
SMITHSONIAN INSTITUTION
Bureau of American Ethnology
Bulletin 179

River Basin Surveys Papers, No. 23
The McNary Reservoir: A Study in Plateau Archeology
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THE McNARY RESERVOIR, A STUDY IN PLATEAU ARCHEOLOGY¹

BY JOEL L. SHINER

ACKNOWLEDGMENTS

In any extended program that involves as much as 4 years' work in the field and laboratory, contributions of time, labor, and ideas will have been made by many persons. It is not possible to extend to each of these persons my gratitude for a job well done, but, for the record, the cooperation and assistance given me at all times were all that I could ask for.

Through all of the period of field and laboratory work, Dr. Frank H. H. Roberts, Jr., was the director of River Basin Surveys, and for most of the period, my direct supervisor. Dr. Roberts was a constant source of guidance for any problem large or small. I wish to acknowledge my gratitude for this and for a most pleasant association.

My closest associate in the fieldwork, and for part of the period, my immediate supervisor, was Douglas Osborne. Dr. Osborne, who later was with the University of Washington and is now director of the Wetherill Mesa Project at Mesa Verde National Park, was of invaluable assistance, and is a real student of the Plateau area. Without his understanding and frequent assistance, work would not have gone on.

It was through the efforts of Dr. L. S. Cressman, chairman of the Department of Anthropology at the University of Oregon, that River Basin Surveys was given office and laboratory space on the campus of that University. Dr. Cressman's long experience in northwestern archeology was of constant assistance to the River Basin Surveys program, for he gave freely of his time and ideas.

Louis R. Caywood, National Park Service archeologist, Region 4, acted in the capacity of liaison between the National Park Service and River Basin Surveys. His friendly and cheerful cooperation in the

¹The material in this report was used in a thesis submitted to the faculty of the Department of Anthropology in partial fulfillment of the requirements for the degree of doctor of philosophy in the Graduate College, University of Arizona. The manuscript was submitted to the River Basin Surveys in February 1955.

face of our constant demands on him for maps, transportation, and information, contributed greatly to the progress of the work.

Numbers of institutions cooperated closely with the River Basin Surveys Program. Not only individuals of the National Park Service, but the organization as a whole was geared for close assistance to the salvage work.

The Corps of Engineers, United States Army, frequently supplied transportation and maps, as well as geological and geographic information. Similar assistance was received from the Bureau of Reclamation.

The University of Oregon provided office and laboratory space for River Basin Surveys, as well as library privileges.

The University of Washington furnished generous grants for field research. These permitted the extension of the work beyond what would otherwise have been possible. The State College of Washington also granted funds for field research, and supplied transportation for field parties.

Dean H. P. Hansen, Oregon State College at Corvallis, made pollen analysis of soil samples. Even though the results were negative, his time and efforts are appreciated.

The volcanic ash at sites 35-UM-5 (Hat Creek) and 35-UM-7 was examined by Dr. Harold Culver, Department of Geology at the State College of Washington. Dr. Culver's special trip and his subsequent report were of great assistance. Dr. C. D. Campbell, State College of Washington, made microscopic and spectrographic analysis of the volcanic ash.

To the many persons who examined, tested, and gave expert opinions on artifacts, my appreciation is hereby extended. The list includes metallurgists, art and textile experts, button collectors, historians, and especially residents in the vicinity of our excavations and surveys.

After the field excavations were finished and the laboratory work was carried to completion, came the writing of the interpretation of the data. My guidance through this critical stage was in the hands of my thesis committee, which was composed of Dr. Emil W. Haury, head of the Department of Anthropology, Dr. Edward Spicer, professor of anthropology, and Dr. Edward B. Danson, assistant professor of anthropology, all of the University of Arizona. The comments, suggestions, and questions contributed by these persons did much to ease the burden of writing. I am especially grateful to Dr. Haury for his assistance in solving technical problems in illustration.

The burden of typing and proofreading fell upon my wife, Maxine Shiner. Without her endless hours of painstaking labor, I can truly say that this thesis would never have been finished.

Permission to use the data gathered by River Basin Surveys investigations as material for this dissertation was generously granted by Dr. Frank H. H. Roberts, Jr., director of River Basin Surveys.

INTRODUCTION

Anthropological research in the Plateau Area of northwestern North America has failed to produce a clear picture of Indian culture. From both the ethnological and archeological viewpoint there have been insufficient research and little synthesis. While ethnographic investigation has permitted certain generalities about Plateau culture, archeological research has not produced any sort of chronology, not even a local sequence. Since Wissler's classification in 1922, which set up a culture area known as the Plateau, very little has been done toward filling in the details that were not available then.

A preponderance of the ethnographic research has been centered in specific geographical regions to the neglect of others. Much of the effort has been expended on detailed problems of almost purely academic interest, while basic problems of time, space, and process have largely been ignored. Archeological research in the Plateau has been limited to a few major excavations, and the time factor has not been considered. These excavations have turned up collections of artifacts but have given no reconstruction of the aboriginal culture. This complaint has been made many times and in many places, but, relatively speaking, the Plateau remains one of the least-known areas in North America. If the fact is considered that thousands of aboriginal habitation sites exist in the area and thousands of relatively unacculturated Indians still survive, it is no exaggeration to state that the Plateau is much in need of anthropological research.

An opportunity to reopen one phase of the anthropological study came with the availability of a significant body of archeological data. These data came from the Smithsonian Institution's River Basin Surveys program of salvage archeology, which began in the Pacific Northwest in 1947, and came to an end in 1952. The intensive program of survey and excavation led to the development of a local sequence in one region and additional information from several other regions within the Plateau. These data should permit generalization about the Plateau during the prehistoric period since time and space dimensions on parts of the material culture are beginning to be understood.

The phrases "Culture Area" and "Plateau Area" have been used again and again, but little has been done to clarify the concepts behind them. This study follows the classification made by Wissler in "The American Indian" and accepts the concepts agreed upon by Wissler

and Kroeber. The idea and reasoning behind such a classification are relatively simple. They stem from what might be called an American revolt against the older methods of collecting. In the old days a museum would exhibit collections of bows, canoes, or arrowheads, e.g., and emphasize the type of artifact but tend to neglect its associations. The teachings of Franz Boas regarding the importance of context were heeded by his students. Ethnological collections began to be made according to areas, and associated artifacts were exhibited together.

Among those most responsible for the Culture Area concept was Clark Wissler (1922), and it was his classification that set up a Plateau Area in addition to a Northwest Coast Area and a Plains Area.

