PLAINSMEN OF THE PAST
A Review of the Prehistory of the Plains

Region Two
National Park Service
Department of the Interior

Missouri River Basin Recreation Survey

Guy D. Edwards,
Chief Recreation Planner.

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Archeologist.

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PREFACE

The fertile Plains of North America have influenced world and national history. They have challenged successive generations of stubborn home-seekers. Their conquest has inspired many inventions and the writing of many books. No book yet written, however, contains a simple coherent account of those obscure episodes which, welded together, become 10,000 years of complex Plains Indian history. Until recently such a book could not have been written because the facts were not at hand. In fact, it is foolhardy to attempt it now. A few of our facts are now assembled and they take on a vague semblance of order, but at present this dim outline is chiefly valuable because it shows the incompleteness of our knowledge and the fantastic gaps in time and space in our information.

The present short account is not deemed scholarly. It is a deliberate attempt to reduce some of the scientifically reported data to less technical terms and thus make possible a quick review of the prehistoric events in the Plains. Although details and controversial issues must in large part be omitted, my own thoughts at times lead me to unorthodox interpretations. Where this happens I have attempted to make clear that the opinion is mine and is not necessarily shared by all other students

It is hoped that this short narrative will supply enough facts to allow an appreciation of history's long pageant as it was enacted in the West. It is specifically aimed at bringing the Plains Indian story in palatable form to non-archeologists. Professional archeologists may, it is hoped, also find it useful; they will correctly complain that many details are omitted.

For careful reading and criticism of this Review, I am indebted to Waldo R. Wedel, Smithsonian Institution, Paul L. Cooper, Smithsonian Institution, John L. Champe, Laboratory of Anthropology, University of Nebraska, and Merrill J. Mattes, National Park Service.

Pages 37 to 62 include data I have previously compiled in an "Outline of the Prehistoric and Historic Indian Cultures of Central Nebraska and Kansas," a supplement to the Reconnaissance Reports, Recreational Resources of the Basins of the Lower Platte River, etc., Region Two, National Park Service, Missouri River Basin Recreation Survey, April 1947, mimeographed. The present Review, as was the above cited one of April 1947, is intended primarily for the information of and use by "interested officials of the Corps of Engineers, Bureau of Reclamation, and the National Park Service."

PLAINSMEN OF THE PAST

A Review of the Prehistory of the Plains

Chapter I

SETTING THE STAGE

This article presumes to compress into a few pages the dramatic events which occurred during the prehistoric conquest of a hostile land. Discretion urges, however, that the geographical range of the account be well defined. But we can only define; there is no way to shrink the vast grassy theatre where Plains history transpired.

The basic Plains area has been variously defined. One of the best definitions is that of a Presidential committee assigned to study the Plains region and its problems. This committee defined the Plains

> ". . . as stretching from Canada nearly to Mexico . . . about 1300 miles long and . . . from 200-700 miles in width. The Rocky Mountains form its western boundary but no clear cut line defines its eastern edge, which can be designated approximately in terms of (1) climate, (2) soil, and (3) natural vegetation" (Anon, 1936, p. 23).

Webb, in his classic book,"The Great Plains," says the Plains are

> ". . . an area which may best be defined in terms of topography, vegetation, and rainfall" (Webb, 1931, p. 3).

He prefers to discuss the Plains "environment" rather than the Plains area. This environment has three characteristics (not necessarily always found together). It is a treeless land, exhibiting a level surface of great extent, where rainfall is insufficient for ordinary intensive agriculture -

> ". . . a land of low relief, few trees, and little rainfall - of sun and wind and grass."

The Plains is outlined by criteria of physiography, climate, vegetation, and soil. The map opposite, modified from the report of the Presidential Committee, shows the physiographic Plains, and an "average" Plains area (Anon, 1936, Figure 2). For our purpose here the Plains will be that area selected by the Committee, whose study was limited to a zone which follows the edges of the physiographic zone very closely, except in northeast North Dakota where more territory to the east is incorporated, and in extreme Southern Texas, where a part of the physiographic area is cut off. It is recognized, of course, that the climatic and vegetation zones will move back and forth across any arbitrary lines set up by the Committee, so that the "Plains environment" will shift slightly from time to time. We will then talk of the Plains as the "average" area of the Committee.

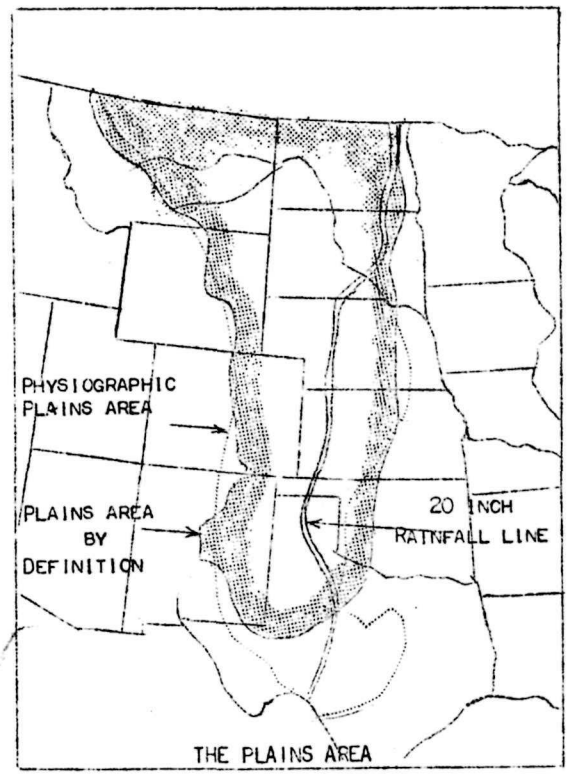


FIGURE 1

The Plains have one more rather remarkable feature in common. Virtually three out of every four square miles of the extensive area is drained by one amazing river - the Missouri. Except for the southern tip of the Plains, the muddy, treacherous Missouri - "too thick to drink but too thin to plow"-receives the precious moisture of the land and carries it swiftly to the sea. The Missouri and its host of attenuated tributaries spread like

the ribs of a grotesque fan across more than half a million square miles of continental United States. The fabulous, romantic, Missouri. and the diversified territory it drains has been described thus:

> "The Missouri River Basin comprises a territory of nearly 530,000 square miles - approximately one-sixth the area of the continental United States. It extends about 1,350 miles from Glacier National Park, Mont., in the northwest to St. Louis, Mo., in the southeast, and more than 700 miles from Colorado's South Park in the southwest to Devils Lake, N. D., in the northeast. The Missouri River itself, from its source at Three Forks, Mont., flows 2,500 miles in a general easterly and southerly direction through or along seven States. With its innumerable tributaries, it drains all of the State of Nebraska, portions of the States of Montana, Wyoming, Colorado, North Dakota, South Dakota, Kansas, Minnesota, Iowa, and Missouri, and small areas in the Canadian provinces of Alberta and Saskatchewan. . . .
>
> "Briefly, the Basin rises in altitude from about 400 feet above sea level at the mouth of the Missouri to the 10,000 to 14,000 - foot snow-capped summits of the Continental Divide in Montana and Colorado. The watershed consists largely of plains, but in south-central Missouri, in western South Dakota, along the easterly slopes of the Rockies, and elsewhere there are rugged areas of considerable extent. Annual precipitation ranges from 40 inches at the mouth of the Missouri to less than 10 inches in parts of Wyoming and Montana. East and north of the Missouri River the soils are mainly of glacial origin; to the west and south residual, alluvial, and sandy aeolian soils predominate. Native vegetation consists of oak-hickory hardwood forests in the extreme southeast, successively replaced toward the west by tall-grass prairie, shortgrass plains, the sagebrush and desert scrub of Wyoming, and finally the western pine forests of the Rocky Mountains. . . ." (Wedel, 1947a.)

Having defined, and in part described, the geographical area which concerns us, the range in time can next be set off. Generally this narrative will stop at about the year 1800. This ending date is selected largely because there is a wealth of printed material which covers, in varying degrees of accuracy and competence, every phase of more recent Plains Indian life and custom. Nearly every American has an idea, sometimes incorrect, of the Plains tribes of history, who with lance and

rifle and hardy, half-wild ponies effectively patrolled the grassland against white settlement for so many years. But, there were other much earlier peoples whose existence is almost unknown by many present day Americans; it is these tribes who will engage our attention.

And for the beginning of the story? In actual elapsed years the best one can do is guess. The first nomad who looked across the flat expanse of the Plains was probably looking for food animals now extinct. His search was being conducted ten or fifteen thousand years before Christ. At that time there were vast ice fields in Canada; in the Plains the streams ran full, and marshes, lakes, and game-filled brakes were common. And across this hunters' paradise there moved small bands of hunters whose way of life is faintly known. The most commonly known of these hunters were called the Folsom men.*

In brief, then, the data reported herein extend from 15,000 - 10,000 BC until 1800 AD; from the earliest known human arrival until the time when the written records of history take over the narrative from the pick and shovel of the archeologist.

It is only fair to introduce at this time a few of the major facts which should be kept in mind while the Plains Indian cultures are studied. Anthropologists, as do any scientists, constantly modify their theories

*(Throughout this record various prehistoric cultures will be given arbitrary names unless tribal names are definitely known. The arbitrary names assigned to various groups or collections of archeological data are usually no more than the name of the site where the material was first found, or where it is best represented. For example, the name Folsom itself was applied to a distinctive type of arrowhead or lance head found at Folsom, New Mexico, in association with extinct bison. Similar specimens are still so called. Again, Yuma, an ancient culture, takes its name from Yuma County, Colorado, where arrow/points of unusual type were first observed in quantity.)

and spear

and beliefs as new evidence is found. In the Plains this modification has gone so far as to show a complete reversal of position. The study of the Plains tribes had, until recently, largely been confined to the living Indians. Their adjustment to their environment - i.e., their exploitation of the buffalo to the exclusion of other natural resources - was so complete that students generally assumed that they possessed a static way of life little changed over many centuries. Archeologically, the region was deemed sterile. The point of view was expressed this way by a leading student:

> "The present state of our knowledge indicates that the Plains is a barren area" (Wissler, 1922, p. 271).

A decade later, the same student says:

> "Not being able to discover how the various tribes came to be in the Plains, we can scarcely expect to tell how long they have been there. The archeological method may be brought into play here; but as yet we lack sufficient data. Mounds and earth works have been discovered in the Dakotas and southward along the Missouri, apparently the fringe of the great mound area in the Woodlands to the east, but in the open plains we have so far only evidence of states of culture similar to those we have just described /the horse-using hunters/ from which we infer that no other culture preceded this one. Yet for all we know, its origin may date back several thousand years. Certain it is that in 1540 all the typical Plains traits of culture were in function, and since the wheels of primitive progress move slowly we can safely assume a remote origin" (Wissler, 1934, p. 163).

But even as Wissler wrote the patient archeologists had unearthed information needed to revise Wissler's views. Strong (1933 and 1935) after weighing the archeological evidence accumulated over several years, concluded that the Plains was inhabited and dominated for centuries by tribes who built more or less permanent villages and, practicing agriculture, depended for food upon domesticated farm plants as much as upon wild game.

To the mobile warlike tribes of history which were entirely dependent upon the horse and buffalo (Crow, Sioux, etc.) he assigns a very

recent place in time as

> "... a thin and strikingly uniform veneer over the central Plains " (Strong, 1935, p. 298).

On this same subject Kroeber, after analysis of the data available to him, concludes

> "I believe that culture /in the 16th century/ within the so-called Plains area was . . . /only/ incidentally based on bison subsistence. . . ." (Kroeber, 1939, p. 77).

For a proper understanding of the prehistory of the Plains two basic facts should be kept in mind. The first of these is that the Plains Indian, the symbol of superlative horsemanship, hunting, and hit-and-run warfare, was following a way of life which had developed after 1700 AD. It was a life utterly impossible before the introduction of the horse. The fullness of the horse Indian culture, however, resulted from a reorganization of life around basic ideas which had controlled the semi-sedentary horticultural peoples of the region for centuries. It does not represent a whole complex of new traits. For example, the controlled buffalo hunt and "the kill", the travois for transportation, the tipi, and many ceremonies were already part of the culture (Kroeber, 1939). The horse was the only new item in the culture. The Indian utilization of the animal merely made it possible for the tribes to subsist almost entirely upon the fruits of the hunt, whereas the food sources were originally more evenly divided between gardening and hunting. Some tribes (e.g. the Crow and Cheyenne) completely gave up their semi-permanent villages and many of the customs of village life to follow the bison all the year round. For the Cheyenne, the transition required only about 50 years (Strong, 1940)! Others (e.g., Pawnee) intensified their hunting activities but retained their permanent villages and gardens. It must also be noted that firearms, the

pressure of the white population in eastern United States, and other factors are known to have accelerated the development of the horse culture, but their full influence has not been adequately assessed and may never be.

A second item to remember is the wide climatic fluctuation for which the Plains are notorious. The tragic effects of varying rainfall upon the population of the Plains in the past century were equally important in the centuries before white men settled the country. There are suggestive tree-ring records back to 1406 AD from North Dakota showing several drought periods lasting as long as 26 years alternated with long periods of high moisture (Will, 1946). Other scanty data show that in western Nebraska the wet-dry cycle was operative before 1200 (Weakly, 1943, Wedel, 1941, Champe, 1946). In both of these areas, however, trees survived so that we cannot assume complete desiccation. The Indian technique of farming along the streams and in sheltered valleys may have made their crops more resistant to slight climatic variations, or stored surplus might carry them through one or even two crop failures, but the general regional desiccation and erosion resulting from a long drought would inevitably have decreased crop yield, in addition to causing a sharp decline in the amount of game available because of grass and water shortage. Some species of trees succumb to a five year period of greatly below normal rainfall (Weakly, 1943). Evidence is accumulating that some of the major shifts in Indian cultures were influenced by, and can be correlated with, the major drought periods. (See also page 49.)

But incidental to the increase in scientific knowledge of prehistory which archeological study provides, there are many immediately practical results. From archeological data such as tree ring analysis of prehistoric

wood or study of soil deposits overlying archeological materials the weather man, the conservationist, and the student of climate get information about the cyclical fluctuations of climate over the centuries. The anthropologist also gains knowledge of primitive human adjustment to a changing environment from the pitiful tools and the scraps of meals left behind by the first Americans.

The claim that archeology is constantly gathering evidence about drought conditions with resultant modifications of previous ideas about the cause and frequency of the disastrous drought periods, rests on a solid body of observations. Wedel has an excellent study in which he pyramids evidence gathered from all sources so convincingly that his conclusions below seem hesitant.

> "It need not be assumed from the findings of archeology that any major climatic change or permanent desiccation has taken place in the central Great Plains within the span of time represented by the various aboriginal pottery-making groups formerly resident there -- or, as a guess, within the past 8 or 10 centuries. In all likelihood, however, shorter or longer periods of deficient rainfall have occurred repeatedly in prehistoric as in historic times. . . it begins to look as though alternate settlement and abandonment was true of primitive man's occupation of the western plains just as it has characterized the subsequent white man's tenure where large-scale government aid was not forthcoming during periods of adverse climatic conditions " (Wedel, 1941).

In passing Wedel (1941) effectively disposes of cultivation and overgrazing as prime causes of the tragic Dust Bowl eras of recent decades. He cites the case of McCoy who, when surveying in 1830 in northern Kansas, experienced dust storms which were comparable to those of the 1930's and in no way referable to poor farming practice. And Malin (1946) has painstakingly analyzed the dust storms of Kansas since the middle of the 19th century to show that the longhorn and the turning plow receive an undeserved

share of blame for the tragic storms of the Plains. Rightfully the credit belongs to the climate.

In every drouth of recorded history white settlers were dispersed simply because their crops, their livestock, and they themselves were dying for want of food and water. Indians, whose weapons appear to have been unequal to the struggle with climate, also bowed to the capricious elements and moved on. Wedel's excellent articles (1941 and 1947) on the human ecology of the Plains are "must" reading for those persons interested in the future of the agricultural development of that area.

Tentative archeological data are available for a long range study of meteorology, water conservation, wind erosion, sedimentation, and ecology. When the many unfortunate gaps in the archeological story are finally filled in it seems certain that geologists, soil scientists, and others will benefit increasingly, just as past teamwork between all the branches of science has resulted in more accurate and credible interpretation of archeological finds.

The word archeology keeps cropping up. What is archeology? What does it accomplish? These are common questions. Basically archeology pushes history back in time. Working with the imperishable objects of long dead peoples, the archeologists attempt to push historical knowledge back into periods for which documents do not exist. In its purest form archeological research yields data which slowly give an increasingly full knowledge of ancient peoples.

A word concerning archeological method is appropriate here. Most statements about how one culture is related to another are based on inference. The basic assumption here is that objects which look alike, or which

are made in the same manner from the same material, share a common origin, or show similar reaction to an outside influence. So by comparison we deduce history. Customs or habits are similarly compared. At any new site, then, we try to learn where, and from what period, similar features or objects have been observed.

Thus we have introduced the subject of Plains prehistory. This chapter has defined the limits of the study, both geographically and in time; it has set forth some practical results of archeological study; and the basic trends of Plains prehistory have been indicated.

We have set up the conditions and limits of our study. At last we can move behind the scenes of history and get acquainted with the anonymous red men whose lives and habits make a saga of human struggle.

CHAPTER II

THE PREHISTORIC INDIAN CULTURES OF THE PLAINS

THE PALEO-INDIAN

Our review of the prehistoric past begins at the beginning. We first look far back at the men who lived with and fed upon the mammoth. Next, their children, who had an even harder life, will interest us briefly. Finally, the potters and farmers of the last ten centuries will be considered.

The task of learning about the lives and habits of the earliest American Indians (usually called Paleo-Indians to distinguish them from the more recent and better known groups) is greatly complicated by the fact that the evidence is a combination of geological, paleontological and archeological findings. The earliest authentic evidence of human use of the Plains is found in geological formations which experts have agreed are at least ten thousand years old. We cannot here review the difficult evidence and the analysis of assorted data which was necessary in order to set up these tentative dates, but must be content with the knowledge that experts in the field have narrowed down their guesses to a range of 20,000 to 10,000 B.C. Their calculations involve the weighing and analysis of

> ". . . such factors as stratified layers of undisturbed earth, terraces correlated with local and continental glaciers, changes of climate, relation to ancient lake beds, and association with bones of extinct animals" (Martin, Quimby and Collier, 1947, p. 83).

