

Archeology of the Midwest

Central Plains Prehistory. Holocene Environments and Culture Change in the Republican River Basin. WALDO R. WEDEL. University of Nebraska Press, Lincoln, 1986. xviii, 280 pp., illus. \$34.50.

In this volume Waldo Wedel, a "plainsman" born and bred, views the region with the intimacy and love that move scholars to achieve excellence. He is at his best when he describes plains landforms and evaluates the region's environments. His is a sensitive view of the episodic human drama played out in those environments—a drama that required its actors to balance the opportunities of the stark grasslands against the security of the wooded floodplains and river bottoms. He has spent a professional lifetime reading the script of this drama, the archeological record. His reading is rendered in the idiom of culture history, and *Central Plains Prehistory* is a beautifully written, exquisitely illustrated example of this genre.

The advent of culture history in the late 1930s turned American archeology into a fledgling science. In that era archeologists first framed refutable chronological claims and achieved a modest consensus on units of analysis, scale of measurement, and scope of inquiry. Much has happened since, and many archeologists now view culture history as an outmoded approach. I am not among them. I believe culture history is simply Baconian science. It was the archeological norm until the 1960s and if well done provides systematically collected and carefully described "facts" organized around a theme of import to regional specialists. Wedel's efforts should be judged by these standards.

The first three chapters of *Central Plains Prehistory* set the context. A slim first chapter sketches the history of archeological research in the Republican River Basin from first settlement, through amateur collecting, to the organized programs of research conducted by state and federal agencies. It is followed by two remarkably full, well-documented and well-illustrated essays on the region's natural environment. In them Wedel details the annual and millennial cycles of rainfall and drought, warming and cooling, that shaped the fauna and flora and challenged the human inhabitants of the harsh continental grasslands of east central Colorado, northwestern Kansas, and southwestern Nebraska. These two essays, in my opinion, are the book's most valuable part.

The next chapter, "Early big game hunters," is a well-crafted review of material

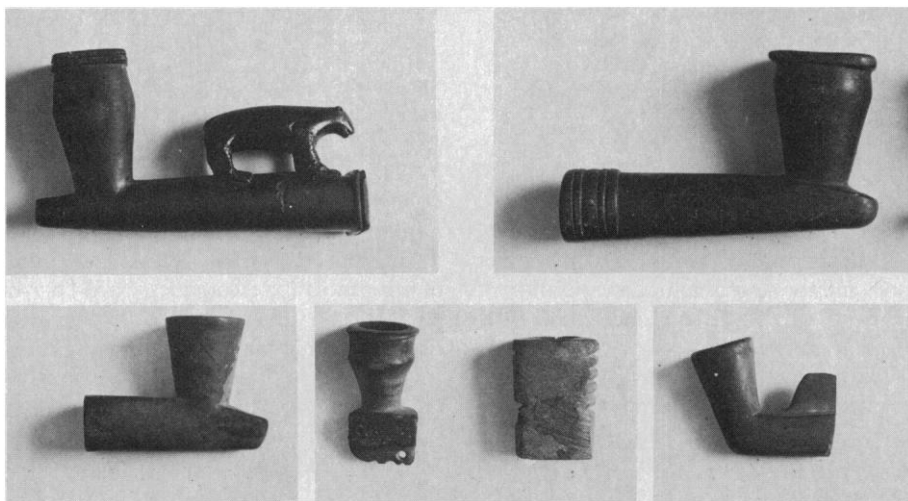
previously published. In the Great Plains of North America, two distinct forms of fluted projectile points, one found most frequently with mammoth and the other with extinct bison, and the stratigraphic superposition of the two established a sequence of early elephant hunters and later bison hunters. Since the food requirements of mammoths presumably exceeded the potential of the short steppe grasses that now dominate the region, a more luxuriant past plant cover has been posited. Wedel argues for a cooler, moister climate that supported a lush prairie grassland. Many of the mammoth kills in the region were, in fact, found in or near ancient ponds, streams, or river channels. Further, a significant proportion of the beasts slaughtered at these locales were female, young, or immature. This evidence suggests an early pattern of single elephant kills at favored hunting stations. With the disappearance of the elephants (for reasons not yet satisfactorily explained) early hunting and gathering peoples turned to the smaller but more abundant grazing animals, chief among them a bison of larger than modern size. Mass kills resembling drives, or pounds, and opportunistic surrounds or ambushes at water holes or in the breaks along water courses or drainage ways replaced the earlier pattern of single elephant kills. We know far too little about this bison-hunting life-style, but if Wedel is right it was the protean base from which the events of succeeding millennia shaped diverse social orders.

In the following chapter, "Archaic foragers and the Altithermal," Wedel discusses the effects that higher temperatures and lower rainfall may have had upon the region's hunting and harvesting populations. He sees a gradual, if uneven, warming and drying that led to at least some redistribution of plants and animals. The human inhabitants responded by adjusting their hunting tools and techniques, extending and perhaps intensifying their collecting practices and equipping themselves with more efficient tools and implements for the preparation of plant foods. One gets the impression from this portion of the book that the better-watered regions now served as focal areas, pockets of periodic but more restricted and intense interaction between humans, plants, and animals.