At the onset we called attention to the need for classification in dealing with ethnological and archaeological material. No one has ever gone far without feeling the necessity for this, . . . In setting up the areas for culture we grouped tribes or communities according to more or less common traits. This is classification by similarities. It so happened that tribes having many traits in common tended to cluster, . . . the habitat of a cluster could be defined in geographical terms. Culture Area is a name for such a cluster of communities. [Wissler, 1922, p. 297.]

Wissler stressed environment in delineating culture areas and stated:

Environment does not produce a culture but stabilizes it. Once adapted to an environment, a culture tends to hold fast, to spread in area of adaption rather than move to a new area. [Ibid., p. 372.]

In setting up culture areas, he could have divided North America into hundreds of areas, or only three or four; but he compromised on a reasonable and workable number.

A perusal of the literature of our subject shows it to be customary to divide the two continents into fifteen regions or areas. If desired, most of these can be subdivided, but it will best serve our purpose to deal with a smaller number. Each area designated has natural features peculiar to it and the tribes living in one of these areas have many cultural traits in common. [Ibid., p. 220.]

In making these classifications, he agreed with Kroeber that a Culture Area should involve:

Reasonably uniform culture and some degree of environmental uniformity. [Kroeber, 1939, p. 3.]

With so little to go on, it is remarkable that Wissler could designate the Plateau as a separate area. At the time the classification was made, few data were available. Kroeber did not wholly agree with Wissler as to the character of Plateau Culture, and designated the area as one of mixed influences (Kroeber, 1939, p. 55). He was impressed by an apparent strong influence from the Northwest Coast on the one hand, and from the Plains on the other. Since that time,

however, people have generally considered that in spite of outside influences Plateau culture maintained a "personality" of its own.

Among the recent tendencies in American research is the inquiry into time depths in culture areas. Since data are available on time and space distribution of material culture in the area, it follows that an examination of prehistoric culture in the Plateau would be a reasonable study. Thus, the problem can be posed, "Was the Plateau in prehistoric times a Culture Area, or was it peripheral to another area or areas?" The approach to this problem can be stated briefly. It will be to develop the local sequence in the region in which River Basin Surveys concentrated its work and to expand the picture to the Plateau in general. It involves detailed reporting of the results of River Basin archeology and comparisons with available materials from other sources. From the local sequence and comparisons important conclusions can be drawn.

The procedure is to present a physiographic and ethnographic background for a general picture of the Plateau before going into details. A brief history of significant contributions to Plateau ethnography and archeology is followed by a summary of the part the River Basin Surveys played in its program of research. The discussion must then become specific before summing up and conclusions are reached. The thesis is that the Plateau in prehistoric times was more justifiably a separate culture area than it was in the early historical period with which Wissler was dealing.

Two of the McNary sites, the burial site 45-BN-3 and the pit house village 45-BN-53, were excavated and reported on by Douglas Osborne. The interpretation of these two sites was used by Osborne for his doctoral dissertation that also included a thorough study of the historic period. In view of Osborne's concern with the historic period in the McNary Reservoir, the present study touches lightly on that period. The material culture of the historic period is discussed only in the sense that it is a continuation of what went before.

In the following physical description of the Plateau no exact limits are placed on the area. Exact limits cannot be set because the physical area described is that which corresponds to the cultural Plateau, and the boundaries of Plateau culture were not sharp lines. The consideration of the Plateau Area in the present discussion is mainly directed to that portion which lies within the United States. Investigations, both archeological and ethnological, have been made in Canada, but nearly all of them were made either a long time ago or so recently that they have not yet been published. Thus, while it must be recognized that the Plateau Area extends far north of the Canadian-United States border, little can be done at the present time to describe and analyze the culture of that portion of the Plateau.

PHYSIOGRAPHY OF THE PLATEAU

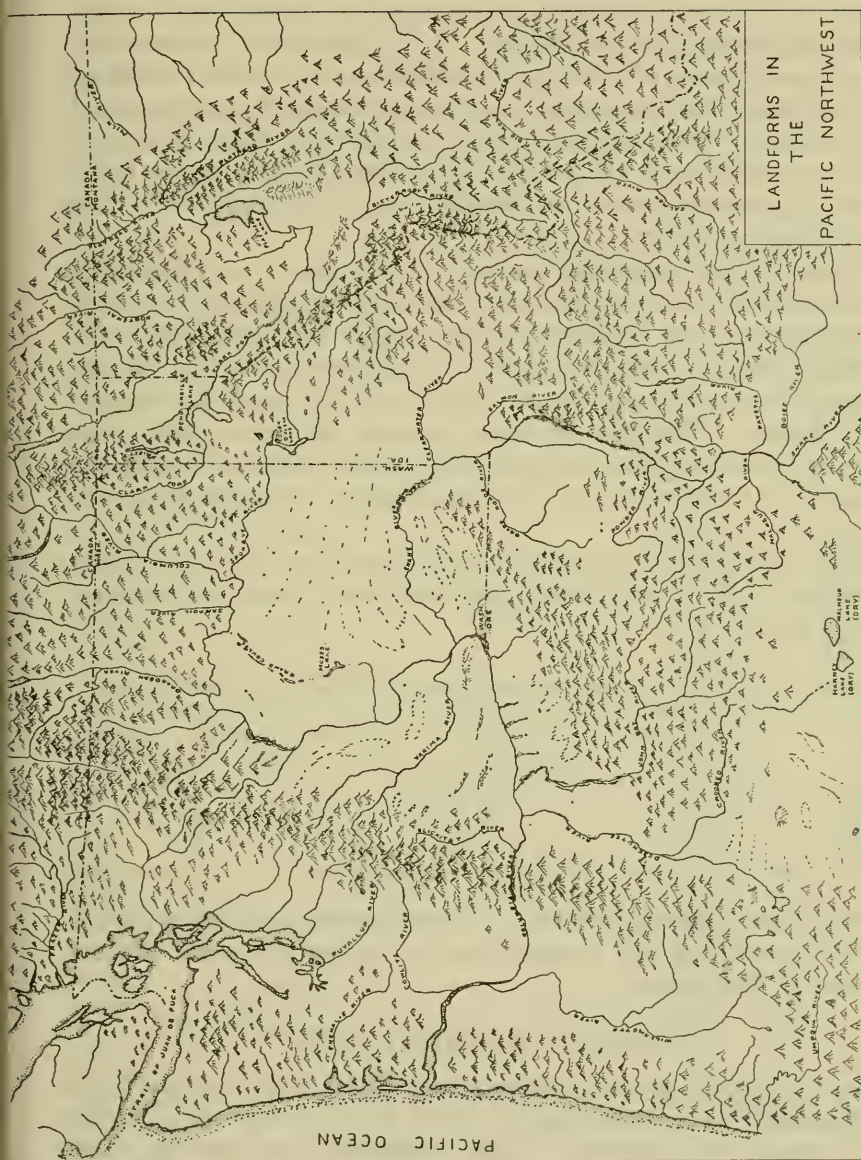
The Plateau is a large basin with mountain ranges on all sides (see map 1). It includes the eastern slopes of the Cascades from the Fraser River south to Crooked River. Eastward, it extends to the edge of the Plains Area which would be the Flathead River in the north and the continental divide in the south. The exact boundaries on the north have never been set. On the south, the Plateau merges into the Northern Great Basin.