There is unfortunately

> ". . . no royal road to chronology but the trail is being blazed by careful and conservative geologists, paleontologists, geographers, and anthropologists" (Strong, 1935, p. 239).

Humans, it is generally agreed, came to the Americas from Asia, during the late Ice age, when a land or ice bridge (or both) opened new land to the wandering, and possibly hungry, Mongolian nomads of northeastern Asia.

The first Americans are presumed to have entered the country from the northwest by following the eastern slope of the Rockies, where an ice-free lane to the south remained open at a time when much of northern United States and all of eastern Canada was sagging under the weight of the thick glacial ice which had, time and again, covered the north half of the continent. It is probably significant that the ancient sites left by these people are clustered south of the line of glacial debris left by the last or 4th stage of the last or Wisconsin glacial period.

Figure 2 shows the distribution of some important Paleo-Indian sites. Full understanding of these early cultures, at the moment, is impossible. It is likely that our information will be forever scanty. There are several reasons for this. First of all, the small groups as they wandered back and forth through the country probably did not have many personal possessions. Such as they had were limited in size and number to what could be conveniently carried on their backs because no other draft animals except the dog were known in North America prior to the coming of the white man, who brought the horse, ox, and donkey. We therefore cannot

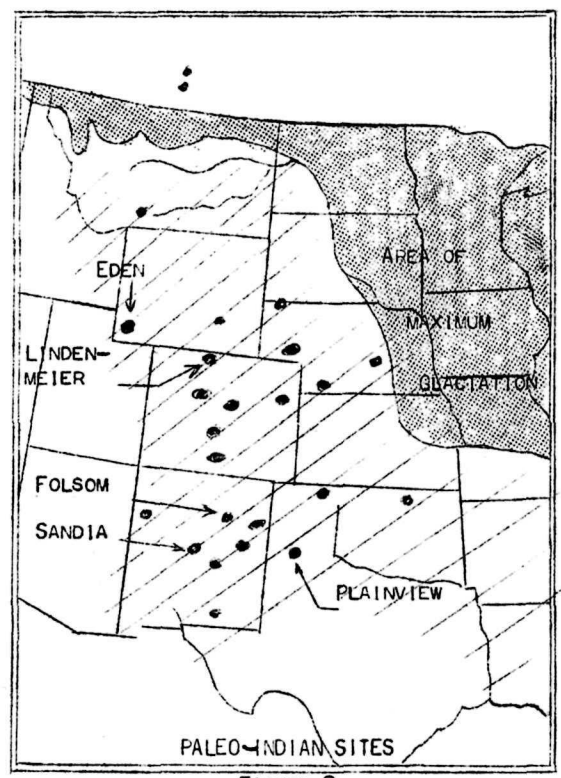


FIGURE 2

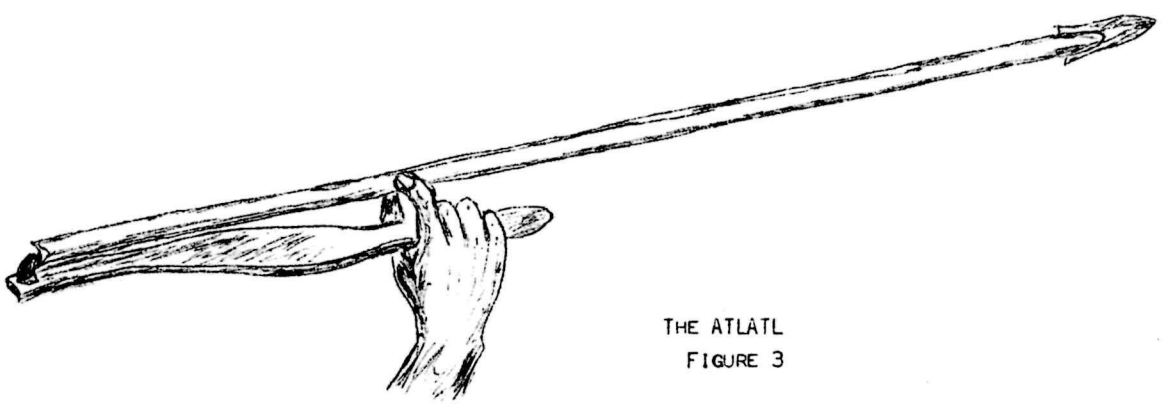
expect to find deep extensive deposits of the material objects possessed by these people. Obviously any perishable material such as skin or bone and wood or any other vegetable material would long since be decayed unless it were left in one of the dry caves which honeycomb the mountains of the West.

There are three Paleo-Indian cultures which we need to consider. The first (already mentioned on page 4) is the Folsom; the second is the Yuma; the last the Plainview. These cultures are characterized by an association with large animals which were apparently killed for food. Such extinct animals as mastodon, mammoth, ground sloth, horses, camels, and giant beavers, saber tooth cats, giant cats, musk ox and bison and numerous smaller forms are found. Other animals, indistinguishable from their descendents of today, are also found. Normally the deposits are found under or included within geological deposits laid down during or just after the last glacial retreat.

The animals and the plants of the period, and other evidence all imply a moist cool climate greatly different from that of today. Heavy rainfall in the Plains resulted from the chill air masses flowing from the northern ice to meet the warmer moist air of the southern latitudes. Ensuing condensation and rain resulted in a damp, probably chilly, climate where heavy vegetation could and did support a large animal population.

Of Folsom man himself we know nothing as far as his personal characteristics and appearance are concerned. We do know that he hunted the huge mammals of his day, often living along the shores of the shallow, marshy lakes or beaver meadows which dotted the country during the glacial ages. It is believed that the chief weapon in use was a light spear,

lance, or dart, propelled by the ingenious atlatl or spear thrower. (The Eskimo and Australians still use this tool.) The atlatl is a short board or stick with a hook or knob at one end (the other end is the handle or grip) into which the notched end of a spear is fitted. The spear is thrown with an overhand motion. The leverage normally provided by the arc of the arm movement is greatly increased by the increased arc allowed by the spear thrower. The spear thrower really does no more than increase the length of the arm. Every country boy who has thrown willow wands or dry sunflower stalks with a notched board understands how this spear thrower increased the effective range of the Folsom spear.



THE ATLATL
FIGURE 3

From the stone implements left in his camp grounds beside the marshes, we have learned that Folsom man was a skillful stone worker. In fact, the diagnostic trait of his culture is the fine fluted point apparently made only by this group, and which was never subsequently manufactured in the Plains. This point is characterized by the careful removal of a lengthwise flake on each side of the flat, chipped blade. This left a long concave groove or trough extending from the base almost to the tip. The excellence of this style of point and its characteristic form have led most students to ignore the fact that Folsom man also made many other stone artifacts. For example, a thin sharp knife was made from the flakes

removed from the fine point which identifies the culture. There is another point which resembles the best fluted point, but it is larger and less deftly made. Other points, although they may be crudely fluted are more nondescript in character.

Other implements found in Folsom sites include various kinds of scrapers, knives, and blades of rougher form. Flakes with small sharp points (for scoring or engraving), choppers, drills, sandstone smoothers or abraders (used to smooth down stone, bone, and wooden objects) and small sandstone palettes for paints are common. Bone awls and eyed needles have also been found. Although these tools are common, similar or identical types occur in later cultures. These latter Folsom pieces are apparently not distinctive enough to allow their use as cultural evidence.

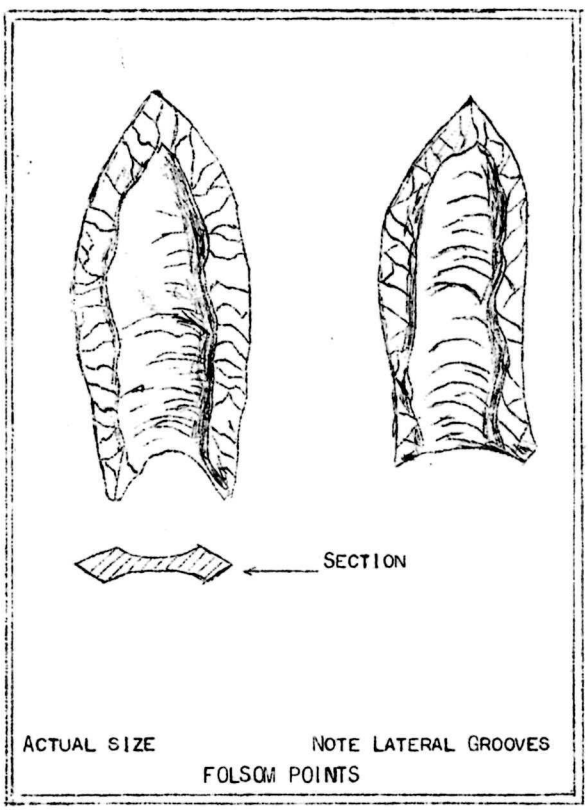


FIGURE 4

It is clear, then, that the Folsom culture is, at present, identified by the presence or absence of a certain type of arrow or dart point, assuming geological and paleontological conditions are met. The other implements and weapons used by the hunters and found with the fluted points are, at present, regarded as being too common in style and occurrence to be

reliable indicators of the culture. It is hoped that work now in progress will show a wider range of associated specimens so that at least the percentage of other specimens can be shown to have cultural importance. Or more careful analysis of these classes of data from many different periods may show minor differences in manufacture of form; such data would permit the division of the general Folsom period into smaller, more precise segments.

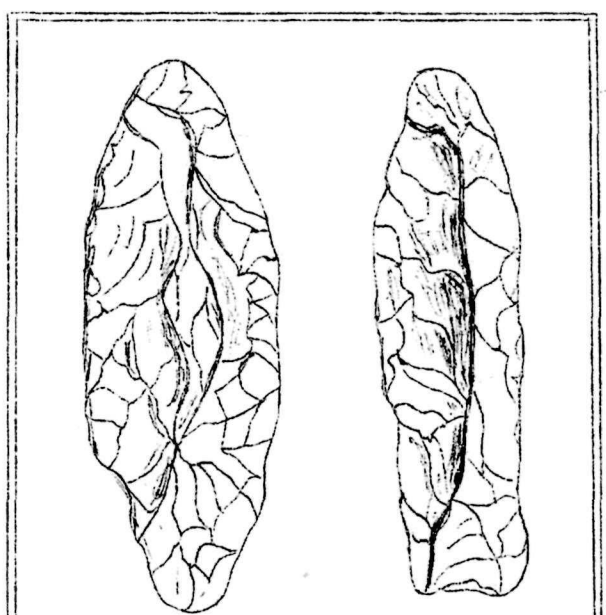
There are several important sites or stations where Folsom remains have been found. Folsom (New Mexico), Lindenmeier (N. Central Colorado), and Black Water Draw (E. New Mexico) are the better authenticated finds. From sites in Nebraska, Canada, Montana, Texas, and Wyoming artifacts of characteristic Folsom form have been reported, but full studies of these latter sites have not yet been made.

We should mention that the fluted points occur in considerable profusion in the Mississippi River Basin and even farther east. It is, therefore, possible that Folsom man finally occupied most of North America east of the Rockies, but the final answer on this question is not possible at this time. Maybe a Folsom infiltration from the Plains into the East resulted from the changes in Plains climate. The distribution of Folsom materials is such as to imply quite strongly that there was a distinct relationship between the physical environment, the hunting type of subsistence, and the ultimate spread of the Folsom culture. (The above section about the Folsom men is based chiefly on data in Roberts, 1935, 1936, 1944; Wormington, 1946; and Martin, Quimby, and Collier, 1947.)

In passing it is pointed out that recent finds in Sandia Cave (east of Albuquerque, New Mexico) hint that there were pioneers from Asia prior

to the Folsom people; therefore, Folsom men may not be the oldest known in America, even though the Folsom are the oldest authentically recorded occupants of the Plains area proper. (In the Southern Plains, near Abiline, Texas, and in other widely scattered spots, Sandia points have been found. See Roberts, 1944.)

The bottom layer of soil in Sandia Cave was sealed over with a mineral deposit of an oxide of iron called yellow ochre which contained no bones or flint specimens. This ochre was under a soil layer containing Folsom points. The earliest soil, evidently sealed by the ochre, yielded a characteristic point of poor workmanship. With the Sandia point, which is a blunt, relatively short type with a notch or shoulder on one side only, were bison, horse, mastodon, mammoth and camel bones in addition to charcoal, ashes, and hearths. Another characteristic point in the deposit is faintly remindful of the later Folsom type in that it shows an incipient lengthwise fluting. There are other stone tools found. These lacked characteristic features which set them off from objects of comparable use in other periods, except for numerous small stone balls with an encircling groove. These latter objects closely resemble



APPROXIMATE ACTUAL SIZE

SANDIA POINTS

FIGURE 5

the weights on the ingenious bolas used so effectively on the South American pampas for snaring and capturing large game. (Information regarding Sandia Cave is taken from Roberts, 1944.)

We have briefly discussed the Folsom peoples and the Sandia vanguard. Now we look at Folsom's successor - the Yuma man - named after Yuma County in eastern Colorado. Again our knowledge of the man himself is totally lacking, but of his tools, food, and living places there are interesting hints. By definition the Yuma culture is recognized by the occurrence of distinctive stone spear or arrow points. Again both the student and layman is handicapped in his recognition of an ancient site because no full inventory of Yuma period traits, including preferred food animals, has been built up. So, unless a site yields definite Yuma points, no clear statement as to its relationship is now feasible, although other criteria may clearly indicate a great antiquity. Further refinement by paleontologists of the lists of animals most often found with Yuma remains (as opposed to Folsom, for example) may be of great service in determining the cultural and especially the temporal relationship of various finds.

What is a Yuma point? This is again a matter of definition. Several students have described their idea of what the term Yuma point should mean. Conferences have even been held on the subject. The need for a formal conference of specialists in order to decide how to describe an arrow point may not be clear to everyone. But it must be remembered that 20 years ago the Yuma culture and the Yuma point were unknown. In order for professional archeologists who had neither seen nor handled the points to understand the term and to describe properly their

own later finds, an agreement as to what was what was necessary; a definition of terms is particularly important if confusion is to be avoided. In any business, government, or scientific activity, the clean-cut term with distinct meaning guards against mistakes. Improper use of words tends to confuse or obscure the evidence and makes all related work less valid.

Now we answer the question, What is a Yuma point?, by saying there are, at present, two Yuma points! By definition, two variant types are accepted. Both have been found in associations with fossil animals in geologically ancient situations and are, sometimes, even found together in the same deposit.

Recognized as a distinct type in 1928, any Yuma point can now be defined as a long slender point with parallel edges. The base is usually straight. A broad stem is sometimes seen. The maker put the finishing touches on the blade by removing thin, narrow, long flakes from each face. In cross section the blade may be either oval or diamond shaped. Although the above general description fits all accepted Yuma points, there are two

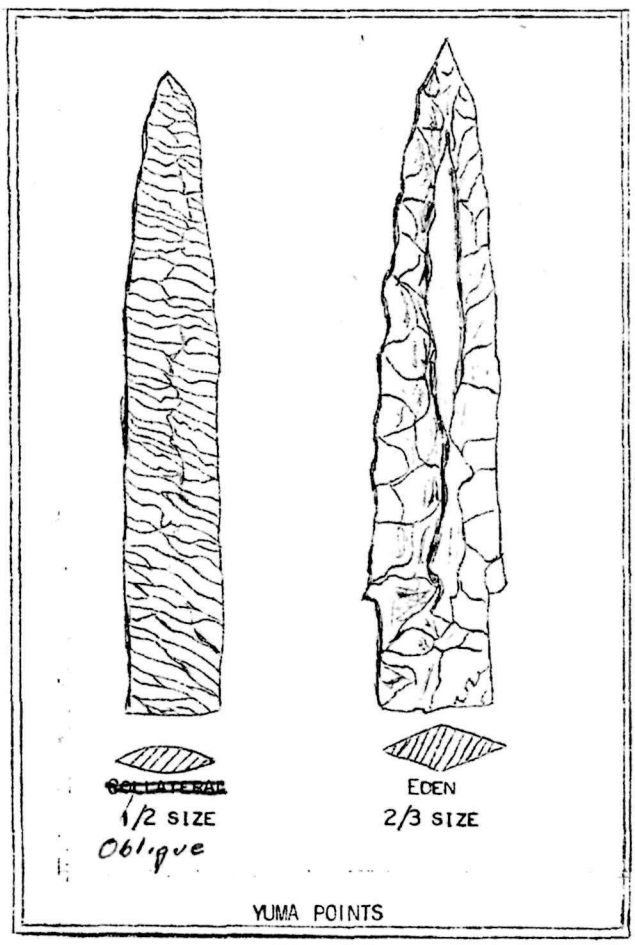


FIGURE 6

basic, closely related types. One is the oblique (~~oblique collateral~~) Yuma. This type possesses long ribbony flake scars left by the skillful removal of thin flakes from one edge of the point diagonally across the thickened central axis sometimes nearly all the way to the opposite edge! It is this point which is usually oval in section, has a straight base, but lacks a well defined stem. The second type, about as common and equally characteristic, is the Collateral or Eden point (named after the area near Eden, Wyoming, where the type is dominant). The points in this subdivision of the Yuma type are identified by a well defined stem and a raised median ridge on each face of the blade extending from tip to stem. The flaking, in appearance, is comparable to that of the oblique ~~or col-lateral type~~ - but each flake scar extends only from edge to central rib. Both types are well made, and show great skill in flint working on the part of the Yuma flint smiths.

We can expect the importance of the Yuma culture as a probable Paleo Indian culture to diminish because these Yuma remains seem to occur in association with modern, rather than with extinct forms, although the geological conditions often show antiquity. In fact, four years ago our authority on the Paleo Indian has said:

> ". . . The early forms of the Yuma may have been contemporary with late Folsom types, but their main development was in subsequent periods. As a matter of fact they continued to be made in some regions until almost historic times. Because of this it is obvious that Yuma-type points are not as significant as was previously supposed, and their presence in a collection may mean little from the standpoint of age." (Roberts, 1944)

(The Yuma account is based chiefly on Roberts, 1944, and Wormington, 1944.)

In the extreme southern tip of the Great Plains, near Plainview, Texas, an important Paleo-Indian site has recently been reported (Sellards, 1947). Here again the evidence of man is in direct association with fossil mammals.