If the next chapter, "Plains Woodland hunters and gatherers," adequately represents what we know about this stage in the Republican River Drainage, then we obviously need more work here. In the plains at large, post-Altithermal differences in fauna and flora seem to have shaped a mosaic of adjustments on the part of Woodland Stage hunters and gatherers. Among the elements of this mosaic were (i) a highly mobile pattern of herd animal hunting and high plains foraging in the western short grass plains, (ii) a less mobile, mixed woodland and tall grass plains form of hunting and harvesting along the network of creek and river courses in the central plains, and (iii) a yet more sedentary woodland-adapted pattern of hunting and gathering focused upon the broad-forested bottomlands of the major river valleys and feeder streams that edged the plains on the east. The Republican River



Pa-hur, or "the hill that points the way," a sacred place of the Pawnees that "has given its name in anglicized form to the town of Guide Rock, Nebraska, . . . about a mile to the north." In 1833 the Pawnees ceded to the United States their lands lying south of the Platte, but "strong ties remained," including those associated with such sites as *Pa-hur*. [From *Central Plains Prehistory*]



Stone tobacco pipes found among grave goods at the Hill Pawnee site, around A.D. 1800. The Reverend John Dunbar, in his *Letters Concerning the Presbyterian Mission...* (1918) made reference, "unfortunately without description or other elaboration, to the use of the 'big pipe' by his hosts on ceremonial occasions." [From *Central Plains Prehistory*]

Drainage spans two of the three, yet, because the work was done before water screening and flotation were common recovery practices, we have little evidence for Woodland Stage plant or animal use in either.

The elegance of Wedel's ecologically focused presentation falters a bit in the chapter on Early Village Indians. After a paragraph comparing the Kofyar of Nigeria with Upper Republican cultivators of the North American Plains he wonders "just why the comparison was made" (p. 129). I do too. I believe Wedel has mistaken a previously published reference to wood ash fertilizer for a comparison of farming practices. His discussion of the radiocarbon dates for Upper Republican complexes in the region is equally puzzling. To paraphrase him, the available dates indicate a 12-century span. Nevertheless, he contends, we should assume a restricted period of occupation, purge the sample of assays considered too early or too late (that is, 25% of those available), then average those from sites with more than one determination. If we manipulate the evidence in this way then the Upper Republican occupation of the region need not have been much longer than the two or three centuries originally assumed. Unfortunately, such manipulations leave a five-century gap between the region's Woodland and Upper Republican occupations. It therefore becomes necessary to explain the Woodland vessel found on an Upper Republican house floor, which Wedel does by creating a new, and implausible, version of the curation effect.

Wedel reviews the White Rock and Dismal River remains in the first of two chapters on Late Village Indians. He handles the pertinent explorers', travelers', and traders'

accounts with the care and precision of a good ethnohistorian, and his treatment of the material remains meets the highest trait- and object-oriented standards of cultural historical description. The second chapter on Late Village Indians describes historic Pawnee subsistence practices and material culture but deals far too briefly, albeit lucidly, with Pawnee social organization. The penultimate chapter of the book provides a balanced and sympathetic view of the events and processes that led to the removal of the Pawnees from Nebraska. In concluding Wedel reviews the issues and ideas that have guided his work in the Plains and makes interesting suggestions for those who might wish to continue in the same vein.

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The Ecology of Plant Disease

Plant Virus Epidemics. Monitoring, Modelling and Predicting Outbreaks. GEORGE D. MCLEAN, RONALD G. GARRETT, and WILLIAM G. RUESINK, Eds. Academic Press, Orlando, FL, 1986. xxii, 550 pp., illus. \$71.50.

Modern advances in the molecular biology of plant viruses have not been paralleled by equally striking advances in the ecology of plant virus diseases. Detailed understanding of how viruses replicate, move, and cause disease within plants on a molecular level is unlikely to be a panacea in the control of plant virus diseases because many factors outside of the plant influence disease spread. *Plant Virus Epidemics* calls attention to the importance of understanding the

complex interactions among viruses, vectors, plants, and environment and of describing these interactions in quantitative models.

General epidemiological principles for plant virus diseases have yet to be established with the clarity and confidence J. E. van der Plank and others have brought to the understanding of fungal diseases since 1960. Three international conferences on the epidemiology of plant virus diseases held since 1982 have confirmed that the field dynamics of virus diseases differ sufficiently from those of fungal diseases to require new and different approaches. The book that resulted from the First International Workshop of Plant Virus Epidemiology, held in Oxford, England, in 1982 (*Plant Virus Epidemiology*, Blackwell Scientific, 1983) presented numerous interesting but brief accounts on a wide variety of topics. *Plant Virus Epidemics*, which follows the second international workshop, held in Australia in 1984, focuses instead on the theme of its subtitle: "Monitoring, Modelling and Predicting Outbreaks."

R. G. Garrett's prologue outlines the rationale for predicting outbreaks. Lacking therapeutic methods, we can at best prevent virus spread. But prophylactic control measures are often applied when not needed because the incidence of disease cannot be predicted. Moreover, the scope for modeling "seems so wide, and the approach so direct, that it is surprising how little has been attempted" (p. 10). The disciplinary isolation of scientists working on the multifaceted subject of plant virus epidemiology probably explains why modeling has been used so seldom.

Encouragingly, *Plant Virus Epidemics* illustrates a variety of applications of models to plant virus systems and points the way to major steps that must be taken to improve current models. The editors have included a diversity of viewpoints, but these are generally well integrated toward the volume's central theme. For example, chapters on migration of aphid vectors (L. R. Taylor), plant growth models (M. Stapper), and simulation modeling (N. Carter) provide broad but succinct coverage of essential background material written by capable specialists for interested nonspecialists. In this regard, only a few chapters on insect population regulation and modeling fall short of clearly establishing their relevance to plant virus epidemiology.

The most instructive contributions are those that provide detailed and updated case studies and explanations of model development and application. The work of Kiritani and colleagues on rice dwarf virus resulted in a series of research reports that spanned