Most of the Plateau is characterized by horizontal sheets of basaltic lava piled one on top of the other, the result of Miocene eruptions. Pleistocene and recent eruptions have been numerous, but have not materially changed the landforms. Erosion and deposition have gone on, cutting and filling, carving deep canyons and creating flat alluvial valleys. Still the thick layers of lava dominate the landscape.

The Columbia River, with its major tributary the Snake, is the most important feature in altering the landscape. Throughout the Plateau these two rivers have carved deep canyons along the main courses and side canyons where each tributary joins the main stream. The Columbia is an exotic stream in that it rises in a climate zone different from the Plateau, and carries a tremendous volume of water through a semidesert whose rainfall could never support more than intermittent streams. The Columbia and its tributaries made it possible for man to utilize an area which otherwise might have been comparable to the Great Basin in its aridity and barrenness.

The course of the Columbia River through the Cascades is in the form of a deep gorge with high mountains on both sides. At The Dalles, as one leaves the coastal strip and enters the Plateau, the country changes suddenly, and east of there the trees disappear. The lush vegetation of the gorge gives way to semidesert, and almost true desert conditions. As one proceeds upstream, he can see little change in several hundred miles. The river is entrenched in a basalt-cliff-lined canyon one hundred to one thousand feet below the rolling and broken uplands. Here and there, some miles away from the river, the hills rise to a height capable of intercepting moisture from the Pacific Ocean winds, and thus supporting some vegetation. Otherwise, the canyon and its flanks are barren except for those trees and gardens recently planted by white men. Life is possible in this interior basin only where water is available, and that is limited to those major streams that rise in the mountains that surround the basin.

Not until the river traveler reached the Okanogan highlands on his way upstream, would he notice much change. Here the river leaves the basalt cliffs and winds through rounded hills that feature bunchgrass and pine in a typical park landscape. Farther to the north the vegetation increases gradually to become more forestlike.



MAP 1.—Landforms in the Pacific Northwest.

Much of the land away from the Columbia River and in the basin is arid, windswept, and supports little more than cactus and sagebrush. Major tributaries include the Deschutes, just east of The Dalles, the Yakima nearly opposite the mouth of the Snake, and a number of small streams in the northeast. A division of the Plateau could be made on the basis of aridity. The southern and western portion of the area, except for the mountains, is hot in summer, dry, treeless, and basalt covered. The northeastern part, on the other hand, is forested and dotted with lakes. Malouf has considered designating the latter region a separate culture area (personal communication, 1953). This point is discussed later.

In the hills and mountains that are on all sides of the Plateau the size and number of trees are proportional to the elevation. The lower eastern slopes of the Cascades are more or less in a rain shadow but benefit somewhat from the runoff. On the other hand, the western slopes of the eastern ranges receive sufficient direct rainfall to support heavy forests. The most common trees are jack pine, pitch pine, Douglas fir, and maple in the higher elevations. Cedar and oak dominate much of the forest edges, which quickly give way to the ubiquitous sagebrush.

Mean Fahrenheit temperatures for different parts of the Plateau, as well as annual precipitation, are taken from Ray's charts (Ray, 1936, p. 105).

TABLE 1.—*Temperature and precipitation for different parts of the Plateau*

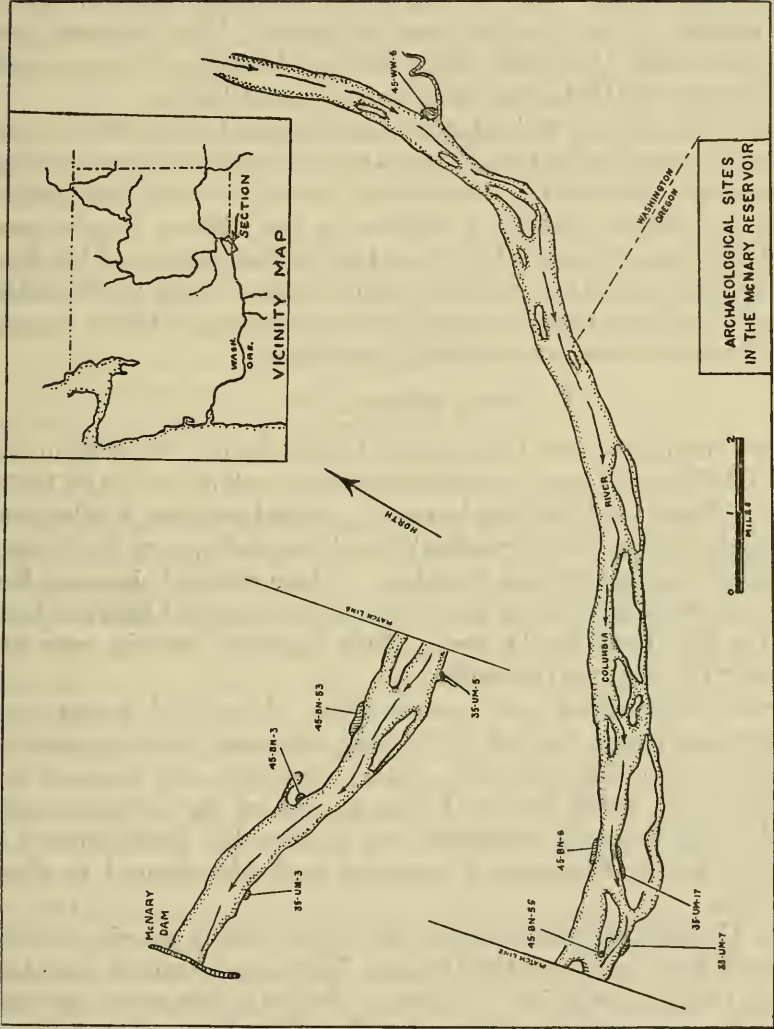
Location	July mean (°F.)	January mean (°F.)	Rainfall (inches)
Kalispel.....	68	23	18
Sanpoil.....	66	22	12
Wenatchi.....	71	25	9
Umatilla.....	75	33	7.5

Absolute maximums are not listed but temperatures exceeding 110° F. are not uncommon and temperatures as low as minus 20° are not unusual in the winter.