It is contained in a valley fill, which was deposited during a period of accelerated erosion and depositional activity. At the base of the fill in the wide valley of Running Water Creek a layer of bones was discovered during the operation of a quarry. That part of the bone bed which was uncovered during the scientific excavation of the site was sixty-two feet long, varied from five to ten feet in width, and at the center was 18 inches thick. The carcasses of approximately one hundred fossil bison (Bison Taylorii) were here preserved, evidently the remains of a mass slaughter or "kill," where a small herd was driven or stampeded over a bluff by the hunters. Eighteen flint points were found in the bone layer. Most of the flints were toward the top of the bones; evidently the hunters stood upon the bluff and with their crude weapons killed the crippled or stunned animals which were attempting to escape from the top of the heap. Presumably the leaders of the herd, on the bottom of the pile, were already dead and motionless, having fallen directly on the bed rock of the original valley. If they survived the drop, they were probably crushed by the cascade of heavy bodies of the bison which followed.

For its clear evidence of association of animals and artifacts and for the number of flint specimens, the Plainview find takes an important place in the list of Paleo-Indian finds. It also gives eloquent testimony to the antiquity of the "kill" as a favored method of hunting large animals. The "kill" was still in use in the Plains as late as the 1850's.

Most interesting, however, are the spear points themselves. These Plainview points resemble, in some respects, both the Yuma and the Folsom specimens, but could not conceivably be classed as either. There were, fortunately, eighteen specimens, all of which are generally similar to each other and were probably used for the same purpose. They constitute, it is thought, a valid new type distinct from other defined dart and lance points. In addition to the lance points, several other sharp edged implements, connected in some way with slaughtering, skinning, or dismembering game, were recovered.

In form the projectile points were slightly longer than the average Folsom, but in other respects possessed the typical Folsom shape -- i.e, the broad blade, with straight sides, an indented or concave base and well developed basal ears. There is no stem. nor basal side notch. One specimen even shows the slight constriction just above the base, but the diagnostic fluting, and thin cross section are entirely lacking. Instead the straight longitudinal ridge, running from base to tip, which identifies the Eden Yuma, is present. And further, the chipping as the thin ribbony flakes scars show, was like that used in the shaping

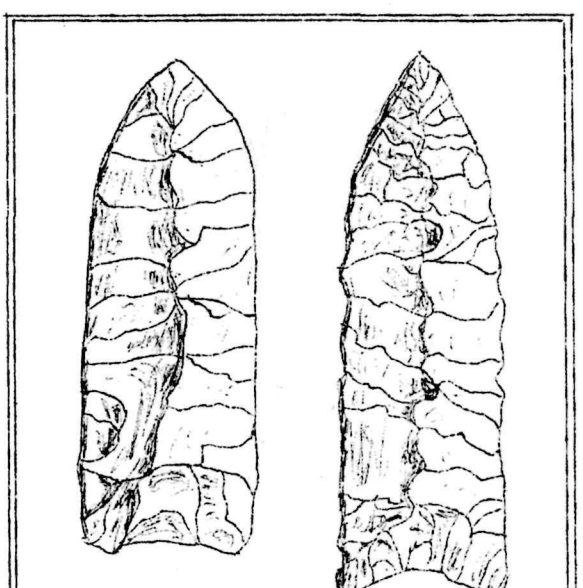


FIGURE 7

of the Yumas. Here we see a wedding of two distinct types -- possibly combining, from the Indian's point of view, the best features of the two types. The Plainview type may be: (1) a later form made by a people who succeeded the Folsom and Yuma groups, and who utilized the knowledge of the preceding generations; or (2) it may be a generalized form ancestral in time to the better known types; Folsom and Yuma types may represent specialized local variations on the basic Plainview idea; or (3) it may be a transitional form from Folsom to Yuma. An assertion that either of these alternatives is correct would be foolhardy at this stage of knowledge. Evidence as to the proper relationship probably exists in the earth in the bank of some obscure gully. Indeed, it has been shown (Krieger, 1947b, p. 949) that there is some evidence at the Lindenmeier site (Roberts, 1935 and 1940) that the answer is already at hand. The Lindenmeier evidence faintly suggests that the Plainview type coexisted with the Folsom type. It is possible that the Plainview culture is "conceptually and historically" transitional from the Folsom to the Yuma cultures (Krieger, 1947b). We must wait for better data before determining the final place of Plainview man in the stream of Plains history. It is also true that many random examples of the Plainview type of projectile point have occurred at other ancient sites, in and outside the Plains but have remained unclassified (Krieger, 1947b). Upon the evidence of the Plainview site, the Plainview point, and its sure association with extinct bison, is set up as evidence of Paleo-Indian occupation of the Plainview area in very ancient times.

With the bones at Plainview there were also scrapers and knives made of flint flakes. The

". . . scrapers and flake knife contribute nothing new to our knowledge of early American hunters, as similar artifacts which have been found at most [early American cultural type] stations" (Krieger, 1947b, p. 946),

so no description of these tools need be introduced here.

In summary, we can then say that in the Plains there existed during the late Pleistocene period at least two culturally divergent, but near contemporary, groups of men who preyed upon a wealth of now extinct large animals. One of these was the Folsom, whose remains are identified by a distinctive fluted point of beautiful and delicate workmanship which had a relatively broad, thin blade with rounded point, normally straight sides, and a concave base. At Plainview, a culture was defined which appears to possess a series of points which combines the diagnostic features of both Folsom and Yuma. There was also the Yuma, a culture which is characterized by a pair of equally distinctive artifacts, which possess a long slender blade, with sharp point, almost parallel sides, and a straight stem. The Oblique ~~or Collateral~~ and the Eden Yuma are differentiated by characteristic flaking technique and by cross section. The Yuma men are thought to have been later than the Folsom.

All three so-called cultures have been found in deposits geologically identified with the terminal phases of the ice age of North America. Folsom and Plainview occur in conjunction with extinct animal forms; Yuma, presumed to follow the other forms, is associated with modern forms.

Many questions occur in connection with the Paleo-Indian. The most vexing one is, "Where did he go?" There is evidence that he existed in Alaska. Did he follow the game which follwed the retreating ice which slowly shrank toward its northern core? Or did he, as implied elsewhere,

drift eastward when the Plains began its long drying process? I personally incline to the latter view at least as a partial explanation. There is a good chance that the Archaic cultures of the East represent the end of a movement of people set off by the invasion of America by the questing Folsom. They may have amalgamated with equally miserable hunters living in the eastern woods, whom we do not now suspect, or they may even have been the first men to penetrate the southern swamps. Of course, the first fellows may not have gone anywhere. Some of them, with reinforcements from Asia, may have settled down, dodged the dust storms, and finally became the American Indian of today.

When and how man first appeared in America are among archeology's most interesting questions. And the problems we have outlined above scarcely introduce the complexities of the study. Elusive as the first Indian may be, we can one day expect to understand him better, but never perfectly. Scientific progress tends to accelerate with the years. Each little new fact adds to the total mass of knowledge and, like a snowball rolling downhill, the mass is imperceptibly increased in size until a huge volume of material has been gathered. In the same way our knowledge of early man, coming from all sides and from many specialists, is each year increasing. The tantalizing glimpses we have had of him so far are sufficient to keep the academic posse on the trail.

THE LITHIC PERIOD*

Leaving behind the hunters of glacial times, the narrative moves into a misty land where the ghosts of defunct cultures have little more substance than the twisting fog which obscures them. After the relatively positive, albeit sparse, knowledge which is accumulating from the Folsom-Plainview-Yuma periods, the long period from 10,000 B. C. to 1000 A. D. is a near-vacuum. During this period it is certain that portions of the Plains were inhabited, possibly for the entire period. But honesty compels the admission that we do not know how many separate periods or cultures there were, how widespread the various culture patterns were, or even what objects or practices set one period off from the ones before and after it.

There is evidence that for this entire period man was still nomadic, still a hunter, lived in caves where caves could be found, and continued to use a wide variety of stone tools. His was probably a miserable lot; it is doubtful that he lived as well as his Folsom precursors. It must be remembered that the close of the Folsom-Plainview era was marked by the abrupt disappearance of many animal forms. Lakes, marshes, and streams were drying up. Vegetation was by no means as lush. Trees were becoming scarcer. So, the Lithic man, or people, had more than one problem. In addition to sustaining life on a day to day basis by constant search for game the problem of survival was complicated by the need for adjustment to a changing climate. The process of climatic shift was

*As recently used by Champe (1946) the term Lithic included all remains prior to the pottery making cultures, but we here use it only for that period from the end of Folsom to 500-1000 A. D. The cultures here discussed actually fall in his Intermediate Lithic.

probably very gradual (although some of the Pleistocene animals seem to have disappeared, from the Plains at least, with amazing speed), but it is likely that within the span of one man's life small adjustments to nature could have been observed.

Now just how many landmarks are there in this long grey stretch of time? Where have we glanced briefly into the lives of these hunters? Signal Butte (Strong, 1935) in western Nebraska is possibly the best known site. It is one which seems to belong fairly early in the fantastic gap in time. Another important site is Ash Hollow Cave (Champe, 1946), also in western Nebraska. In Wyoming, near Laramie Peak, the unreported Shaw Cave material promises important data (Jennings, [redacted], n.d.). At Billings, Montana, Pictograph Cave yielded very important data which will be soon reported. In Ludlow Cave in southwest South Dakota, a lower stratum produced what is presumed to be material of some antiquity. Other scattered reports have come in from all over the Plains. Of course, to the west of the Plains there are sites which fall into our twilight zone of time. Gypsum Cave, Nevada, Ventana Cave, Arizona, and Guadalupe Cave, New Mexico, are examples. On the eastern edge of the Plains in Minnesota, two or three provocative finds which appear to be quite early

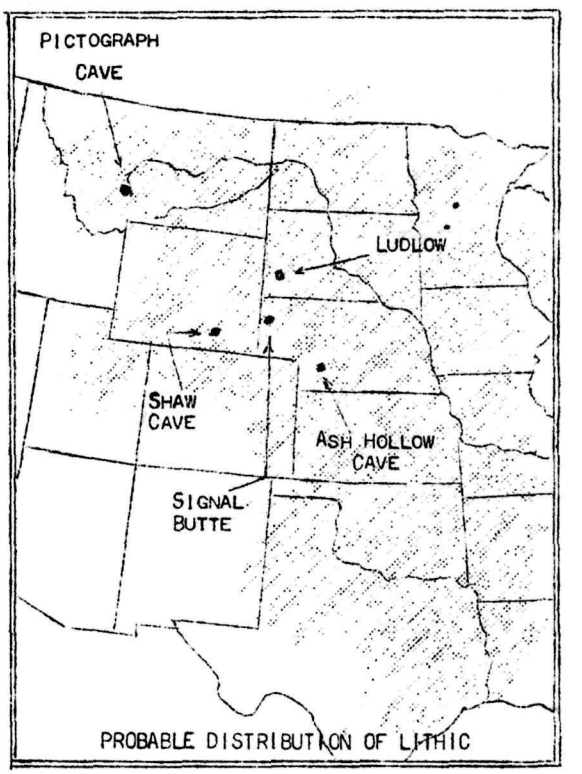


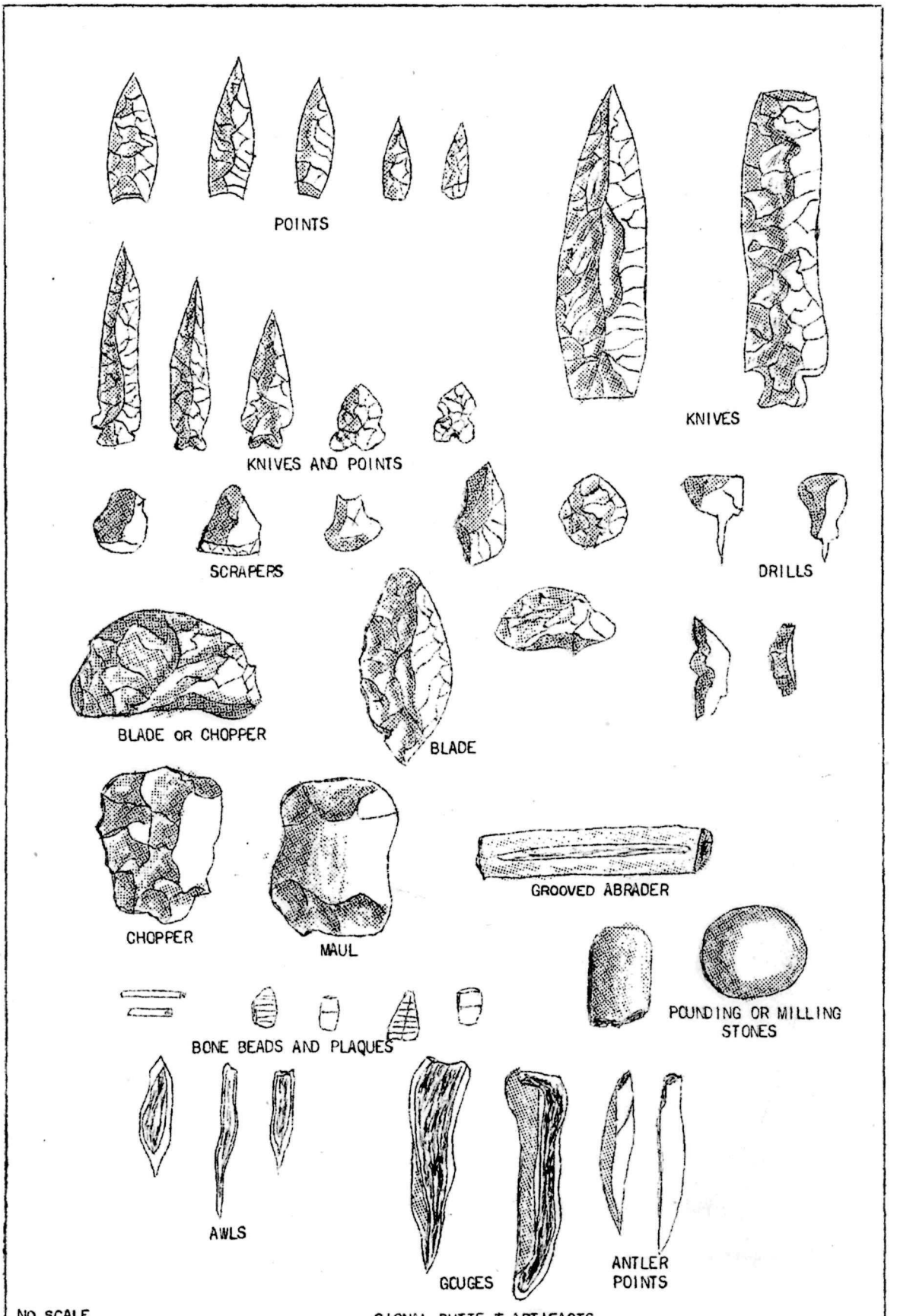
FIGURE 8

are reported from Browns Valley and other sites. These later sites, outside the Plains, may provide part of the facts needed for full understanding of the Lithic era of the Plains. It is also very probable that the pervasive and reasonably well understood Archaic horizon of the eastern and southeastern United States will help in the later centuries of the Lithic period.

Some of the most important evidence of the well nigh continuous occupation of the Plains comes from Signal Butte in western Nebraska. This site was located upon a crescentic butte near the Platte River. Upon its summit three successive Indian groups had lived. Between the layers of debris left by the occupants were thick unbroken layers of fine wind deposited dust.

By a series of somewhat complex geological correlations the dust deposits have been identified with a series of near-by dunes which were formed during the dry periods subsequent to the last glacial phase. An estimate of the age of the dust layers has been based on the rate at which dunes move overland in front of prevailing winds. The butte deposits were made at the time the formation of the dunes began. Deposition of soil upon the butte is credited to up-draft air currents which today still swirl around the butte and drop their dust burden on the summit.

From the foregoing it is obvious that the age of 8000 or more years ascribed to the earliest Signal Butte culture, called Signal Butte I, is a very tentative one, based upon assumptions which lean upon each other. For purposes of this paper we can assume for Signal Butte I a respectable antiquity, later than Folsom or Yuma, but far earlier than the pottery making cultures which arose after the time of Christ.



SIGNAL BUTTE I ARTIFACTS

FIGURE 9

There were three cultural layers of varying thickness separated by sterile soils upon the top of Signal Butte. Total deposits on the top of the butte reached seven feet in depth. The basilar eighteen inches of this deposit consisted of a heavy black soil containing artifacts and other evidence of occupation. This deposit was sealed by another eighteen inch layer of fine dust of aeolian origin. Next was another layer of black dirt three or four inches thick containing scanty human material; this was again sealed by a thick dust deposit. The upper two feet which included the sod layer was dark in color and contained Indian artifacts of quite recent age.

Except for their tools we know pitifully little about the first Signal Butte people. The earliest occupation has been called Signal Butte I. Aside from the chipped flint artifacts (which we will consider later) this level yielded flat sandstone and pumice grinders, rounded or naturally round pebbles or small boulders used as hammers, pestles, two longitudinal shaft polishers (these are usually of sandstone or pumice), two grooved hammer stones or mauls, and numerous fragments of red and yellow ochre (oxide of iron) probably used as paint. There were 72 bone and antler artifacts in this layer. There were 15 bone tools used for working flint, 26 bone awls of a characteristic shape, 5 large gouges of split bison bone (probably used for scraping hides), incised bone fragments, and 4 bone beads. Most numerous were the chipped flint specimens; more than 1,000 specimens were recovered. The most common was a small oval shaped side scraper, the next most common was a small arrow point which is fairly thin and leaf-shaped with a concave base, and other less numerous points of similar form. Another characteristic artifact

was the end scraper which was made from a thick flake with only the scraping edge reshaped although there were other specimens where the entire implement had apparently been deliberately manufactured. Drills and gravers (used for incising and fine cutting) were also found, but are not numerous.

Evidently these people relied almost exclusively on animal food, but preliminary analysis of the animal and bird bones indicate that all the food animals were of modern species. No extinct forms were recognized, but this may be a result of the poor condition of the bones. Nothing is known of the houses or shelters used by these people.

This first layer at the Signal Butte site is of great importance because it provided such a large number and variety of artifacts. For example, there were 222 of the leaf shaped projectile points mentioned as most typical. Scrapers were quite numerous and the other specimens, although of less frequent occurrence, give collections of such size that a fairly good picture of the range and importance of numerous tools and weapons can be established. This is in direct contrast to most of the sites of the Paleo-Indian, where the objects recovered are so few that adequate samples of the artifacts associated with the characteristic points cannot be fully determined. Signal Butte I is especially important because its specimens resemble some of those found with Folsom points at Lindenmeier; there is here then a possible link between the Paleo - Indian and his more modern successors.

