf Coast conch (*Busycon perversus* Linn), fresh water snail shells (*Anculosa praerosa* Say) "common in the Ohio and Wabash Rivers and southward but not known to occur west of Illinois," marine olivellas (*Olivella jaspidea* Gmelin) "from the Gulf or Atlantic coast," and a marginella (*Marginella apicine* Menke) from the Florida or Gulf coast. Most of these items presumably reached the Republican valley peoples from the east, south or southeast, but whether as finished products or raw materials is not now clear. Moreover, since most of these items are from burial sites, of which few have been worked and even fewer reported in the Upper Republican area, it may be premature to read too much into the available published record as regards

so-called "provincialism" for either Nebraska culture or Upper Republican peoples.

A certain carelessness or insensitivity in word choice may be noted from time to time by the perceptive reader, and this is nowhere shown more revealingly than in the discussion of the pottery remains from the Nuzum site. Here, on page 72, Strong's (1935, pp. 251-52) characterization of the Nebraska culture vessel form is referred to as an "allegation." To many readers this is a pejorative term which carries the connotation of an unsupported, and possibly unsupportable, pronouncement. Considering that Strong personally examined several thousand sherds plus whole, restored, and partly restored vessels, whereas the Nuzum sample consists of "a total of 107 sherds" (p. 69), it seems very probable that both Strong's "assertion" and the following "allegation" rest on a more substantial basis than do the adverse observations of his critic in the present memoir. To so downgrade the research efforts and findings of 30 to 40 years ago does a grave injustice, particularly in this case to a major scholar in Plains prehistory.

The degree of success attained in any enterprise should be judged in terms of its stated goals. In summary, the archeological experiment here reviewed (p. 109)

> was designed to obtain comparative data on two manifestations of the Plains Village pattern: Nebraska and Upper Republican. We have tried to present all data as fully and objectively as possible, and have tried to extract as many inferences as possible from these and related data to provide hypotheses for future investigations of these two taxonomic units. Our basic data, limited to the inventories from one house site in each complex, were analyzed in depth and collated with presently available information from published and unpublished sources.

These broad objectives are particularized in the abstract, preface, and introduction to the memoir, from which have been extracted the quoted passages in earlier pages of this essay. That useful data have been added to record and some likely lines of approach to Central Plains problems pointed out, is evident. In this sense the doors to deeper understanding of Plains prehistory have been opened a little further. The application of more refined field and laboratory techniques is wholly commendable, since it has been demonstrated in other areas of North America that the perceptive and critical use of such devices, including some of those presumably employed here, can provide notable advances and sometimes stimulating or exciting insights to archeology when properly used and interpreted. In the present case, unhappily, the real significance of much

of the new substantive data and forcefulness of the updated interpretations based on empirical evidence, presumably hard won by painstaking work in field, laboratory, and seminar room, have too often been dissipated and their meanings obscured by over-hasty and imperceptive reporting, dubious and incomplete correlation with previous work, and inadequate quality control over the final product.

The authors have indicated that the two cultures studied were among the "most poorly known" in the Plains at the present time. This is essentially true. The outpouring of federal and other research funds that has characterized archeological investigations on the Middle Missouri, for example, during the salvage operations since 1946 (Wedel 1967) and the heavy and continued concentration of trained personnel and other manpower there, have not been matched in the Nebraska-Kansas Central Plains region. On the other hand our ignorance of the Upper Republican and Nebraska cultures is not quite as profound as we have been asked to believe, where the serious student seeks to study them. In their over-riding objective of extracting all possible details from their own meager field data and interpreting them *de novo,* the investigators have chosen to disregard for all practical purposes a great deal of material with which their own findings might have been collated to advantage. Thus, they have essentially ignored, except for a parenthetical remark on page 14, the very extensive body of data on Upper Republican collected at Medicine Creek in the 1947-48 salvage operations. Although only preliminary reports on that work have appeared, the records are available in Lincoln and so is the principal investigator on that project. If the methods followed in 1947-48 fell short of total recovery, the area subjected to close scrutiny was extensive and the yield in quantity and variety of data was impressive. Perhaps some familiarity with that material and with unvisited Nebraska culture collections in Lincoln, would have tempered some of the conclusions based so heavily on limited data from two house sites 250 miles apart. Such insights, coupled with more critical handling of old and new data and a less hurried drive for quick and innovative results to "establish credibility, not objective truth" (p. 97), might have diminished somewhat the singular aptness of their own evaluation (p. 2) that "we have tried to do too much with too little"—and, one may add, too fast. They might also have improved substantially both the plausibility and the accuracy of the interpretations.

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