PLATEAU ETHNOGRAPHY

Map 2 gives the location and territory of the major Plateau tribes as of about 1825 to 1850, based on work done by Berreman (1937), Ray (1936), and Osborne.² The boundaries may not be exact for many reasons; hunting territories are seldom precise, especially if hunting is not the major economic pursuit. There is also considerable evidence of movement in the period between 1800 and 1850 (Teit,

² See footnote 3, p. 164.



MAP 2.—Archeological sites in the McNary region.

1928). Osborne's plan was to place ethnic boundaries, wherever possible, on the nearest topographic feature, stream, or ridge, to the land indicated by native informants.

Three linguistic stocks are represented in the Plateau. The Sahaptins are in the central portion along the Columbia River and lower Snake River. The Interior Salish are in the northern half of the area, all the way to the Canadian border. The Northern Shoshoneans occupy the Snake River south of Lewiston, Idaho, as well as the mountains that fringe the northern Great Basin.

In order to gain an understanding of aboriginal life in the Plateau, it would be worthwhile to review one or two typical Plateau cultures. Ethnographic material is available on several Sahaptin and Salish tribes, but almost nothing is written on the Plateau Shoshoneans. The Umatilla are more or less typical of the Sahaptins, and the Sampoil are representative of the Interior Salish. Since the Umatilla occupied the lower portion of the McNary Reservoir in 1800 a description of their culture is particularly pertinent.

THE UMATILLA ³

The Umatilla occupied both sides of the Columbia River from just east of Arlington, Oreg., to just west of the mouth of the Walla Walla River. From what has been learned in limited contacts, it is believed that their nearest kin, linguistically and culturally, were the Tenino who lived on their western boundary. Their political ties were few, but very friendly relations and a war alliance existed between them and the Nez Percé to the east. Their "natural" enemies were the Paiute in the desert to the south.

Tribal organization and centralization of political power were undeveloped before the influx of Plains influence, which apparently began between 1750 and 1800. Local autonomy was more or less typical of the whole Plateau before the era of the horse and gun. Local chiefs formerly inherited their position but later achieved it by their deeds. Concepts of ceremony probably changed at about this time.

The Umatilla shaman received his power from a guardian spirit, and both sexes could practice the art. Laymen also sought guardian spirits, usually just prior to puberty. Puberty rites were restricted to the first menarche isolation of girls. They believed that illness could be caused by intrusions, both spirit and material, or by loss of the soul. The corpse was prepared for burial by being washed and dressed, but it was never buried in the village.

³ Most of this material is taken from H. D. Osborne's "Excavations near Umatilla, Oregon; The archeology of the Columbia Intermontane Province." Unpublished Ph. D. dissertation, 1951. (Published in slightly revised form as Bulletin 166 of the Bureau of American Ethnology. See Osborne, 1957.)

War was important, at least after the horse and gun became common. With it was a complex of raids, coups, scalps, and slaves. The bow and arrow which were used in warfare were the principal hunting weapons. Deer, elk, rabbits, antelope, and probably bison were hunted, and both the drive and stalking techniques were used.

The Columbia was one of the main food sources. Chinook salmon were said to be the most important fish and they were taken by spear, nets, traps, and weirs. From the river came also numbers of shellfish. Surely as important as fishing in the economy was the gathering of camas and kouse (tuberous roots), berries, pine nuts, as well as seeds, bark, and sap. Cooking was done by roasting food in an earth oven or by boiling it.

The Umatilla are said to have had dugout canoes and rafts. Their houses were normally multifamily dwellings 60 feet long and 16 feet wide. These were constructed of poles and mats over a shallow excavation. Conical semisubterranean lodges were also used, as well as sweat lodges and drying racks for fish.

Other traits listed include armor, drums, flutes, whistles, pipes, outdoor sports, and a first salmon ceremony.

THE SANPOIL⁴

The people of this group shared a language and culture but were not a political unit. The 1,200 to 1,300 Sanpoil lived in autonomous villages along the Columbia in northeastern Washington. Their territory of some 16,000 square miles included about 85 miles of the Columbia as well as the Sanpoil River drainage. Much of their river frontage that included all their villages is now under the pool of Grand Coulee Dam.

Theirs was a classless, democratic society with no slaves. All married men could vote and claim citizenship. Anyone was eligible for chieftainship, a position of advisory powers only. Since the village was the political unit there was no real tribal organization. There was no unity in war, for the Sanpoil did not make war. Pacifism was stressed to the point that even enemy raids were not retaliated.

The permanent habitations were along the Columbia River, which in this area is still a desert. Just north of the river there were forested hills, but they were used only for hunting. It was the river that provided food, firewood (driftwood), water, and transportation. Shellfish also were used, as well as plants that grew along the banks of the river.

Fishing began in May and lasted until about the end of November. The most important species was the Chinook salmon but others were readily taken and dried. Several methods of fishing were employed;

⁴ Material taken from Ray (1932).

the large traps were probably the most important. Seines, dip nets, and spears saw considerable use, particularly in conjunction with canoe fishing. Large quantities of fish were dried on racks and stored for use during the winter.

In the winter, hunting was the only practical economic pursuit, but it too was carried on throughout the rest of the year. Hunting parties sought to drive the game, which was killed with the bow and arrow. Deer were hunted for the most part, but antelope, elk, bear, and rabbits were important food animals.

The spring and summer months were important ones for gathering, and large quantities of many kinds of plants were collected. Camas was particularly favored, with bitterroot, serviceberry, chokeberry, and sunflower seeds filling in. Prickly pears and pine nuts were gathered in season. The implements used were digging sticks, baskets, and carrying bags. During the winter when fishing and gathering were impractical much time was spent in weaving baskets and manufacturing tools.

Most of the houses were of two types: the summer mat house, which was shallow and open to ventilation, and the winter lodge, which was semisubterranean and more solidly built. Summer clothing was rather scanty. The men wore a breechclout and little else, not even sandals. The women usually wore a woven poncho or often only a breechclout. Winter apparel included the addition of fur robes, moccasins, fur leggings, and blankets. Snowshoes were known and used. Both men and women painted their faces and braided their hair on occasion.