The second level containing artifacts has been designated as Signal Butte II. The occupation represented by this layer was evidently quite short, at least the finds from it are not numerous. The stone work in

part resembles that of the early Signal Butte I, but possessed certain significant differences, chief of which was the preponderance of stemmed arrow points with barbs and with straight bases. It is recognized as a culture different from Signal Butte I which underlay it. This second level is regarded as two or three thousand years younger than Signal Butte I.

The third or surface layer of Signal Butte contained culturally mixed debris. Most of the materials are assignable to the Upper Republican and Dismal River cultures which will be discussed later. (Signal Butte data are derived entirely from Strong, 1935.)

For more than a decade the Signal Butte site was the only reported site of great antiquity where clear stratification of cultures existed. However, in 1946 an important site was fully reported which was physically the exact opposite of Signal Butte. This site, Ash Hollow Cave (Champe, 1946), lies beside the old Oregon Trail along the Platte River, some 110 miles east of Signal Butte. The site is important for many reasons, but its chief significance to us lies first in the fact that it was a stratified site containing samples of cultures from 1700 A. D., possibly back to Signal Butte II times. The occurrence of possible Signal Butte II material in the bottom layers of the seven cultural layers recovered from the Cave indicates that the separate Signal Butte II period, which was so poorly defined at the type site, has been slightly strengthened by the Ash Hollow Cave finds.

The cave had a long prehistoric occupation. In the many contrasting layers of soil and stone which made up the floor of the cave, there were many lenses of refuse and debris. The three deepest of these, as indicated,

are together comparable but not identical in content to Signal Butte II, although the reporter did not regard it as having the antiquity ascribed to the Signal Butte remains. There is slim evidence that the earliest Ash Hollow material is no more than 2000 years old, whereas an age of 5000 years was estimated for the Signal Butte II culture. It is possible in the face of such divergent estimates in time that Ash Hollow Cave and Signal Butte II are not too closely related; but it is also possible that the Signal Butte II culture had a rather wide distribution and lasted for many centuries. To me it seems likely that the age imputed to the Signal Butte material is too great or that the Ash Hollow objects are older than estimated. (Champe, 1946, and Hill and Kivett, 1940, furnished the Ash Hollow Cave data.)

Ash Hollow Cave will remain a landmark in Plains archeology for a second reason. Tree rings made possible the dating of various upper lenses or layers back to 1210 A. D. In addition to overlapping series giving the 1210 date, older layers yielded four long year counts totaling nearly 600 years, but which did not overlap. There is no way to determine what length of time separates the four floating tree ring calendars which were built up from the wood of these earlier series. The ends of the series may be only one year apart or might be centuries apart. It is clear then that the age of the Lithic cultures represented by the Ash Hollow Cave debris can only be estimated. The period covered by these floating chronologies has been suggested arbitrarily (Champe, 1946, p. 57) as extending from 0 - 1150 A. D., but could equally well be twice that long.

The significance of the Lithic period should not be gauged by its summary dismissal in the above brief mention of two important sites. No phase of Plains archeological research is more important than the task of learning and isolating the Lithic cultures and arranging them into their proper order. The study of the river terraces of the West will help in this task (Champe, 1946).

There are literally thousands of sites on the surface or deeply buried by erosional deposits where bone, flint, other stone, fire pits and hearths, charcoal, broken food bones, etc. demonstrate that man, for many millenia, roamed and hunted along every stream in the region. That these sites exist and probably contain remnants of cultures intermediate between the Paleo-Indian and the pottery makers of the last centuries is not necessarily a new idea; but it has been given new emphasis by work in the past few years. Sites which lack pottery, and give every evidence of antiquity, have been found and reported over all the Plains as a direct result of the salvage archeological program made necessary by the nation-wide program of dam and reservoir construction (See Chapter III for fuller data on the conservation program as it affects archeological research). There is already new evidence that the high plains of Montana and Wyoming, which are critically important and as yet a totally neglected zone, will prove especially prolific in terms of Lithic sites, but the full implications of such a concentration of material are not yet fully understood.

Within a very short time the analysis of these recently found data will undoubtedly show that there are several separable, recognizable groups of bone and stone artifacts which are consistently found together at site after site and represent a prehistoric occupational period.

Occasional stratified sites can show the time relationship of these cultures to one another. The Signal Butte and Ash Hollow Cave finds both do this. Eventually, then, we can expect an orderly succession of cultures to be defined and the chasm between Folsom and the pottery cultures will be closed. Accompanying the closing of this time gap there will doubtless be drastic revisions of the estimated age of all the prehistoric cultures including the Folsom and Yuma and related cultures.

In the East and South, east of the Mississippi River, there are dozens of Archaic cultures which resemble each other very closely. They are considered as geographical and chronological variations upon a very strong and widespread Lithic period culture. Although we have hinted that these Archaic cultures may have their roots in the Folsom period, we should also point out that better knowledge may show the Lithic of the Plains and the Archaic of the East to be very closely related. It is known that in Kansas and northern Oklahoma, for example, sites are found which yield stone and bone objects most similar to the Archaic artifacts of New York (A. C. Spaulding, Department of Anthropology, University Museums, University of Michigan -- personal communication). In the section on the Paleo-Indian, the possible influence of Plains climate on the Archaic cultures of the East was brought out.

CULTURES OF THE LAST 1000 YEARS

The assemblage of artifacts and customs which distinguish the recent archeological periods from one another are here briefly described. It is already evident that present knowledge of the prehistory of the Plains is pitifully fragmentary, although for the cultures of the last 1000 years, our information becomes more complete.

For convenience the cultures dealt with in this chapter will be treated on a geographical basis. It is emphasized that in a very general way the cultures of the entire Plains show at any given time about the same level of development. The reader is invited to compare the contemporary variants noting the generally similar way of life observed over the whole area.

Figures have been prepared and scattered through the text to show the age (actual or estimated) of the recent cultures and areal distribution of each. Although very much simplified, these simple maps still provide a summary of the present state of knowledge concerning the distribution of the recent prehistoric peoples. Regional variations within a culture or the extent of mixture or hybridization between contiguous groups of equal age are not shown.

Some of the behavior traits and many of the material objects used by the Indians endure from early times down on through to the nineteenth century. Therefore, many of the cultural differences lie in relatively small variations in utensils and tools. This is particularly true of pottery. As opposed to stone or bone, pottery is a plastic medium and, therefore, is a very responsive indicator of new ideas and improved technique. It is, for the Plains as elsewhere, an important mirror of cultural contact.

It should be mentioned that normally the use of various aboriginal tools and implements has been categorically stated without proof or discussion. Where this is done, the use is usually inferred from the observed uses made by historic tribes of similar implements. Note that the states of Wyoming and Montana are often blank on the maps.

THE WOODLAND HUNTERS: (1000-1300 A. D.*)

The first people to interest us in this last major phase of the Plains story are the Woodland. The name Woodland hints at the suspected origin of this culture in the forested regions of the East. Recent surveys have shown us that there are scores of small Woodland sites found from the foothills of the Rockies all the way to the Atlantic coast. If these people did enter the Plains from the well watered East, we can infer a rather long wet cycle which rendered life comparatively easy with game abundant, although the invasion might equally well have resulted from pressures, such as warfare or overpopulation, which forced the Woodland tribes to move westward.

The evidence now at hand (Krieger, 1947a) indicates that Woodland remains have not yet been recognized in the extreme southern part of the Plains area. The period, however, is well represented in Kansas, Nebraska, and in the remainder of the Plains, as well as in the middle western states adjoining the Plains on the east. Wherever encountered, however, the Woodland pattern appeared still to be characterized by nomadic living and a heavy reliance on wild food, but is enriched by the sometime use of mounds as burial places, small casual village or temporary camp site, and in the first possession of pottery in the Plains. Pottery is frequently regarded as evidence of the practice of horticulture, but this is purely inferential. For our purposes here the knowledge of agriculture is not

*These dates and those subsequently cited are based on (1) inference from archeological data; (2) cross dating by means of traded artifacts which can be identified as belonging to dated cultures in the Southwest; and (3) tree ring calendars very tentatively set up for restricted areas in the Plains. Dates assigned in previous chapters are, as there indicated, highly speculative.

credited to all Woodland peoples, although corn has been found once or twice in Woodland contexts in Nebraska.

There are many recognized local variant forms of Woodland, all conforming to a general widespread basic pattern of life. These variants (such as Valley 1, Sterns Creek, Hopewell, Eagle Creek in the central Plains and other unnamed variants in the Dakotas, Wyoming, and Montana) and their sequence of occurrence can eventually be sorted out but are not now certain. Within the Plains the variant known as Valley 1 has been the subject of a good report (Hill and Kivett, 1940) and will form the basis of this description.

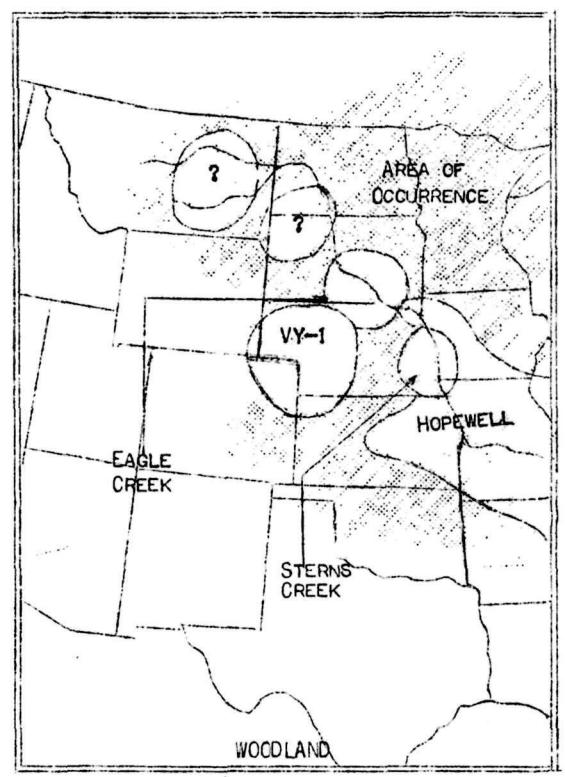
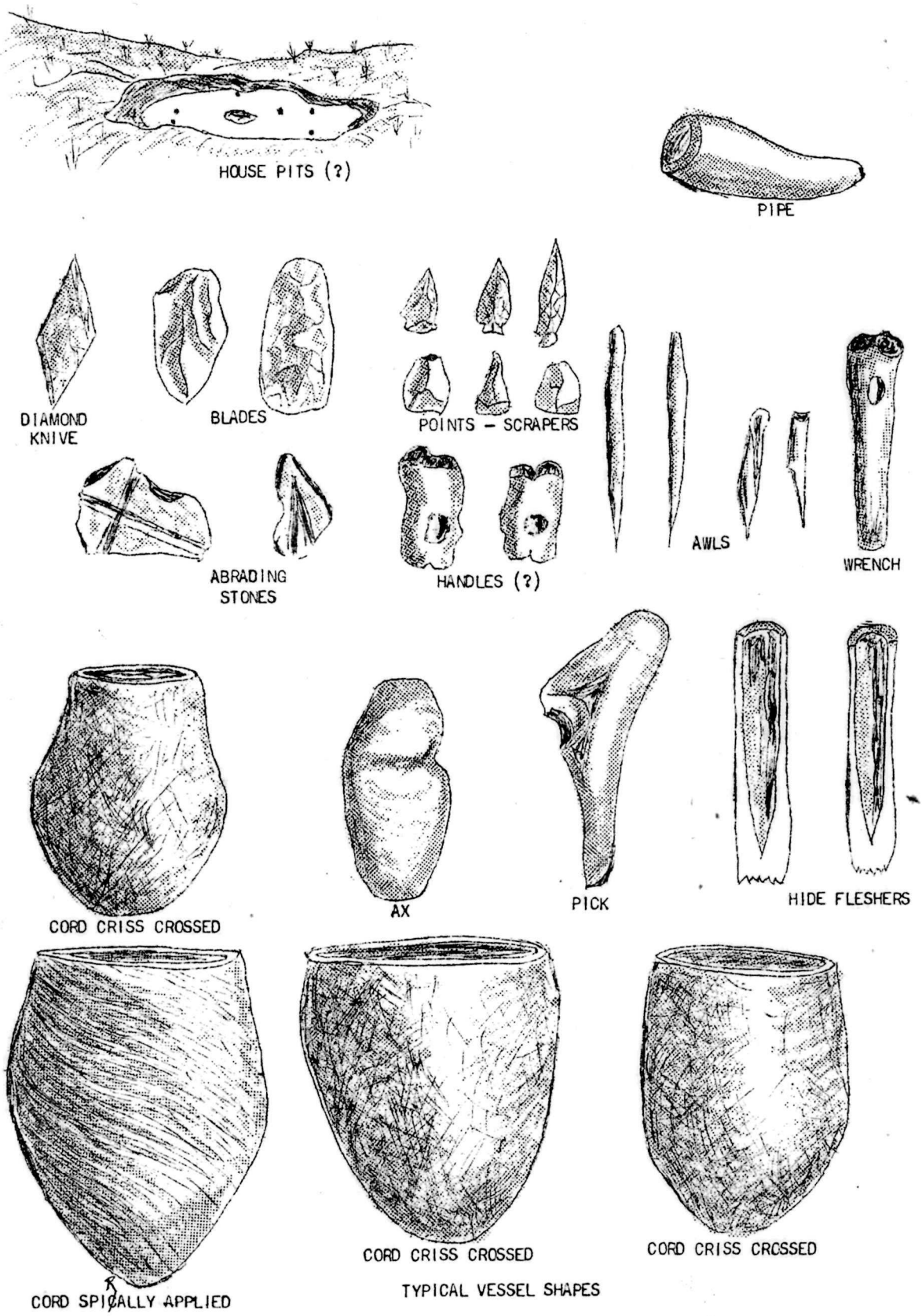


FIGURE 10

Woodland culture has above been partly described in terms of what it lacks as much as what it has. Apparently, the people were not entirely nomadic but lived in semi-permanent communities located on the low terraces beside minor streams for much of the year. Houses here were probably not very substantial; there is evidence that they were made of poles and skins. There is evidence that gardening was not universally practiced; in general, food appears to have been confined to wild vegetable foods and game, at least



WOODLAND ARTIFACTS FROM NEBRASKA

FIGURE 11

in the early stages of the culture. Among the animals eaten by the people were rabbit, beaver, deer, bison, badger, dog, prairie dog, gopher, muskrat, and various birds.

The dead were allowed to lie out, probably on scaffolds, until the flesh disintegrated, after which the bones were saved. At intervals, a number (up to 100) of these bundles of bones were given a communal burial in a large pit or ossuary. Rarely, if at all, were personal objects buried with the bundled skeletons. This type of mass burial may have occurred at regular intervals or may have been done as demanded by the accumulation of bodies.

Tools were simple ones usually directly related to the business of living. Bone was used for awls, fleshers (for removing flesh from hides), hoes for digging (made of bison shoulder blades), and a few beads. Scraps of sandstone were used as abraders or specialized whetstones for smoothing arrows and sharpening bone awls. Grooved axes of stone are occasionally found on these sites. From flint, large triangular knives or projectile points with stems were very common. The chipping is relatively rough and carelessly executed, except for a characteristic diamond shaped knife, bevelled on opposite edges which were fairly well executed. Another tool was the so-called scraper of flint which was a small ovoid implement with a thick rounded edge. With these set in handles, wood, bone, horn, and skins were shaped, cut, or scraped. Personal ornaments were rare -- a few irregular pendants were made of mussel shell.

The pottery, used first in the Plains by these people, was not beautiful by modern standards. Dull and rough it was, but it was a strong, durable ware. Only one general vessel type -- a pot form with sloping

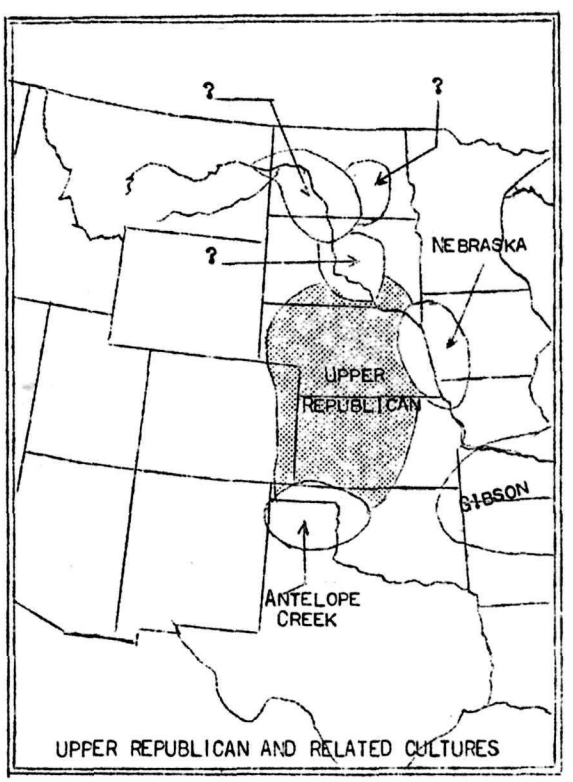
shoulders, round-pointed bottom, and slightly constricted neck -- was in use. These vessels varied in capacity, holding from one pint to six gallons of fluid. Outer surfaces were roughened by paddling or beating with a small paddle wrapped in cord. The roughening was not decorative, but was incidental to malleation which was a feature of construction tending to strengthen and compact the clay paste; the manner of using the cord-wrapped paddle was apparently a well established technological process so that the cord marks are uniformly applied from top to base of vessel. In fact, the manner of marking was so consistent within a culture that from one period to another the accuracy of "matching" cord marks and direction of alignment in conjunction with other construction features make up the diagnostic traits which enable the student to distinguish the pottery made by one group from that of another.