A number of taboos were observed by the parents before a child was born. Soon after birth the child was placed on a cradleboard and seldom removed until he began to walk. The usual isolation ceremony was observed by girls at puberty, while the boys performed exercises such as swimming and running without any real ceremony. After death the body was immediately removed from the house and was buried as soon as possible. A talus slope was usually chosen for burial. Guardian spirits were sought by all young boys and by some of the girls. They were sent out at night at an early age in order to meet their spirit. Both men and women could become shamans. They were well paid for curing but had to perform certain public duties such as conducting funerals.

The Sanpoil had pipes, dice, the sweat lodge, and wooden mortars. The usual household might contain 10 to 20 persons.

ETHNOGRAPHIC RESEARCH

Two studies by Verne F. Ray (1936 and 1939) give the most comprehensive treatment of tribal distribution in the Plateau. These are "Native Villages and Groupings of the Columbia Basin," and

"Cultural Relations in the Plateau of Northwestern America." Ray is quick to point out that the word "tribe" does not apply to the Plateau until sometime after 1750 or 1800 because of the widespread local autonomy. The boundaries shown on map 2 thus are more dialectical than political. Although there are hints of movement and perhaps migration in the Plateau just prior to 1800 they have not been worked out (Teit, 1928, p. 98).

The groupings shown in map 2 are concerned with two languages, Sahaptin and Interior Salish. The following are Sahaptin groups: Tenino, Klickitat, Umatilla, Cayuse, Nez Percé, Yakima, Wallula, Wanapam, Kittitas, and Palus. The Interior Salish include: Wenatchee, Columbia, Chelan, Methow, Okanogan, Nespelem and Sanpoil, Spokane, Coeur D'Alene, Colville, Lakes, and Kalispel.

At the present time there are not sufficient data to show significant differences between one group and the next or between Sahaptin and Salish. A few generalities can be made, however. The Sahaptins apparently received influence from the Plains Area earlier and were perhaps more receptive to it. The Umatilla were close allies to the Nez Percé who in turn were in touch with such Plains tribes as the Blackfoot. Through such contacts the Sahaptins learned of horses, guns, tribal organization, war honors, and other typical traits of the Plains Area. The Salish, without such direct contact, remained what might be termed conservative. They were slower and more selective in their borrowing. There are probably many other differences. There is reason to believe that the Salish were better boatmen, there being more water in the northeastern Plateau. Such things as Bear worship, exposure of the dead, grooved mauls, and "potato masher" pestles seem to be confined to the Salish tribes, just as head deformation, funerary houses, stone fishing weights, and stone fetishes seem to be more southerly centered. All of these traits could be studied fruitfully. The distribution charts (see figures 31 to 40) cover only a few sites, for only a few site reports have been published in the Plateau.

Scientific research in the Plateau began with the Lewis and Clark expedition of 1800 to 1806 (Thwaites, 1904-5, vol. 3). Their journals are full of ethnographic observations and factual reporting that showed these explorers to be far ahead of their time. Lewis and Clark saw only the southern part of the Plateau but recorded a most valuable account of what they witnessed.

Robert Stuart kept a diary of his travels but was not given to recording many details. He may have been a keen observer but left little in writing to preserve what he saw in 1812. A full account on almost all parts of the Plateau as of 1832 can be found in Parker's travelog (Parker, 1845). Despite the fact that he saw the Indians through the eyes of a missionary intent on conversion, he gave excellent

descriptions of clothing, houses, ornaments, economy, and social practices.

The journals of Alexander Ross cover a period between 1818 and 1828 (Ross, 1849). Certain parts of his material are valuable but they cover only a limited area.

There are many other traveler's accounts that can yield specific information but none to compare with Lewis and Clak (Thwaites, 1904-5) or Parker (1845).

It was not until the turn of the century that work in the Plateau was begun by trained anthropologists. The main contributions in archeology were by Harlan I. Smith (1899) in Southern British Columbia and the Yakima Valley (Smith, 1910); Herbert Krieger (1927 and 1928) in the middle Columbia River; Strong, Schenck and Steward (1930) at The Dalles; and Collier, Hudson, and Ford (1942) on the upper Columbia River. Cressman (1950) did some work in the Plateau, but the majority of his research has been in the Northern Great Basin. The work of each of these men will be used for comparative material.

Ethnological research in the Plateau has been carried on to a slightly greater extent. The earliest investigations were ethnographic and dealt with a single group. Later work was of a comparative nature and in some cases made contributions to anthropological theory as well as fact.

The first major ethnographic report published on the Plateau was by James Teit (1900) and consisted of a study of the Interior Salish. It was followed shortly by Spinden's (1908) excellent monograph on the Nez Percé. Leslie Spier and Edward Sapir (1930) studied the Wishram near The Dalles about the same time that Verne Ray (1932) was working among the Sanpoil and Nespelem in northeastern Washington. Linguistic studies have been made by Melville Jacobs (1931) for the Sahaptins, Sapir (1909) for the Wishram, and Gladys Reichard (1938, 1945) for the Interior Salish.

Minor contributions have been made by a number of authors. There is no intention of slighting the works of the many contributors to Plateau ethnography and archeology, but special mention can be made of only those whose research has had fairly broad coverage of the area, or is pertinent to this study. Joel Berreman (1937) published a study on the distribution of tribes in Oregon, and Walter Cline (1938) published a study of the Southern Okanogan.

The most active ethnologist in the Plateau has been Ray. His work and major publications have been listed earlier but it is worth mentioning that he has contributed much to the ethnographic understanding of the Plateau Area. His "Cultural Relations in the Plateau..." is the only work of its kind on the area.

THE RIVER BASIN SURVEYS PROGRAM

About the time that it was clear that World War II would come to a successful conclusion, plans were made by the Federal Government for a nationwide program of flood control and irrigation. The realization that these plans would be carried out caused some concern among historians, archeologists, and paleontologists, in that the work would inundate vast areas in which little or no scientific investigation had been undertaken.

In 1945, one of the first steps was taken to remedy the situation. Members of the Committee on Basic Needs in American Archeology, of the National Research Council, and members of the Smithsonian Institution staff met and discussed plans for initiating a program of salvage. First, a Committee for the Recovery of Archeological Remains was formed to study the problem. Later, agreements were reached between the Smithsonian Institution, the National Park Service, the Corps of Engineers, and the Bureau of Reclamation for a salvage program.

The National Park Service is the agency officially responsible for the preservation of historical and archeological sites; it therefore became the responsible agency in the salvage program. In October 1945, an agreement was reached between the Park Service and the Smithsonian Institution, whereby the latter would undertake scientific responsibility for the work done. The Park Service would, under the agreement, advise the Smithsonian Institution of Federal projects which might involve salvage, and in turn advise the agency responsible for the construction that archeological and/or paleontological sites were threatened if such were the case.

River Basin Surveys was actually organized in the fall of 1945, with Dr. Frank H. H. Roberts, Jr., as director. It was set up as a unit of the Bureau of American Ethnology. In 1946 the Missouri River Basin established the first field office at Lincoln, Nebr. In 1947 field headquarters were opened at Eugene, Oreg., for the Pacific Coast region, and Dr. Philip Drucker was appointed director.

Initial archeological surveys were begun in the Pacific Coast region during the summer of 1947. One of the first surveys accomplished was that of the McNary Reservoir on the Columbia River (see map 2). Clarence Smith and Franklin Fenenga did the fieldwork and reported 120 archeological sites within the pool area. They recommended that 22 or more of these should be given priority for excavation. Numbers of reservoirs were surveyed in subsequent years, and reports on the results were mimeographed for distribution to cooperating agencies and institutions.

During the summer of 1948, excavations were initiated at three sites. At site 45-BN-3 (Berrian's Island), a burial ground was almost com-

pletely excavated; at site 45-BN-53, a pit house village was partially excavated; and at site 35-UM-8, an early occupation site was tested. In 1949, site 35-UM-8 received additional testing, and at site 35-UM-7 (Cold Springs), a pit house and midden area were partially excavated. In 1950, two pit house villages were partially excavated. These were 45-BN-6 and 35-UM-17 (Techumtas Island). In 1951 an early site 35-UM-5 (Hat Creek) and a late site 45-WW-6 (Wallula) were each partially excavated. In 1952 further testing was done at sites 35-UM-7 and 35-UM-8. Sites 35-UM-3, 35-UM-10, and 45-BN-55 were scenes of minor excavations.

After each summer in the field, the excavated materials and data were taken to the laboratory in Eugene for study. As soon as possible, reports were written on the results of each excavation. These reports were little more than a factual account of the material recovered with an attempt to relate it to other cultures in time and space. Because of their limited distribution, illustrations were kept at a minimum.

Techniques in the field were kept as flexible as possible and only a few were standardized. One of these was the grid system. A site was staked with sections of reinforcing iron with wooden caps which could be lettered. A single row of stakes 10 feet apart were set across a site in a north-south direction and numbered consecutively from south to north. Facing north for directions right and left, rows of stakes parallel to the first row were given the additional designation R or L. The first stake to the right of stake 1 would be 1-R-1. The second stake to the left of stake 3 would be 3-L-2, and so forth. Since engineering surveying equipment was provided, and it was calibrated in feet and tenths of feet, these units were used in the field.

Artifact locations were recorded in three dimensions, with horizontal measurements taken from the nearest stake. Vertical measurements were taken from both the surface of the ground and by alidade. Animal bones and other specimens were normally recorded by arbitrary levels within a grid square.

Sites were mapped and contoured with excavations, houses, and other features shown. It was not deemed necessary to relate each map to sea level but only to a single benchmark arbitrarily chosen within the site. Each house was excavated as a unit, and was controlled by an interior grid system of 5-foot squares. Normally, a house was trenched from north to south to determine what condition the floor or floors were in. Further excavation could be made by parallel trenches or by quartering. A few houses were excavated by horizontal plane sections 1 foot apart so as to distinguish the floor from the fill. It was not feasible to follow floors, for they were far too thin and nebulous. It proved to be easier to find them in profile by the changes in soil color.

It was seldom possible to do more than sample a site. Funds were limited, and there were dozens of sites to excavate before the water began to rise behind the McNary Dam. Thus, four or five houses were usually excavated in a village of several hundred dwellings, and three or four tests were made in the midden. The only site that was extensively excavated was 45-BN-3, a burial site with a remarkable array of material culture.

EXCAVATIONS IN THE McNARY RESERVOIR

During the extensive surveys and excavations in the McNary Reservoir, River Basin Surveys found no evidence of the well-known "Early Man" tools such as have been related to Folsom, Yuma, and other cultures. No fossils or remains of extinct animals were recognized in association with cultural material.

The earliest cultural evidence comes from two sites, 35-UM-5 (Hat Creek) and 35-UM-3. The former, which is situated on the east bank of Hat Creek near the Columbia, was extensively excavated. Site 35-UM-3 was only tested in several areas. In order to determine the relative age of the culture represented at the Hat Creek site, the geological stratigraphy must be considered. At both 35-UM-5 and 35-UM-3 all of the cultural materials were found beneath a thick (1 to 2 feet) mantle of pure volcanic ash. The continuous layer of ash was unbroken except for small rodent holes, and formed an effective isolating mantle for the cultural material beneath it (pl. 30, b).

Disappointingly little is known of the origin of the volcanic ash. Efforts to tie it definitely to a specific volcano have not succeeded, mainly because there are too many of them. Williams notes:

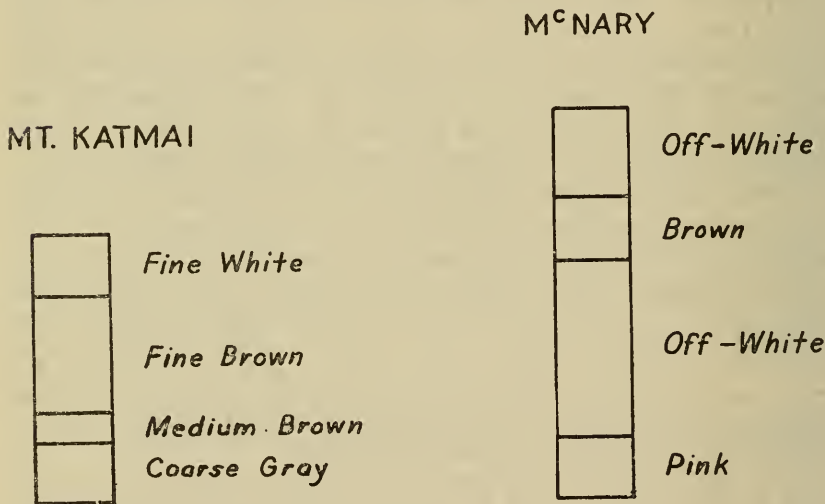
Too much space would be occupied by listing the signs of postglacial volcanic activity elsewhere along the crest of the Cascades, for there are youthful flows and cinder cones by the score. [Williams, 1948, p. 51.]