At present, the Woodland culture variant which presents the most interesting problems is the Hopewellian. Aside from a very distinctive pottery style, use of copper, specialized pipe form, etc., the rock mounds or cairns and the rock chambers inside earthen mounds found in eastern Kansas are features unique within the Hopewellian culture. Tantalizing bits of evidence are coming to light that this culture, centering in Ohio, came as far west as Ellsworth, Kansas, and is strong on both sides of the Missouri River as far north as Council Bluffs and Omaha. These data are important because determining the exact place of Hopewell in the Plains sequence of cultures will give a better idea of its importance and influence upon the subsequent periods and may explain certain enigmatic items of culture in the Plains. As mentioned earlier the term Woodland (which here embraces Hopewell) implies a generally eastern origin for this culture, but beyond this, speculation hasn't gone very far. (This account is condensed from Hill and Kivett, 1940, Champe, 1946, and Wedel, 1943.)

THE FIRST FARMERS OF THE WEST (1200-1300 to 1500 A. D.)

Next in point of time comes the Upper Republican culture (1200 or 1300 to 1500 A. D. tree ring date). Although the name is obviously taken from a small region in western Nebraska where the remains were first encountered, the related material covers a large area, extending from somewhere in central South Dakota to south central Kansas, and even into Texas and Oklahoma. Of course, the local forms diverge from the southwest Nebraska original, but all possess the basic traits which make up the Upper Republican complex. Toward the edges of the area covered by the Upper Republican, there are mixed or diluted hybrid cultures which demonstrate a mingling of Upper Republican ideas with those of different origin.

The Upper Republican peoples were, by Woodland standards, quite well to do. Several new concepts had been introduced. For example, numerous domesticated food plants were now cultivated in garden patches. Charred specimens of corn, beans, and squash have been unearthed, as well as the pits of wild fruit, such as plum and cherry. Berries were also eaten. Communities were located on bluffs or terraces along small tributary



UPPER REPUBLICAN AND RELATED CULTURES

FIGURE 12

streams rather than on main water courses; gardens were raised in the flood plains below the villages. Another new practice was the building of permanent dwellings.

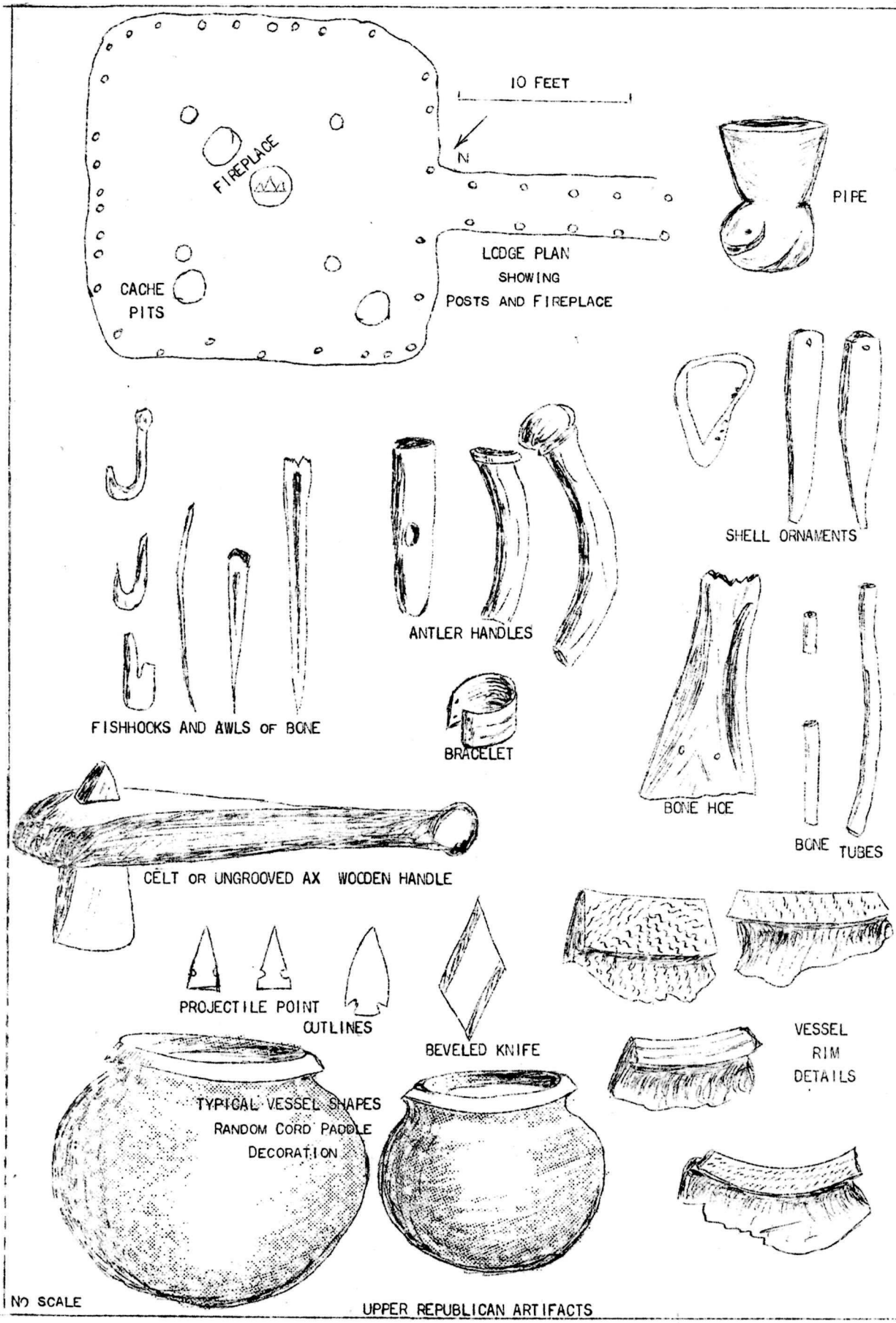
Settlements, now large because of the more abundant and dependable source of food from the practice of agriculture, were composed of several of the rectangular pit-houses, some of which were as large as 50 feet on a side. To make the earth lodge, earth was removed for a depth of 6" to 18" over the area selected for the house. (The remains of these houses often lie deeper than two feet under the present surface. This added depth is usually a clean unstained soil of aeolian origin, deposited in the house pit after the house was abandoned during subsequent drought conditions. These mantles of later soil may seal the old humus and the house remains.) A timber structure was built in the pit. Four tall, strong center posts, making the corners of a 6' - 10' square, were set in the center of the shallow dugout. At the edges of the prepared pit smaller posts, 4" - 6" in diameter, were set. The small posts served as studding to support the wall plates just as the four center posts supported caps or plates. Rafters, closely spaced, ran from center to wall. To increase the enclosed area, slanting posts may have been laid from the wall plates out onto the ground surface, but this is not certain. Over the rafter poles and the sloping side walls were successively placed brush, grass, and finally earth. When finished, the house was, from the outside, no more than a low, dome-shaped mound of earth which was entered from the south or southeast by a long narrow passage, built also of a post frame-work covered with earth. The house was heated by a fire in a clay basin located within the square formed by the center posts. Smoke

escaped at the top of the domed roof through an opening purposely left by using rafters too short to meet at the center of the lodge.

Farming now gave the Indians an assured supply of staple foods, so a method of storing food was needed. The solution to this problem was the digging of storage pits in the ground. These storage or cache pits were roughly bell shaped with small mouth and expanded base. They were usually located both inside or outside the houses, but were sometimes only placed inside. Many were deep, as much as 6 feet; the contents were protected with a skin cover and the mouth sealed with earth to match the surrounding floor or prairie surface. The pits apparently served well because this method of storage continued in use by the farming tribes until 1850. Vegetable foods were augmented by game of every kind to be found in the Plains, including fish (and sometimes mussels and clams).

Despite the apparently greater comfort of Upper Republican times, the basic tools for every day tasks were but little different from earlier times. Bone was still used for awls, fishhooks, bodkins, and needles. Hoes were made of bison shoulder blades. Sections of bison ribs were drilled through from side to side to make a tool which is called a shaft straightener for straightening and smoothing arrows; this tool may have had other uses. Small squared and grooved objects of bone were used -- probably for some form of gambling game, presumably similar to dice.

Tools of flint were still common. The diamond shaped bevelled knife was still in use. Projectile points were of various sizes, including some small triangular side notched points showing neat careful workmanship.



UPPER REPUBLICAN ARTIFACTS

FIGURE 13

Snub-nosed scrapers, again ovoid in outline, were common. Stone, other than flint, was more extensively used than in Woodland times. The commonest pipe was the elbow, where stem and bowl are at right angle to each other as in the modern briar. Spherical and oval beads were made of stone. Sandstone shaft polishers and many hammerstones were used. Hammerstones were usually natural round boulders, small enough to fit the hand, which show wear, although some were deliberately fashioned and rounded by pecking.

The grooved ax of the Woodland did not persist but was replaced by the broad, flat chisel or gouge-like implement called the celt . The celt was an ax in terms of use, however, having been hafted by inserting the smaller apical end into a wooden handle. A good polish, either deliberately applied or resultant from use, appears on the sharpened bit of the chipped celts.

Upper Republican pottery, still hard and durable, showed important differences from earlier Woodland cultures. The pots now have smaller mouths, are full bodied, and are not as deep as the Woodland vessels. The simple rim and lip were sometimes changed by thickening into a definite collar which was wedge-shaped in cross section, thickening toward the bottom. Although the vessels were still cord marked during manufacture, intentional decoration was also being applied. Upon the collared rim scratched (incised) lines were placed in parallel multiple lines or in diagonal chevrons or alternate line-filled triangles. These same designs were also obtained by pressing single cords deeply into the soft clay. The vessel rim frequently had diagonal punctations, incisions, or "pie crust" scallops, but no decorations were applied to the body below the collar. No handles were yet used on the pottery.

Burial customs are not clearly known, but the evidence is that the ossuary method of burial was still in use in Upper Republican times.

On the basis of many traits, such as earth lodge, horticulture, pottery type, certain implements, etc., Upper Republican is regarded as the direct forerunner of certain of the historic tribes observed in the eighteenth and nineteenth centuries still practicing in modified form the semi-sedentary, mixed hunting-farming life of Upper Republican times. (The above account of the Upper Republican culture was taken from Wedel, 1940, Strong, 1935, Cooper, 1936, and Champe, 1936.)

In the Panhandle country of Texas and Oklahoma, into which the Upper Republican ideas penetrated, a strong hybrid culture called Antelope Creek has been localized and well described (Krieger, 1946, 1947a, Wedel, 1947c).

Here we evidently have a venturesome group from the Southwest pushing out into the Plains to meet Upper Republican people drifting southward. Their remains bespeak a cultural marriage, so that the people lived in a manner reminiscent of both heritages. We cannot here chronicle the details of the lives of these Antelope Creek communities, but it is of importance to note that their stone walled multi-room houses had rectangular rooms and were grass roofed, that their storage pits were lined with stone, floors and walls were plastered, burials were made in abandoned cache pits, grinding or milling stones (metates) were used, and they possessed pottery imported from the West. At the same time, however, the tools and weapons such as hoes and flint material were almost identical in form and range with Upper Republican; utilitarian pottery was generally like that in the North. Although the full

list of traits which characterize Antelope Creek would lack some Upper Republican traits, it is still obvious that the Upper Republican influence is dominant in many phases of Antelope Creek life.

Again, on the main stem of the Missouri River in the two Dakotas the rectangular earth lodges, the large village, horticulture, the making of good pottery, and a strong reliance on the bison was the accepted mode of life. Influences are found here from the woodlands and lakes of Minnesota, Wisconsin, and Canada, but the basic pattern is still similar to the popular Upper Republican complex of ideas. Information about the "main stem" must remain general because so few of the hundreds of Missouri River sites have been dug and reported that the detailed traits and comparisons (possible for Antelope Creek) can not be made.

For North Dakota itself, two students have recently set up three major time periods (Will and Hecker, 1944) for the spectacular remains in that state along the Missouri River. These periods, from early to late, are the Archaic, Middle Mandan, and Later Heart River periods. These correspond roughly with the Upper Republican, Lower Loup, and Pawnee divisions found in Nebraska.

Subsequent references to the North Dakota material will be in terms of the classification above, although it is unsatisfactory and has been questioned by other students. The assumption that all the remains for 600 - 700 years are Mandan is unproved. The term "Archaic" is very poor when applied to a culture as sophisticated, in its own way, as the Upper Republican; particularly when Archaic shares certain broad traits (see paragraph above) with Upper Republicans.

In this section, it has been evident that the Upper Republican culture is being used as a yard stick against which remains to the North and South are compared. For this practice there are two reasons. First, and most practical, is the fact that the most archeological work done and reported has been done in Kansas and Nebraska, and we, therefore, simply know more about the Central Plains material. Secondly, in the present state of knowledge, we think that the typical Plains farmer in 1300 A. D. was the Upper Republican, and that similar cultures elsewhere were influenced most by the Central Plains people. At the same time, it is cautioned that the numerous separate cultures we have listed do have distinct and distinguishable "personalities" and are to the student readily separable. The emphasis here upon likenesses points up the fact that the semi-sedentary farmer-hunter way of life was evidently a satisfactory adaptation to Plains conditions and as such persisted for centuries.

Along the Missouri River, chiefly south from Sioux City, Iowa, the Nebraska culture was among those coexistent (1300-1500) with the later phases of the Upper Republican. In house form, village location, economy, and general range of artifacts and tools, there is considerable similarity between the two cultures and ample evidence of a common origin for many of their customs. The Nebraska collections show, however, a greater variety and richness and a few new objects, such as shell hoes, and potter's anvil, toggle-head harpoon points of antler, and antler combs. There is an abundance of pipes, of several styles, made of either clay or stone. The chief distinction between the Nebraska and Upper Republican complexes is seen in the pottery where the divergence is pronounced.

Some Nebraska culture vessels were made of clay which was tempered with crushed shell instead of the usually employed grit and sand. Some of the pottery was tan, red, or brown in color instead of the gray and black of Upper Republican. A significant percentage of the pottery recovered is a polished black ware. The occasional shell tempering and the polishing technique are pottery traits commonly found in the later cultures of Mississippi Valley, and here represent an Eastern influence upon the Nebraska peoples. Vessel form was more varied. Among the new forms was a squat, globular pot with constricted neck, out-flaring rim, and two heavy strap or protruding knob handles. Another new shape was a vertical walled, flat-bottomed bowl with an animal effigy head moulded on the rim on one side and a tail opposite it, or two heads might face each other across the bowl. Plain surfaces characterize the vessels, but shoulders and necks were decorated by incising. Cord marking was used, but the vessel was smoothed so that the cord marking was partially obscured.

Instead of the ossuary burial of the Plains, these people probably used cemeteries in which extended, flexed, and bundle burials were made. As would be expected where the two cultures overlap, there are many sites in eastern Nebraska which show a fusion or hybrid blending of the pottery complexes of the Nebraska and Upper Republican. The St. Helena variant of Upper Republican is a mixture of these two cultures. The Iowa variant of the Nebraska culture has been called the Glenwood Focus. (This section on the Nebraska culture is modified from Strong, 1935, Wedel, 1940, and Cooper, 1936.)

Although there has been emphasis upon the continuity of the Plains pattern of living over a long period, during which many changes in details have been indicated, the life of the farmers was not all beer and skittles. From western Nebraska (Champe, 1946, and Weakly, 1943), from North Dakota (Will, 1946), and from central South Dakota (Meleen, 1948) tentative tree ring calendars appear to establish the fact that late 15th century was marked by drought and by wind storms which moved fantastic quantities of dust. The abandonment of many villages appears to coincide with this period. At least, at many villages the house or lodge remnants are buried under a clean mantle of tan, yellowish, or gray dust, over which the humus and sod of later years developed. These dust deposits vary from one foot thickness in Medicine Creek (Nebraska) sites to 7 feet at the Sommers site (near Pierre, South Dakota). Moreover, tentative tree ring dates on the Sommers site are 1480-1489, plus or minus 10 years (Meleen, personal communication, April,1948). Tree ring records from near Bismarck, North Dakota (Will, 1946) show, at this same time, 19 wet years from 1452-71, 14 dry years from 1471-85, 3 wet from 1485-88, 13 dry from 1488-1501, 4 wet from 1501-05, and 13 dry from 1505-18. Thus in the 47 years from 1471 to 1518 we have 3 long drought periods totaling 40 years. If these conditions apply down river 300 miles at the Sommers site, we find at least one house (from which the wood specimens came) was built during the end of a dry period, and was abandoned soon enough to be blanketed by 7 feet of dust, presumably whipped up during a subsequent dry spell of long duration or a dust storm of great violence. It should not be forgotten that sites along side the Missouri River (such as Sommers) may have been covered with dust whipped up during low water from extensive

bars and flats in the river. It is more likely that the bulk of the Sommers site was established during the 19 wet years from 1452-71. Again, to the west, near Scotts Bluff, Nebraska, the small local tree ring record showing long droughts implies that the Upper Republican period ended in that section in the early 1500's. (It should be pointed out that the accuracy of Will's 1946 work with Dakota tree rings has been seriously questioned by Bell, 1948.)

We cannot yet say exactly how the Indians of that period survived, but it is possible that the perpetuation of the Plains economy may have depended on the abandonment and later reconquest of drought stricken areas. I rather fancy the following explanation of the known facts: During the period 1300-1500 A. D. the basic village pattern of living (pottery, earth lodge village, and horticulture-hunting economy) spread over the Missouri River Basin from Kansas to North Dakota. During the dusty decades toward the end of this period, the remnant village population in North Dakota moved eastward (whence they may have originally come) into the woods and lakes of Minnesota and Wisconsin where they lived generally in conformity with the habits of their hosts. As soon as climate permitted, they returned to their old homes and pursued the old life. In the states of South Dakota and Nebraska, the trek was probably also eastward. In Kansas, the flight from drought and dust may have led into east Oklahoma and Texas. This simple explanation does not necessarily represent current thought. It is merely a suggestion which superficially, at any rate, answers the inevitable question as to where the Indians went during the dry cycles. More probably there was never a time when the entire vast region was deserted. Islands of population

might conceivably hang on desperately during the worst of it, but it could also be true that the shifting line of adequate moisture was closely followed by a mobile population. It must be remembered also that rain would have to be followed by grass and game before the normal farming-hunting life could be pursued, but that crops alone depend on summer moisture rather than on total annual moisture.* Whatever the explanation may finally be, it must take account of the demonstrable fact that there are over all the Missouri River Basin scores of abandoned prehistoric villages covered with a blanket of dust. Then, in the same area, later and similar populous villages arose.

*In the paragraphs above, and in the entire chapter, any discussion of climate which appears to be based only on tree ring records must be taken with considerable salt. It has been well demonstrated that tree ring growth reflects winter moisture, spring temperatures, and other variable factors. Summer rains, at least in the Southwest, do not appreciably influence tree growth. But, as any farmer knows, corn and other crops are totally dependent on rain at the correct times during the growing season. It is entirely possible to raise normal crops after a dry winter if there is a late spring snow or rain to bring the seed up, and adequate summer moisture as needed. In fact, this cycle of events has frequently occurred. It is thus obvious that a section could experience several seasons of light snowfall, with consequent low tree growth, yet have good crops and continue to be occupied, if the summer precipitation were adequate and properly spaced. Even heavy dust storms do not prove that an area is uninhabitable. We cannot, then, boldly state that short rings prove a total dessication. They can only record a light winter or a cold spring or other factors, alone or in combination. It is also important to know the relative size of the small rings. Does one dry cycle, which only means a less-than-normal cycle, reflect drought conditions equal to, greater than, or less than a subsequent series of small rings?

However, as we have emphasized, the tree ring records in the Plains are supplemented by other evidence, such as the heavy dust deposits, and the distribution of cultures. All these factors must be weighed in the final interpretation of culture history in the Plains (For fuller data concerning the inferential influences of drought upon culture see Gladwin, 1947).

More recent than the Nebraska culture and with the same or greater distribution in the states of Nebraska and Kansas are the Oneota remains (1600-1700). The Oneota culture is the archeological manifestation of the culture possessed by the Chiwere-Sioux groups of historic times. The remains are distributed over the state of Iowa, extending also into adjacent states. The Oneota house type is as yet unknown, but was probably not a semi-subterranean type. Burial customs are different from those of the Plains people to the west. Bodies were placed in an extended position in cemeteries or sometimes in pits sunk in mounds (where these exist) built by earlier Indians as opposed to the Plains practice of mass ossuary burial. Many artifacts, such as pots, projectile points, pipes, bone awls, and knives, were buried with the Oneota dead. The inventory of Oneota artifacts is familiar from earlier cultures in the Plains. Bison hoes, awls, disc pipes, elbow pipes, fishhooks, awls, needles, grooved mauls, abrading stones, and scrapers are all common. Sheet copper rolled into beads is added to the list.

Pottery is quite distinctive. It is similar in some ways to Nebraska culture ceramics. It is preponderantly shell tempered; the most common shape is a wide-mouthed globular pot furnished with two or four wide strap handles. The vessel lip, rim, and shoulder were decorated with incised lines and with dimple-like impressions (punctating). Sometimes the lip was cut or pressed down at regular intervals to give a fluted effect. Undecorated vessel surfaces were left smooth. Cord-marking was not used. The recency of the culture is attested by the fact that on some sites, glass beads, copper springs, and objects of iron are found. (This brief statement regarding Oneota is based on material taken from Mott, 1938, and Wedel, 1940.)

From central Kansas in the Arkansas-Smoky Hill drainage, a local but very important collection of archeological materials called Great Bend is quite well segregated. Dated 1500 to 1700, the material has been identified as belonging to the tribe historically called the Wichita. It is thus dated and identified because of the recorded contact between the Indians of Quivira and the far ranging Spanish explorers of New Mexico. In the Great Bend villages finds of chain mail, glass beads, and iron ax blades are found and offer indisputable evidence of very early European influences. Also indisputable for dating purposes are pottery fragments from the Rio Grande pueblos; apparently pottery, turquoise beads, and obsidian projectile points were received in trade from the West. The Great Bend culture fits into the Plains culture pattern in all important respects, but its contact with the early Spanish and Puebloan groups of the Southwest is well established.

The Great Bend sites are studded with low mounds (Wedel, 1942). These mounds are no more than large dumps or refuse heaps containing foodbones, pottery, ashes, and soil. Literally hundreds of large cache pits as much as 9 feet in depth and diameter occur between the mounds. From the cache pits also quantities of cultural debris are recovered as well as specimens of wood, charred corn, beans, plum pits, and evidences of other foods. But there were none of the pit houses so consistently found in the villages of more northerly tribes. Documentary evidence is that the Great Bend people dwelt in domed grass thatched huts, like the Caddo to the south. In some villages an earthen mound 100-120' in diameter surrounded by a ditch marks the site of a supposed temple or ritual center -- again like the Caddo to the south.

Implements and tools were the ones common to the Plains -- shoulder-blade hoes, awls, eyed needles, wedge-shaped bone paint daubers, transversely scored ribs, and tubular beads -- made of bone. Scrapers and knives of numerous types, the grooved maul, hundreds of small triangular projectile points, pipes of elbow, calumet and tubular forms, and the flat milling stone were made of various kinds of stone. Mussel shells were fashioned into pendants, beads, gorgets, and spoons.

Pottery is not as strong nor as well made as the Upper Republican wares. The usual shape is a jar 8" - 12" in height with vertical rim and rounding shoulders which slope to a small flat or rounded base. Two handles often extend from vessel lip to shoulder. Some cord-roughened sherds and some malleated with a scored rib or grooved paddle are found but most surfaces are plain. There is little decoration by incising or other means on any part of the vessel. In vessel shape, rim shape, presence of handles, and lack of surface decoration, the pottery complex can be distinguished from the other known cultures of the Plains.

Toward the southern tip of the Plains, we find a recognizable relative of the Great Bend culture. Through central Oklahoma and north central Texas are sites belonging to the Henrietta Focus (Krieger, 1946 and 1947). The Great Bend and Henrietta cultures shared the use of cache pits, bison scapula hoe, the horticulture-hunting subsistence base, meal grinding stone, small triangular arrow points, end scrapers, various bevelled knives, including the diamond-shape 4 bevel one, flint drills, numerous bone awls, and many other traits. For neither do we know the house type. In other particulars the cultures diverge but a basic relationship or contact is assumed on the basis of the cited similarities.

To the north in the Dakotas, the material called Middle Mandan had developed into the Later Heart River culture, which in many particulars was diverging farther and farther from the Upper Republican base (Will and Hecker, 1944).

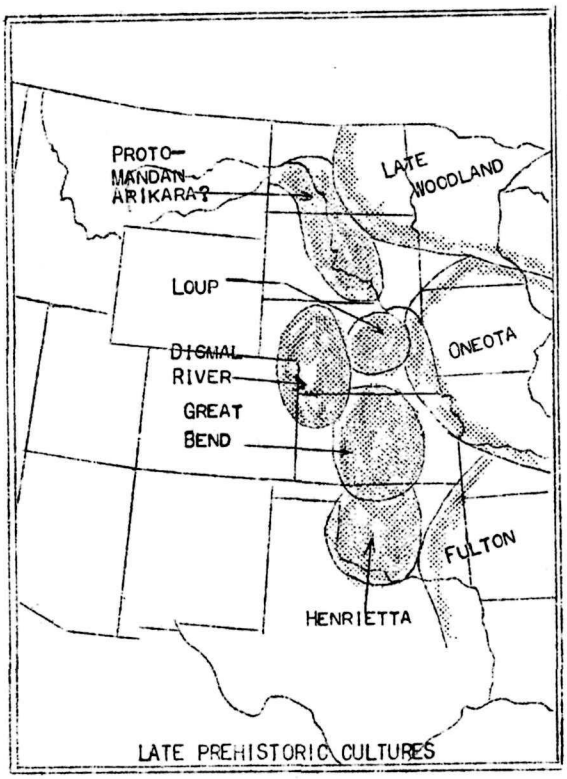


FIGURE 14

More recent in the Republican and Platte basins are the Dismal River remains (1670-1705 A. D. - tree ring). This culture was found in and described from the Sandhills to the west. From Harlan County on the Republican River comes the easternmost occurrence yet reported. Tentatively, the Dismal River remains are regarded as belonging to the Padouca (Comanche?). It is interesting to note that the dates ascribed to this culture coincide closely with a known series of 39 consecutive wet years in the Dakotas, (Will, 1946) but in the Scotts Bluff region of Nebraska, a drought is recorded for the same period (Weakly, 1943).

The Dismal River groups had fewer tools and less comforts than did the people of the Upper Republican culture. Built on terraces above the streams, the small villages were made of impermanent surface type dwellings which apparently were flimsy versions of the Navajo hogan. No cache pits for food were found. Burial practices are not known. At some sites bell shaped pits up to 3 feet in depth show heavy burning; these may represent roasting pits or ovens.

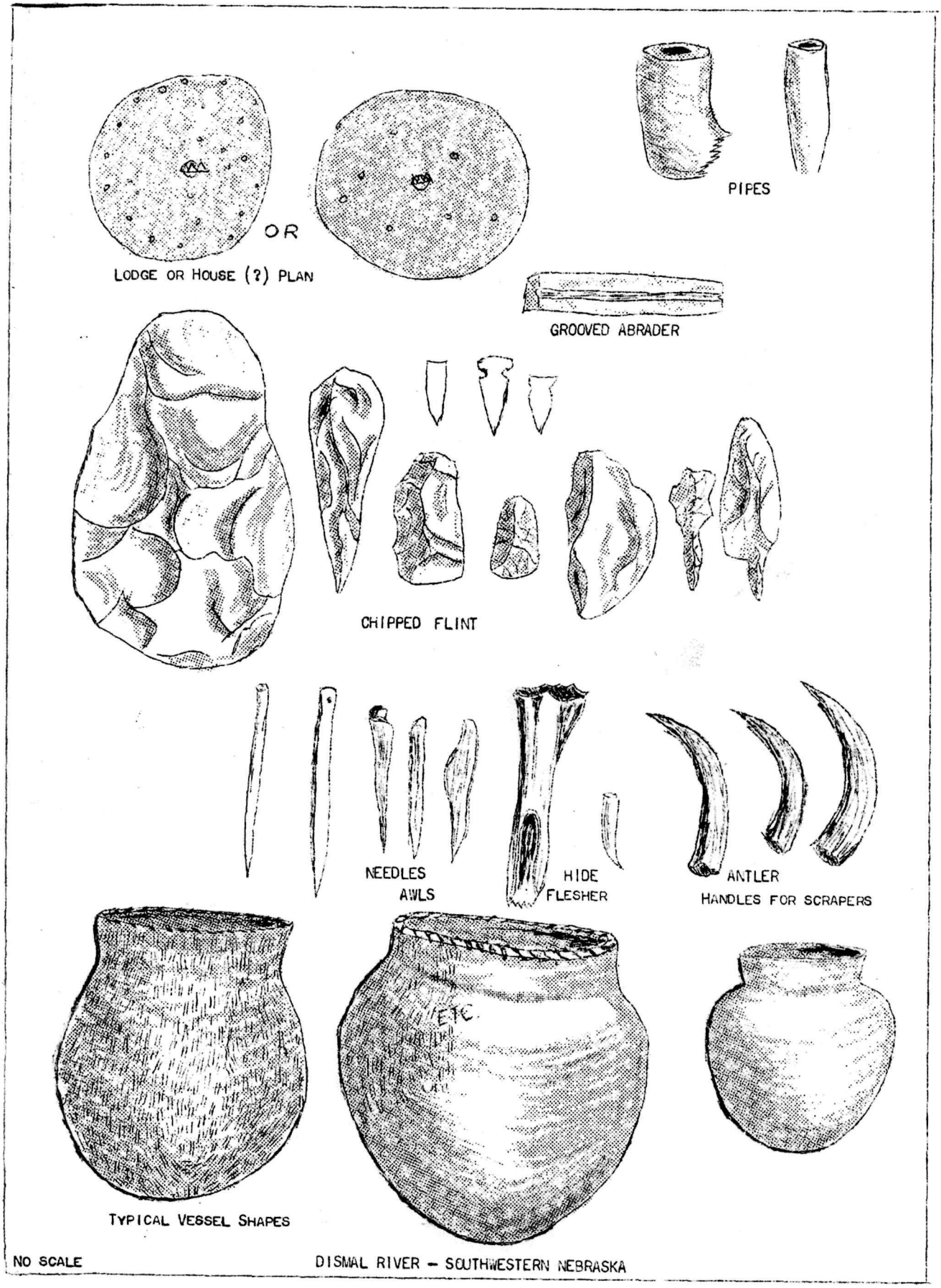
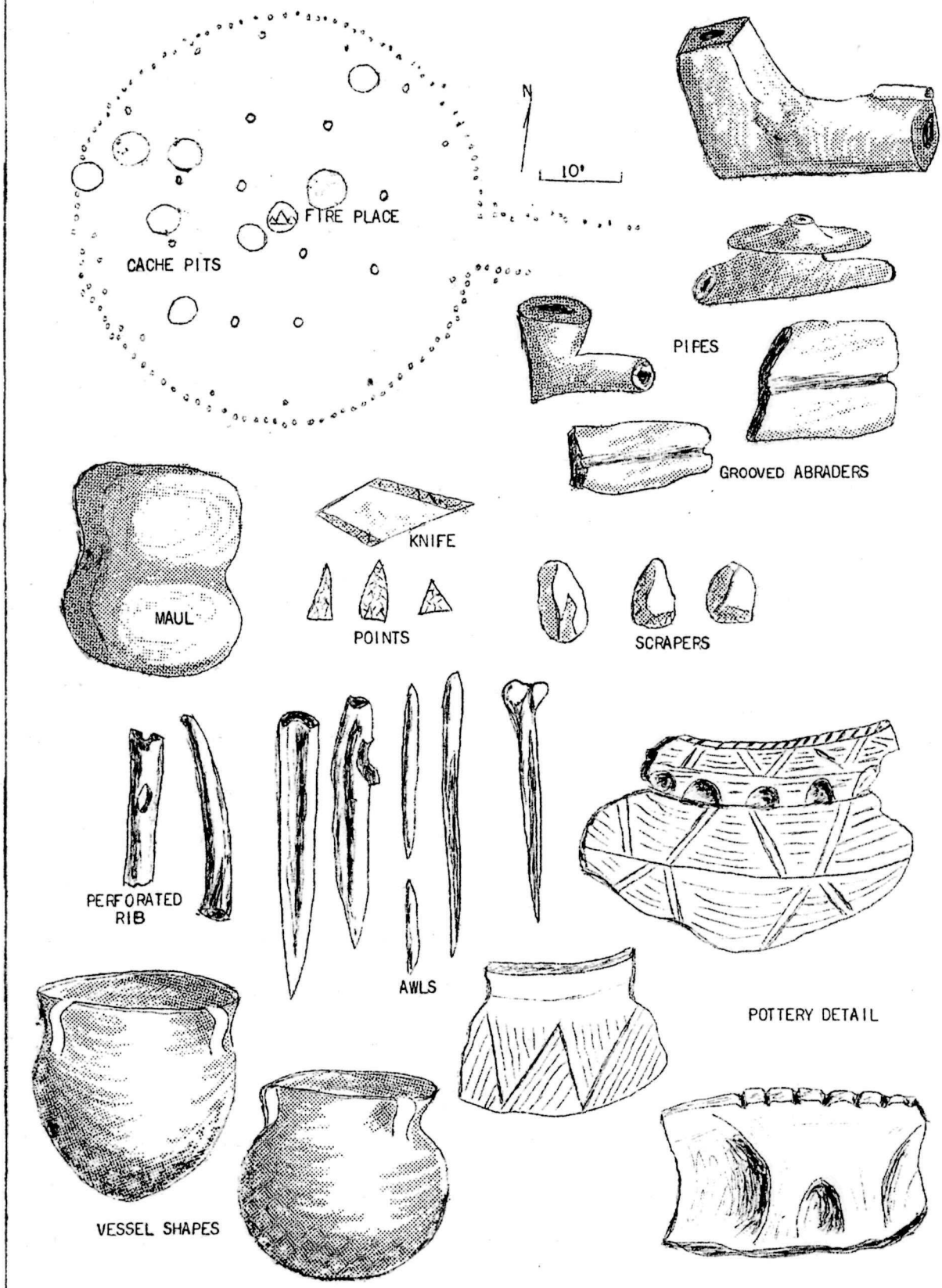

OR
LODGE OR HOUSE (?) PLAN
PIPES
GROOVED ABRADER
CHIPPED FLINT
NEEDLES
AWLS
HIDE
FLESHER
ANTLER
HANDLES FOR SCRAPERS
ETC.
TYPICAL VESSEL SHAPES
NO SCALE
DISMAL RIVER - SOUTHWESTERN NEBRASKA

FIGURE 15

In chipped stone the older forms continued, but the execution is generally cruder with the objects themselves somewhat larger than Upper Republican counterparts. The commonest tools were the bevelled edge, diamond shaped knife, scraper, chipped but poorly polished celts, and large stemless triangular points. Long slender flint points were not unusual. Other stonework included flat slabs with smoothed concavities which were used for grinding foods; shaft smoothers and abrading stones were common. Bone was used for the same implements as previously: fleshers, awls, punches, and tubes, and possibly a few bison shoulder blade hoes were made.

In pottery a characteristic type of decoration is about the only measure of difference from earlier styles. The surface had been smoothed by scraping; malleation was done with a grooved rib or paddle, leaving a ridged surface similar to, but readily distinguishable from, the earlier cord marked wares. This malleation, partially obscured by smoothing, was found in about 30% of the pottery. In the remaining 70% of the pottery the groove marks were so completely removed as to result in a smooth surface. Vessel shape, although distinctive, tends to resemble the earlier Woodland shapes rather than the immediately preceding cultures. Hill and Metcalf (1941) have the only report on a site of this type. It is possible that Dismal River, as a culture, is not really as lack-lustre as the present scanty knowledge implies. Only two sites have been excavated scientifically; other sites are known from surface finds. Additional field research only can add to the limited information now available. (Wedel, 1940, Hill and Metcalf, 1941, and Champe, 1946, furnished the basic data for the Dismal River paragraphs above.)