For an idea of what takes place in volcanic eruptions of this sort, consider the example of Mount Katmai in Alaska which erupted violently in 1912 (Martin, 1913). This was one of the most dramatic explosions known to history and occurred in three stages, one on the sixth of June and two on the seventh. The result of the explosions was something like that which took place when Mount Mazama (Crater Lake) blew apart. Several cubic miles of rock were pulverized to finely divided dust and were blown high into the air. At the town of Kodiak, 100 miles from the mountain, darkness lasted 60 hours. Fifteen miles from the volcano the ash was 5 feet deep, 118 miles away it was $3\frac{1}{2}$ inches deep, and some of it drifted 900 miles to the east.

On the island of Kodiak, 50 to 100 miles east of Katmai, brush and trees were buried, but a high percentage came up through the ash and survived. Marine life apparently suffered more than did the

land dwellers, for fish and shellfish died in great numbers. A few birds and animals died on Kodiak. Islanders themselves took refuge in houses, but there were many cases of sore throats and eyes. Two or three men died from the effects. For several years there was a shortage of game fish, but conditions eventually returned to normal.

The story of the eruption of Mount Katmai has interesting parallels with what must have taken place in the McNary region. At least two villages or camping spots were buried under 1 to 1½ feet of ash. The pattern of the ash deposit itself is remarkably similar to that at various places east of Mount Katmai. Martin (1913) illustrated a chart indicating the depth and composition of the Katmai ash at several stations east of the mountain. The column at Middle Bay, Alaska, 101 miles east of Mount Katmai was 11½ inches high, and the cross section is diagrammed below. The McNary ash was 171½ inches high, and the pattern is depicted below.



The McNary pattern suggests that either the ash there was closer to the source of its eruption than 101 miles or that the eruption that deposited it was of greater intensity or duration. The writer is inclined to believe that there were two major explosions in the same volcano, and that they were a matter of a few days or perhaps a week apart. For example, there is a repetitive pattern in the McNary ash: dark-light, dark-light; furthermore, between the lower white layer and the brown layer, there is a slight admixture of sand indicating perhaps some wind deposition between ash falls.

Other than a physical description, little can be said of the McNary pumicite. Its existence is ignored by the geological literature, and inquiries made at departments of geology at northwestern universities

yielded no information. In 1951, Dr. Harold Culver, of the Department of Geology at the State College of Washington, examined the deposits at Hat Creek and other exposures in the vicinity. He concurred in the opinion that all of the exposures were homologous, and that the source lay in the Cascade Mountains about 100 miles to the west. The volcanic source could not have been much closer than 100 miles, for the ash itself is composed entirely of minute particles. Were the source closer, the ash would have contained larger particles including pumice. The fact that the ash was airborne over a considerable distance was verified by Dr. Culver.

Dr. Culver found no basis on which the precise time of the ash fall could be determined. He postulated a postglacial age and late rather than early postglacial. Examination of the ash itself was made by Dr. C. D. Campbell, also of the State College of Washington. He described the material as very fine volcanic dust with an index refraction of 1.53, indicating andesitic rather than rhyolitic affinities. Part of the material proved to be 90 percent glass with no incipient crystallization. Another part of the column showed 50 percent crystalline material, in part plagioclase feldspar.

Estimates, all admittedly guesses, would place the time of the ash deposition at between 2,000 and 5,000 years ago. Without going into detail, it is the writer's opinion that it would be difficult, indeed, from a cultural perspective, to account for as much as 5,000 years since the eruption. On the other hand, the changes in material culture and depth of deposit seem to require no small amount of time. It is dangerous perhaps to speculate with so little evidence, but the cultural data would tend to support a figure closer to 2,000 rather than 5,000.

Recognition of the layer of volcanic dust as a single event permits the relative placement of several of the McNary sites in time. Sites 35-UM-3 and 35-UM-5 (Hat Creek) are stratigraphically earlier than the deposition; sites 35-UM-7 (Cold Springs), 35-UM-8, and 45-BN-6 are later, since the ash stratum underlies the occupational remains.

35-UM-5 (HAT CREEK)

On the south bank of the Columbia about 6 miles east of McNary Dam, Hat Creek empties into the river. The creek is named for Hat Rock, a tall erosional remnant of columnar basalt that looks like an old beaver hat. This landmark was seen by Lewis and Clark and noted on their map by the name "Hat Rock."

The site is located on both sides of Hat Creek, a little distance from the river proper. The principal exposure, on the east bank of the creek, was 50 yards from the river; the one on the west bank was 100

yards from it. Both exposures were fairly high on the steep hillsides, and were 40 or 50 feet above the normal river level. Extensive testing of the west bank uncovered cultural material beneath the pumicite, but the pumicite stratum itself had been almost decimated by rodent burrowing. Since nearly ideal conditions were found on the opposite bank, the material on the west bank may be ignored.

The exposure of the volcanic ash on the east bank was merely 6 or 8 feet of badly slumped material. Initial excavation, after the establishment of a grid pattern for horizontal control, was in the form of a broadface 10 feet wide. It was soon extended to 30 feet after cultural materials began to appear under the volcanic ash (pl. 31, *a*).

The ash stratum sloped slightly toward the river and slightly more toward the creek, thus dipping toward the northwest at about 3 degrees. Its mean thickness in the excavated area was 17 inches, but a few hundred yards up the creek, in a small depression, it had accumulated to a thickness of 7 feet. The later deposit was due to wind redistribution. Beneath the ash was a stratum of sandy loess soil thinly scattered with broken rock, charcoal, animal bones, and an occasional hearth. This midden, averaging 3 feet in depth, rested on a hardpan of undetermined thickness. Some charcoal flecks and bone fragments were embedded in the hardpan, but below the first tenth of a foot, it was sterile.

Recent erosion has eliminated part of the site, the extent of which is not known. As excavation proceeded and the broadface advanced some 20 feet, the thickness of the overburden increased to serious proportions, 5 and more feet of sterile coarse sand. The eastern extremity of the site was not reached.

Primary consideration was given to the maintenance of stratigraphic controls. Every effort was made to be absolutely certain that the excavated material was unquestionably older than the ash stratum. This involved a careful inspection of the ash stratum to detect any penetration before the midden beneath it was excavated. By using a step pattern of excavation, 1 foot wide along the length of each 10-foot square, the overburden was removed. The ash along a 10-foot horizontal strip was examined and then removed to expose the midden. This procedure was repeated as each section of the broadface advanced. No penetrations other than small rodent burrows were found.