NO SCALE

LOWER LOUP (OR PROTOHISTORIC PAWNEE) ARTIFACTS

FIGURE 16

Contemporary with or slightly earlier than with the Great Bend, Dismal River and Oneota is the Lower Loup or protohistoric Pawnee culture. The Lower Loup is a complex directly ancestral to the complex of traits exhibited by the Pawnee tribe and may be a straight-line descendant of the Central Nebraska Upper Republican. The large villages of this culture are on the Platte and Loup Rivers, located on the high bluffs near these two major streams. This location implies that defense, ignored by earlier Indians, seemed to be a consideration, but towns are not commonly fortified with encircling ditches. The earth lodges have changed to circular outline but retain the four central posts of earlier times. Cache pits for storage of food were huge -- 10 feet deep by 10 feet or more in diameter. The food supply was the same as in Upper Republican times but with an even greater reliance on horticulture. Burial customs are not known, although some flexed burials inside filled cache pits have been found. Bone and stone artifacts, except for quantity and a few new items, do not differ materially from the Upper Republican prototypes. The new items are the large grooved maul (or "pemmican pounder"), an adze shaped elk-horn scraper, a large elliptical quartzite scraper, and the bone paint brush, and possibly the transversely grooved rib. The bone paint brush and grooved rib are also found in the artifact collections from Dismal River and Great Bend, both late cultures. Polished stone, possibly including red pipestone (catlinite), was now used for ornaments, incised flat stone tablets, and for various forms of pipes, including the elbow, disc bowl and calument forms.

Pottery is very plentiful and, in form, durability and appearance, marks the climax of the pottery art in the true Plains region. Large

full-bodied pots, with grit temper, predominate. The cord marking has been abandoned in favor of malleation with a grooved paddle or bison rib. The upper part of the vessels were decorated with incised rectilinear designs. Utterly alien to Plains tradition is an unusual use of broad strap handles extending from rim lip to the base of the neck. These handles were apparently sometimes decorative in function because they are occasionally added all around the vessel, giving the upper portion a cloistered effect. Even the handles were decorated by incising. This complex of pottery is possibly the easiest of all Nebraska types to recognize. This complex is well reported by Dunlevy.(1936) and Wedel (1940).

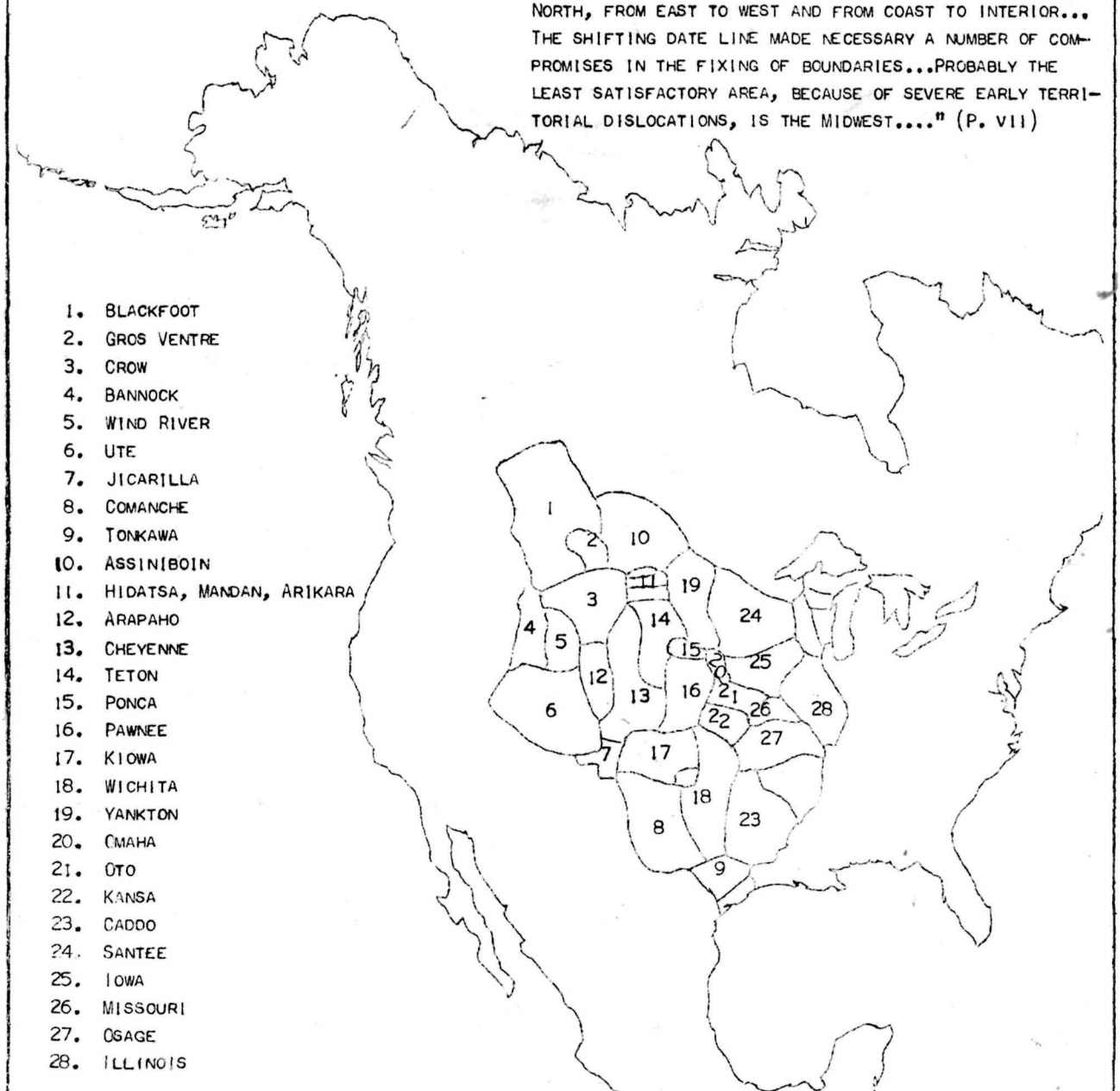
While the grandfather of the Pawnee were working out their destiny on the Loup Rivers of Nebraska, the same process was going on in other provinces. The early Arikara, related to the Pawnee, had by now moved up the Missouri River as far as the present Pierre, South Dakota. The legendary history of this turbulent tribe is that the Arikara, who spoke the Caddoan language, split off from the Pawnee (who also spoke a Caddoan tongue) sometime before white knowledge of the country. Will (1924) dated this schism at the very beginning of the 18th century, but the evidence of the La Roche site (Meleen, 1948) and other unreported evidence resulting from the survey of the Fort Randall Reservoir area (Cooper, 1947) convince me that the ancestral Arikara were probably on the main stem in South Dakota by 1400 A. D. The protohistoric Arikara at La Roche behaved very much like the Loup River protohistoric Pawnee and, but for a few items, possessed a well-nigh identical collection of material objects (Meleen, 1948).

While the Pawnee and the Arikara dominated the lower Missouri River, the early Mandan had moved well into the Later Heart River stage of development, which was by then essentially the same as we report later for the 19th century tribesmen visited by Lewis and Clark. Less well known tribes whose protohistoric remains have been cautiously identified (and not elsewhere mentioned in this paper) are the Kansa, Omaha, and Ponca who were more or less satellite to the powerful Pawnee tribe, occupying adjacent areas more or less on sufferance.

It was during this protohistoric period that the horse was obtained and the adaptation of life on Plains to this new element began. All tribes accepted the animal and achieved a greater mobility because of it. While the stronger sedentary tribes merely worked the new idea into their existing life, certain tribes entirely abandoned the farming life and reoriented or reorganized themselves on an entirely new basis. All equipment became portable; the tribes followed the bison herds and lived entirely upon the largess of the land. From this point on (estimated as being about 1700 A. D.) there was warfare between the villagers and the nomadic horsemen, and the wide spaces of the western Dakotas, Wyoming, Colorado, and Montana, where the farmers had seemed to go only when the climate beckoned, were now being ranged by hunters. The impact of the horse on the cultures of the Plains was tremendous and set up a chain reaction of tribal conflict which was not yet settled when white men began to roam the West in search of furs and for roadways to the rich lands of the Pacific Northwest.

MAP AFTER ETHNOGRAPHIC BIBLIOGRAPHY OF NORTH AMERICA, MURDOCK, GEO. P., YALE ANTHRO. STUDIES, VOL. 1, 1941.

THE MAP SHOWS "... THE LOCATION OF THE VARIOUS TRIBAL GROUPS AS OF THE PERIOD OF THEIR FIRST EXTENSIVE CONTACTS WITH EUROPEANS. IT ... REPRESENTS A SHIFTING DATE LINE, WHICH BECOMES LATER AS ONE MOVES FROM SOUTH TO NORTH, FROM EAST TO WEST AND FROM COAST TO INTERIOR... THE SHIFTING DATE LINE MADE NECESSARY A NUMBER OF COMPROMISES IN THE FIXING OF BOUNDARIES...PROBABLY THE LEAST SATISFACTORY AREA, BECAUSE OF SEVERE EARLY TERRITORIAL DISLOCATIONS, IS THE MIDWEST...." (P. VII)



HISTORIC INDIAN TRIBES

FIGURE 17

THE HISTORIC TRIBES

From the protohistoric period we move into the post-1700 era. Of all the Indians of the region, the Pawnee and Mandan tribes are about the best known archeologically as well as ethnologically. This is not surprising because these tribes controlled thousands of square miles athwart the rivers leading westward. Explorers even before Bourgmont (1724) encountered them and reported their customs and habits. Added to these early journals are the data recovered by archeologists who have sought out the tribes' towns and sampled their contents in a systematic attempt to work from known cultures backward into the unknown. Richer data result also from the obvious fact that the more perishable items, such as wood or textiles, are better preserved and more susceptible to discovery and study in a site deserted only a hundred years than one abandoned a thousand years ago.

It is logical to focus attention first upon the Pawnee. This tribe, both archeologically and ethnologically, represents a combination of hunting-horticulture economy in the best Plains tradition. As has been indicated, typological similarities in earlier artifact series indicate that the tribe had been for many years in the area where it was discovered. Wedel (1936, p. 96) places the tribe on the Platte and Republican Rivers by 1500 A. D.; 1300 A. D. is probably not too early if the Upper Republican culture is accepted as ancestral to the Lower Loup material which has been identified as protohistoric Pawnee. However, because of the horse, the Pawnee of 1800 had a somewhat different economy than they had in 1600.

The permanent dwelling house of the Pawnee was still round but was larger than in the protohistoric period. It was semi-subterranean, built

generally in a manner described earlier for the Upper Republican. It sheltered from 10 to 40 persons. For the hunt, the skin tipi was extensively used. Large underground cache pits remained in vogue for storage of food.

Villages in historic times were enclosed for defense within an earthen rampart raised three or four feet high, just inside the ditch of similar depth whence the dirt for the wall came. Historically, each house had near it a corral of poles where the horses belonging to the household were penned each night.

Foods were the same as in earlier times. Cultivated plants were corn, squash, and beans. Wild foods were also important, such as the wild potato, turkey pea, Jerusalem artichoke, wild plums, chokecherry, blackberry, cherry, etc. Bison was the important meat food, although deer, elk, bear, beaver, otter, coon, and badger were also eaten.

Bison were hunted from mid-June to September. The entire tribe packed up to follow the herds, leaving the villages and gardens after the second hoeing deserted. When the crops were harvested and the corn cached, the winter hunt toward the south lasted from late October to April. Quite aside from the hunt, the need for forage for their horses, which were numerous, also made it necessary for the tribe to wander much of the year because the large herds soon depleted the range near the villages. Prior to the arrival of the horse, hunting was important, but it is doubtful that the hunts were so far-flung.

As far as tools and implements are concerned, the Pawnee possessed little which were new. The usual assemblage of stone and bone artifacts are found on Pawnee sites.

Pottery was quite distinctive. Its distinction lies in its decadence. Many elements observed in the Lower Loup pottery are also typical of Pawnee ceramics, but, careless and crude in manufacture, the whole complex shows the waning importance of pottery in the Pawnee culture. Metal utensils had here, as elsewhere, led to the disappearance of the art of pottery making. (For this section on the Pawnee, Wedel's accounts were consulted.)

Throughout this section, dates used have been those more or less accepted by the concensus of students in the region. Some evidence, such as that from the La Roche site, as to dating (Meleen, 1948) makes one wonder whether some of the conservative, quite recent dates for the Lower Loup material should not be pushed back into time. If the suggested dates for the Central Plains area are proved correct and the La Roche site is correctly identified as equivalent but 50 or more years older, we might then assume a northerly source for the entire farming tradition. This conclusion would reverse all present thought on the subject. This discrepancy is cited merely to emphasize the difficulty encountered by the archeologist in the correlation of facts and inference on a wide regional basis. Actually, professional opinions regarding the dates for Plains cultures vary enough to accommodate even Meleen's early dating of the important La Roche site (Wedel, 1947c, Champe, 1946, Krieger, 1946, 1947a). I have herein been deliberately over-conservative in the dates assigned to the various periods.

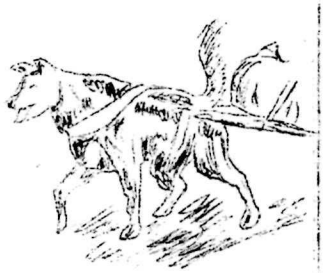
The culture of protohistoric and the historic Mandan has been called the Late Heart River period (Will and Hecker, 1944). The culture which characterized this later period is the one observed and

reported by Verendrye, Lewis and Clark, and other explorers. The tribe's importance in Western affairs for the period 1804 to 1840 is too great and well known to merit discussion here. Suffice to say that their vast numbers and large fortified villages and their generally friendly attitude toward the whites made them a well known Western tribe during the period of westward expansion. The tribe has not been important numerically since 1837 when a smallpox epidemic wiped out an estimated total of 15,000 people, half of which were from the Mandan, Hidatsa, and Arikara tribes.

The Mandan villages normally included forty to sixty earth lodges. The lodges were, for protection, surrounded by a palisade and one or more ditches. Bastions were occasionally provided. The building of bastions is a practice at least 400 years old on the Missouri River because we know from tree ring study that the Huff site south of Bismarck was occupied as early as 1485. The Huff site contains hundreds of lodge pits visible today and is surrounded even yet by a well defined earthen embankment with bastions projecting at regular intervals. Outside the embankment and bastions runs a ditch four or five feet deep and fifteen or more feet across. The lodge housed up to forty people depending upon the size of the family. The description of the method of construction of an Upper Republican house (see page 42) fits the Mandan house generally well, although the Mandan house was circular. Mandan structures occasionally reached a diameter of 90 feet, although 30 or 40 feet were the more common dimensions.

The Mandan did not use the villages for the year round. During the winter they dwelt in temporary quarters built in the wooded area some

CORRAL



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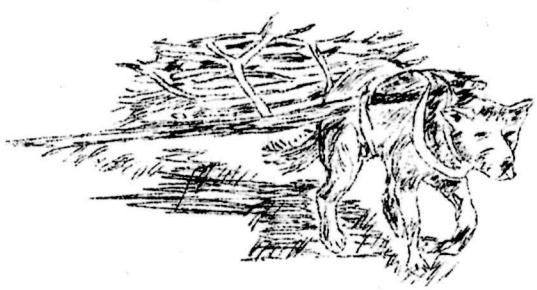

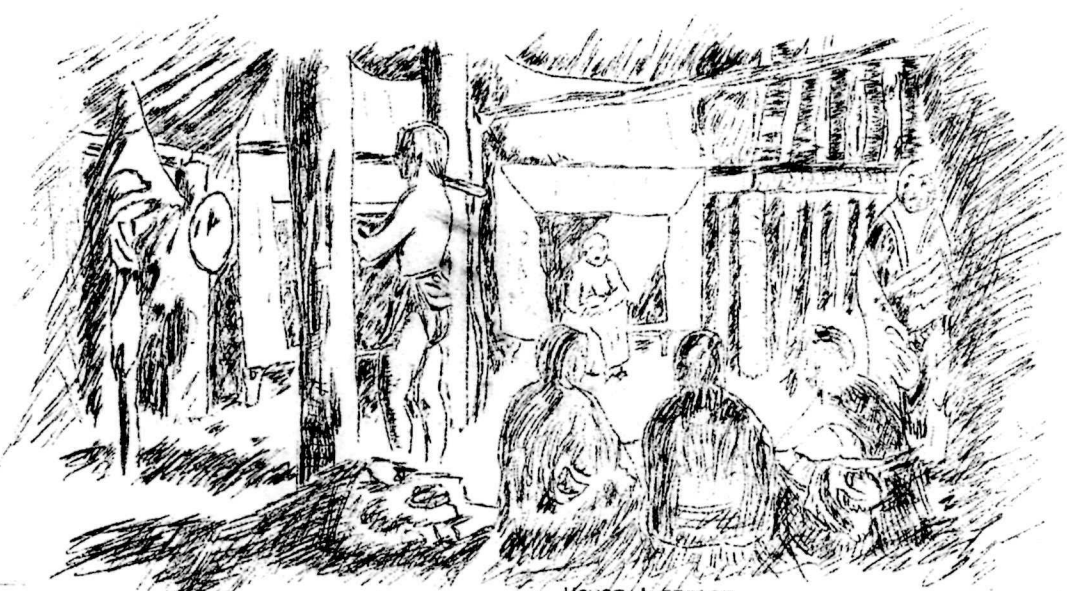

HOUSE INTERIOR

MANDAN SKETCHES
AFTER PHOTOSTATS
OF
F. M. WILSON
DRAWINGS, N.P.S.
REGION II FILES

FIGURE 18

distance from their villages. Apparently the tribe did not wander as far in its hunting as was recorded for the Pawnee earlier in the chapter, although rather large hunting parties would go out at periodic intervals.

The interior of a Mandan hut was interestingly arranged. The following account is quoted direct from a recent study:

> ". . . Ordinarily they spent about four months of the year in these temporary quarters. The reasons for this change in dwelling place during the winter season were to preserve the wood supply and to prevent the disturbance of game in the neighborhood of their permanent homes. In the construction of the Mandan homes, both men and women assisted. The women did most of the work, but the men assisted in the placing of the heavier beams. The arrangement of the furnishings in the lodge followed a quite uniform pattern. The beds were arranged along the wall at the left as one entered the lodge. The doorway was protected by a windbreak extending from one edge toward the center of the lodge at an angle of 45°. Directly across from the doorway on the opposite side of the lodge was the medicine stand or shrine. Here the chief kept his most valued treasures. At the right of the entrance was a stall for horses. Near this area one would usually find the transportation equipment such as the travois. The sweat lodge commonly occupied the right side of the lodge toward the back. In the center of the dwelling was a fireplace, dug into the ground to the depth of about one foot and lined with stones on the sides, near which were the utensils for cooking including earthen pots and wooden mortars. A food rack usually stretched across the fireplace where pots could be suspended for cooking. Robes were strewn on the floor near the fire where members of the family seated themselves. The chief often occupied a seat with a lazy-back made of a matting of willor branches tied together with sinews. Hanging on or leaning against the center posts of the lodge were the spears, bows and arrows, and other war and hunting equipment. . . ." (Goplen, 1946)

The villages themselves would probably not appeal to us today for reasons which are evident in the following quotation from a traveler who visited them in 1811:

> ". . . Rambled through the village, which I found excessively filthy, the 'villainous smells,' which everywhere assailed me, compelled me at length, to seek refuge in the open plain. The lovers of Indian manners, and mode of living, should contemplate them at a distance. The rains had

> rendered their village little better than a hog pen. The village is swarming with dogs and children. I rank these together, for they are inseparable companions. . . ." (Thwaites, 1904)

The economy of the Mandan was also based on the bison and other game animals, wild foods, and vegetables which they grew. Normal crops included corn, beans, squash, and sunflower seed.

For a description of the Mandan clothing we quote again:

> ". . . As regards clothing, practically all the Mandan garments were made from the skins of the animals they hunted. The chief article of their dress was the buffalo robe. This was tanned on the fleshy side and painted white or reddish and ornamented with glass beads. The men's shirts were made of two skins of deer or mountain sheep strung with scalplocks, beads, and ermine. The leggins were made of deer skins and embroidered with porcupine quills while the mocassins were made of buckskin and similarly ornamented. The women wore a long leather garment with open sleeves; this dress was usually fringed at the bottom. The leggins worn by the women were shorter than those worn by the men. Their mocassins were usually plainer. The head dress of men was usually quite elaborate, and the hair was worn long and in plaits with numerous decorations. In the dress up of the Mandans ornamentation in the form of beads, necklaces, quill work, painting, and tatooing was important. This was especially true on special occasions involving ceremonies. . . ." (Goplen, 1946, p. 164)

Agriculture, carrying wood and water, preparing food, and the manufacture of pottery and clothing kept the women of the tribe busy. The men manufactured weapons, hunted, made war, and assisted with the harvesting of the crops. The material objects which the Mandan used included the hoe made from the bison shoulder blade, flint points, knives, scrapers, and other cutting instruments. A variety of excellent pottery, stone clubs and axes, bone handles, and various kinds of tools were made. These, and many other objects, were similar in design and purpose to those described for earlier cultures. They also made spoons and ladles from animal horns. Food dishes were sometimes made of wood. They also

used stone and shell, and bone for such things as pipes, beads, whistles, hair brushes, etc. Skins were used for saddles, cradles, baskets, snow shoes, etc.

It would be possible to greatly lengthen this section on the Mandan by a detailed account of their religion, social organization, and ceremonies, but the above section is sufficient to indicate a high standard of living enriched by many comforts not known to the Indian a thousand years before. The reliance of the tribe upon the bison has been stressed to show that again there were important tribes who dwelt in permanent villages and who regarded themselves as farmers who yet drew much of their living from the inexhaustable herds.

Although the prehistoric Mandan cultures were, in most respects, very much like the historic form we have just described, the lack of the horse would have prevented some of the activity mentioned above. For example, a dog cannot carry on a travois or on its back as much as the horse. It is probable that the tribe would not wander as far nor were its hunters able to return to the settlements with as much bison meat. Numerous industries would not have been appropriate such as the making of saddles, travois, harness, and other items necessitated by the possession of the horse.

It is interesting to note that for many of the early Mandan villages we have tentative tree ring dates. The Archaic period must have begun about 1300 or earlier since the huge Huff site which belongs to the Middle Mandan period was apparently fully occupied before 1500 A. D. Other dated villages show long periods of occupation over the period 1500 to 1800. Apparently the prehistoric Mandan, as well as the Arikara to the south,

had aggressive enemies since these villages of the middle period are most frequently fortified with ditches and embankments.

There are many unanswered questions regarding the full range of Mandan prehistory. We actually know more about the pottery sequences than about any other phase of their life, which is little enough. All the data which we have recovered, however, dovetail neatly, both in time and in the sequence of development, with other plains cultures to the south which have already been described.

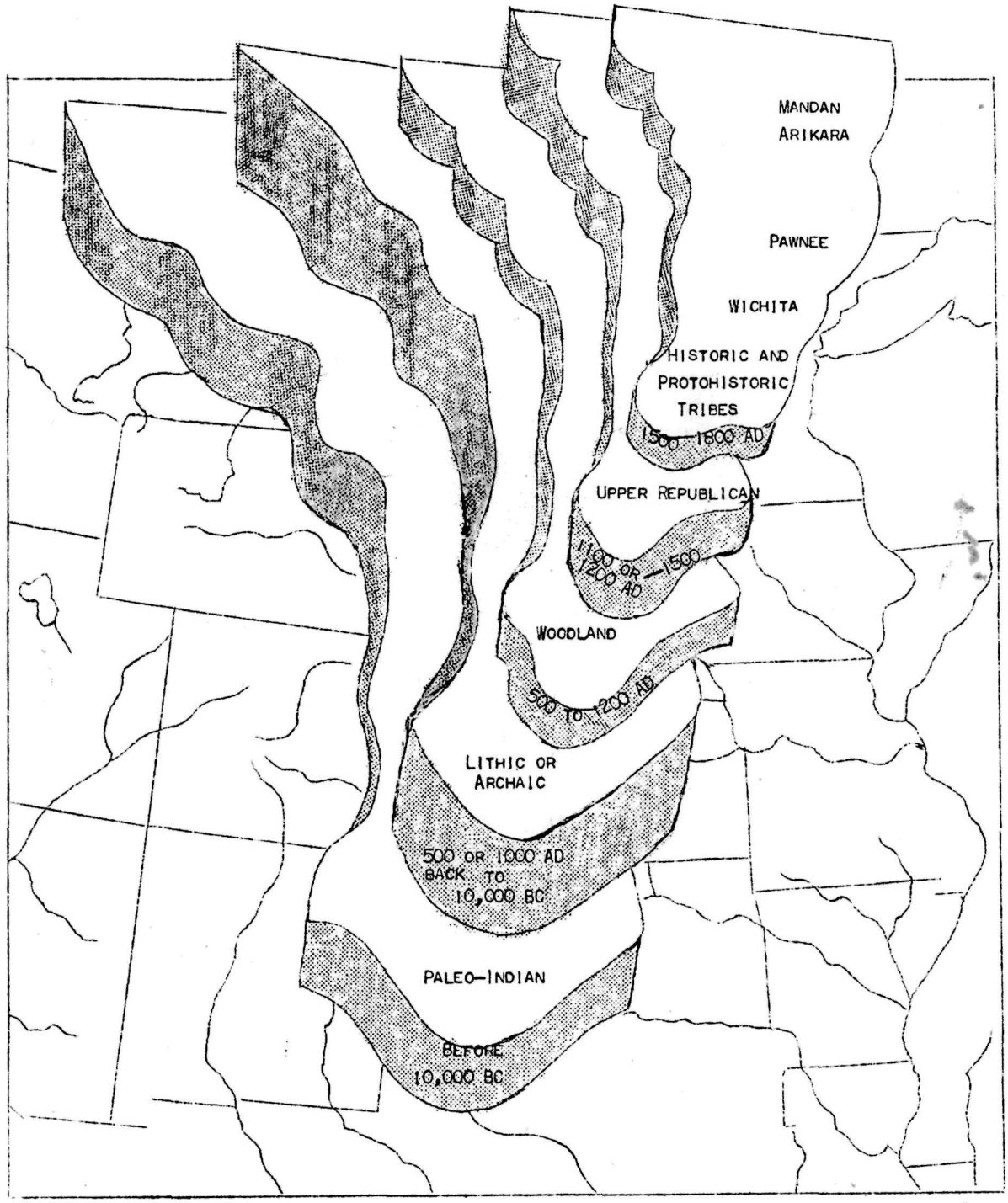

CHART OF
MAJOR PERIODS
OF
PLAINS PREHISTORY

FIGURE 19

RECAPITULATION

We have in the preceding narrative leafed at random through some of the records of the red man's past in North America. From the Folsom through the Lithic, we moved on to a closer inspection of the recent semi-nomadic Woodland, the farmers who succeeded them, and finally the historic tribes of the 18th and 19th centuries. Throughout the account we have emphasized the influence of climate upon man's conduct.

As a summary of the facts and problems of this chapter, we quote a recent stimulating statement regarding the archeology of the Missouri River from the Nebraska-South Dakota line to Pierre, South Dakota. The concluding sentences below apply to all the Plains.

> ". . . Anthropologists have for years recognized the upper Missouri as one of the richest and most promising archeological areas in North America. In historic times, an important part of the fur trade between whites and Indians was carried on at the great stockaded towns of the Mandan, Arikara, and their neighbors on the main stem in South and North Dakota. These towns represented a comparatively advanced stage of native civilization, basically of an agricultural character, and were inhabited by what were apparently only the last of a series of peoples who at various times and perhaps from several directions occupied the region. Progressively simpler and less advanced peoples, who relied to a great extent on hunting, seem to have preceeded the Indians first seen in the region by white men. The steps by which a highly specialized corn-bean-squash economy, adapted to the rather trying environment of the upper Missouri, evolved out of the native agricultural economies to south and east, remain to be worked out. There are suggestions that the prehistoric farmers of the area may have been beset, perhaps even displaced, from time to time by drought, floods, and other vagaries of nature. A long and complex story of man's struggle with his environment, without the technological advantages of the white man today, thus awaits closer scrutiny. The campsites, villages, towns, and burial places of the region represent the documents from which this story must be assembled. It is this story rather than the mere accumulation of specimens and compiling of lists of site characteristics which is envisaged in the archeological research program proposed. . . ." (Cooper, 1947)

CHAPTER III

THE FUTURE

Even cursory reading of Chapter II will show that many logical questions about man's life in the Plains are still unanswered. One of the most obvious defects in this Review is that we so seldom mention eastern Colorado, Wyoming, or Montana. For these states the maps have all shown blank spaces, question marks, or shading; the shading is especially annoying because it suggests knowledge, whereas in truth, its use merely masks our ignorance. Let no one think that the high Northern Plains lack evidence of long-term Indian occupation. The region reeks with Indian signs from early times to late. We expect some of our greatest help with the problems of the Paleo-Indian and of the Lithic period to come from this great white area on our maps. No one has, until very lately, troubled to search here systematically for archeological material. Research here may also tell us more about the present tipi rings (circular arrangement, 10 to 25 feet in diameter, of small boulders still found on the surface) which dot the buttes and canyon bluffs and terraces of all the Northwest Plains. Literally thousands of these rings, scores of huge bison kills and driving lanes, and other fascinating structures are found here. Too little is known of these features to permit very intelligent speculation about them, so no mention of them appears elsewhere in the text.

We can expect the enigmas of the High Plains and many other questions soon to be answered because the Plains, since July 1946, has become the scene of one of the biggest archeological operations of all time. As a result of the plan to harness and develop the water resources

of the Missouri River Basin and many other basins in the United States, a host of dams are being proposed, and in some cases, construction has begun. The scores of reservoirs thus being created will, two times out of three, destroy historical, paleontological, and archeological data of great importance. There has been, therefore, a corps of scientists set to work to search for, sample, and, if possible, salvage the irreplacable data thus jeopardized before it is too late. The time is all too short. Archeology has been asked to do in one decade what normally would have probably required a century of work.

Organization of nationwide salvage effort was not accidental, nor is it the work of any one person or institution. The program is based on agreements between the National Park Service and the Bureau of Reclamation and the Corps of Engineers that the National Park Service will assess the full range of recreational potentialities of the reservoirs being constructed by the Bureau and the Engineers. A phase of this National Park Service study is, of course, the search for, and evaluation of, historical and scientific data. By a further agreement the National Park Service arranged for archeological and paleontological survey and salvage to be handled by the Smithsonian Institution, as long as funds were available. Funds for the Smithsonian Institution survey have been received from both the Corps of Engineers and the Bureau of Reclamation, but in the Missouri River Basin (at present) the Bureau of Reclamation furnishes all survey funds. Professional archeologists, through their national organization called The Society for American Archeology, have set up a four man committee for the recovery of archeological remains. This committee has contributed heavily toward the organization of the entire program.

Assisting the Smithsonian Institution in the staggering job of searching for sites hidden in a half million square miles of territory are numerous states and private institutions. In Missouri River Basin there are a total of ten such cooperating institutions, all of whom have solicited and received specific research assignments in the Plains area. This outside participation in the emergency is voluntary, and is usually possible only when the outside institution shelves its own research program.

In terms of physical progress the Smithsonian Institution surveys have made an impressive showing. More than 50 Missouri River Basin reservoirs have been surveyed in varying degrees of completeness. More than 500 sites, most of them hitherto unreported, have been sampled and promise to provide new and sometimes spectacularly important data. Many of the earlier data have been rendered more significant by work done by the Smithsonian Institution since July 1946. In fact, in this Review, new data are included which are available because of recent Smithsonian Institution research. Research can profitably continue to be focussed strongly on the western and northern portions of the Plains. Although survey is by no means finished, the next phase of the program is the thorough excavation of selected sites and the collection of sample data. Funds for this work are still lacking.

It should be pointed out that the intensive survey of reservoir areas over the United States is almost an ideal research program because it provides, through survey, a valid random sampling of widely scattered areas. No better method for locating typical sites of all cultures over the entire time range could have been devised.

We can hopefully expect then that the scientific dragnet which has been thrown across the Plains will yield archeological data at an increasing rate. The murk surrounding the chronology, cultural relationship, distribution, and many other matters in the Plains should slowly be dissolved.

GLOSSARY *

Adz. A cutting tool with the plane of the blade set at right angles to the handle, thus differing from an ax.

Arrowhead. A small projectile point often arbitrarily defined as a point less than 2½ inches long. Specimens longer than this may have served as knives or spearheads. See Projectile point; Spearhead.

Artifact. Any object manufactured by human beings, applied especially to distinguish between natural objects and those of human workmanship.

Atlatl, or spear-thrower. A device or implement that makes it possible to hurl a spear or lance farther and with greater speed than with the arm only.

Ax, stone. A sharp-edged cutting implement made from some hard, resistant stone and provided with a groove for hafting.

Bolas. A hunting weapon consisting of two or more balls of stone, bone, or ivory attached to the end of a cord by means of shorter cords. It was used to entangle the legs of animals or the wings of birds.

Boulder Effigy. An outline of a bird, bear, turtle, or other animal worked out on small boulders. Regarded as the work of prehistoric Indians.

Buried Site. A buried site is any type of archeological remains sealed by subsequent deposition of soil either by wind or water action. Buried sites may be only a few inches beneath the ground or may be as much as 40 or 50 feet deep. Usually these can be located only in cut banks, arroyas and gulches, or other places where erosion has cut deep into the soil.

In these cuts black zones representing old surface soils can be observed. Hearths, cache pits, fire pits, and cultural debris of all kinds can sometimes be seen in these natural cross sections.

Camp Site. See Occupation Area.

Celt. An ungrooved ax of stone or metal.

Full-Grooved Ax or Maul. An ax or maul with a groove completely encircling it.

Hearth Site. A hearth site usually will contain a heap of stones which are fire burned and cracked. Under the stones will be a fire burned zone of earth mixed with ash and fragments of charcoal. Animal bones, artifacts, and other evidence of man's activities may be found in and near the hearths.

Historic. This term, of course, refers to tribes, artifacts, or cultures about which written information exists. Journals, letters, diaries, etc., usually provide the first written information regarding the Indian tribes of North America (see Protohistoric and Prehistoric).

*(Modified from Martin, Quimby, and Collier, 1947.)

Horizon. As used herein horizon means a cultural level or a point in time where a recognized grouping of tools and weapons gives us a partial picture of the life of the tribes at that time. Horizon thus usually implies a recognizable association of man made objects, and may imply a known chronological position with regard to other well defined cultures.

Mano. The upper part of an Indian mill, generally used to grind grains.

Metate. The bottom part of an Indian mill, generally used to grind grains and usually associated with agriculture.

Midden. A collection of refuse such as ashes, shells, garbage, potsherds, or corncobs around a dwelling-place. Middens vary in thickness from a few inches to many feet.

Occupation Area or Occupation Zone. These terms are usually merely to designate a locality where there is evidence of human occupation. The evidence may be flint chips, flint artifacts, broken bones, hearths, charcoal, etc.

Ovoid; Ovoidal. Egg-shaped; ovate.

Paleo-Indian. This term is applied to the earliest evidences of Indian occupation in North America. The early cultures, called Folsom, Yuma, Cochise, etc., are lumped under this term.

Petroglyph. Outlines of animals, people, or geometric figures pecked, scratched or painted on cliffs and cave walls. Scientists do not know what Indian group made these sketches, nor why it was done.

Potsherd. Any broken piece of pottery or earthenware.

Prehistoric. This term is used to denote objects of culture about which there is no contemporary written record of any kind. In North America any culture dated by tree rings or other evidence as existing prior to 1600 would probably be regarded as prehistoric.

Projectile Point. A point used on an arrow, spear, or lance, usually referred to as an arrowhead or a spearhead. The point may be made of stone, copper, bone, wood, or shell. See also Arrowhead; Spearhead.

Protohistoric. This term is used to describe artifacts or cultures which on archeological or other grounds can be shown to have been ancestral to a historic tribe; or to a culture possessing artifacts of European origin, as well as specimens of native manufacture. Archeological finds of beads of glass, iron, axes, etc., would probably lead to labelling a culture protohistoric.

Spearhead. A large projectile point often arbitrarily defined as a point over $2\frac{1}{2}$ or 3 inches long. See also Arrowhead; Projectile Point.

Temper. A substance such as sand or pulverized rock, shell, or pottery, which is added to the clay used in making pottery. Pure clay, when baked, tends to crack. The tempering material checks the progress of flaws or breaks and prevents them from running in ruinous straight lines.

Three-Quarter-Grooved Ax or Maul. An ax or maul with a groove running around three sides.

Tipi Ring. A tipi ring is a circular area outlined by a ring of boulders varying in size from 6 to 12 inches in diameter, in the center of which are three or four stones heaped together. Tipi rings vary from 10 feet to 25 feet in diameter. Usually the sod has grown up around the stones, in some cases almost obscuring them. These stones have been interpreted as evidence that a skin tipi had been erected at the spot, the stones having been used to hold down the edges of the tent. Artifacts are usually not found in the vicinity of tipi rings. The sites are often on mesas, high terraces, or buttes far removed from water and timber supply.

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*Recommended for those who have time to follow up on some of the points mentioned in this guide.