The coarse sand overburden was tested repeatedly by screening and found to be absolutely sterile of cultural materials. The coarse sand rested conformably upon the ash, so that there was no possibility of the cultural materials having fallen down through the rodent burrows.

If the sheer volume of burned bones, flakes, and firecracked rock

was not proof enough, several artifacts, hammers and choppers, were found to be considerably larger than the rodent holes. Furthermore, hearths composed of rocks and mussel shells were found in situ.

It was realized that the Hat Creek site was important to the regional prehistory, especially since it was the first clear example of pre-ash occupation. Therefore, it was decided that as much as possible would be saved for laboratory analysis. After the slumped face was cleared, every bit of the midden material was screened through a one-fourth-inch mesh hardware cloth. Every flake, fragment of bone, and broken rock was saved. Arbitrary 1-foot levels were maintained for bones and flakes, with the ash stratum as the datum plane. Every artifact recovered during the excavation was recorded in three dimensions to the nearest one-tenth of a foot. Closer inspection in the laboratory turned up several small artifact fragments among the flakes. These might well have been overlooked had the flakes not been saved.

Analysis of the three levels of flakes showed that there was no significant variation in materials from one level to the next. A level between 3 and 4 feet below the ash included some of the sterile hardpan, and for that reason is not included here. In numbers the flakes were highest in the middle level and lowest in the upper level. The same was true of the artifacts. Perhaps the intensity of occupation was dwindling before the volcanic ash fell.

If there was any change in the material culture during the occupation at Hat Creek, it did not show up in the relative position of the artifacts. The similar proportions of stone materials also bear this out. Therefore all of the cultural material is treated as though it were the result of a single occupation.

The following tabulation shows the distribution of flakes by materials, and is based on 3,000 flakes:

	<i>Percent</i>
Basalt	52.7
Crypto-crystalline.....	30.9
Quartzite.....	9.8
Red ocher.....	6.1
Obsidian4

ARCHITECTURE

There was no evidence of habitations at the Hat Creek site. If the small fireplaces found there had been associated with dwellings, the latter left no traces. Since the depth of the midden suggests an occupation of some duration, some sort of shelters must have been built. It is probable that such shelters were made of brush or mats, and that they were light enough to stand without large posts.

MATERIAL CULTURE

The Hat Creek site did not yield a large sample of material culture, but nevertheless the recovered materials permit certain conclusions. In addition to a certain amount of noncultural data, some 97 artifacts were recovered from beneath the volcanic ash.

Most frequent among the artifacts recovered were projectile points and fragments thereof. Twelve of these were either complete or lacked only the tip of the point, so that their shape could be determined with some accuracy (pl. 32, *b*). Of these 12 artifacts 10 were of a simple "leaf" shape, with no notches, barbs, or shoulders. They were oval in outline with convex bases. Two traits of manufacture were shown. Several of the projectile points were markedly plano-convex in cross section, and several had deliberately serrated edges. Some specimens had one or both traits, some had neither. The specimens that could be measured varied from 39 to 51 mm. in length and from 17 to 24 mm. in width.

Another variety of projectile point was represented by two specimens. The only noticeable difference between this and the preceding type lay in the base, which is concave instead of convex. Complete specimens of the second type were not recovered, but there appeared to be a close similarity in size and general appearance.

The 33 fragmental projectile points bore out the conclusions made earlier, that no notching or shouldering was apparent and that plano-convexity and serration were common. Workmanship throughout was considered excellent; the people who made these artifacts knew what they were doing, and excelled in flaking several kinds of material. Twenty of the points and fragments were of basalt, and the rest were of local quartz family rocks, jasper, agate, or chert. Obsidian, which became popular at a later time, was absent.

One fragment, tentatively classified as part of a projectile point, merits some further discussion. It was a midsection, of basalt, but wider and thicker than the other fragments. When complete, it would have been larger than the other projectile points, possibly much larger. The flaking was not as well done as the rest of the points, and there is reason to believe that it may have been a knife. Large basalt knives were typical of the early occupation of the Cold Springs site, stratigraphically later than the Hat Creek culture (pl. 35, *b*). They were associated there with projectile points identical with those from beneath the ash at Hat Creek.

Since every flake recovered from the Hat Creek site was brought back to the laboratory, a large number of used flakes were counted. The majority of these were primary flakes of jasper, basalt, and chert that had been used for cutting or scraping. Usually, one edge showed

a row of tiny flake scars, the result of having been used. The scrapers that had been prepared before use, on the other hand, showed larger and longer flakes, as well as some intentional shaping. Altogether, only 6 of the 27 scrapers appeared to have been prepared for use. Size and shape seemed to make little difference to the inhabitants of the site, and the materials used were those available in the river gravel.

Tools used for hammering and chopping were made from river-worn cobbles, for the most part (pl. 33, *b*). The hammers (5 specimens) were unaltered cobbles that showed the scars and abrasions of use but no intentional shaping. The chopping tools can be divided into three types. One of these (13 specimens) was the ovoid river cobble from which 5 to 15 large flakes had been struck. It produced a ragged but effective cutting edge. Another type (5 specimens) was a heavy spall struck from a river-worn cobble and crudely chipped to a cutting edge. A third type (4 specimens) was made from an exfoliated basalt slab which had a wedge-shaped cross section.

Characteristically, all of the heavy tools left something to be desired in both the selection of stones and in the chipping. The cobbles were seldom symmetrical and would seem to fit the hand poorly. The chipping was crude, for the flakes removed were fewer and larger than would be characteristic of later workmanship. This does not mean that each hammer and chopper in the McNary region can be assigned readily to a pre- or post-ash date by inspection, but, as a group, those tools from beneath the volcanic ash are distinguished by their crudeness.

A total of seven bone artifacts came from beneath the volcanic ash. Two of these were slender splinters, probably from a deer long bone, that showed some wear and polish at the point and along the shaft (pl. 33, *a*). Little or no effort had been expended in improving their appearance or utility. Two beads of bone had been fashioned from bird tibia (pl. 33, *a*). One was just under 2 cm. long and 7 mm. in diameter. The other was 3.5 cm. long and 4 mm. in diameter. Both had been decorated by incising a few transverse lines on the surface. Two small sections, broken out of the shaft of a deer long bone, had been incised with deep parallel lines. The complete artifact type is not known but must have been ornamental. A final piece of bone is not actually an artifact but a residual fragment. A section of long bone had been deeply grooved and snapped off. What was recovered was the waste of the making of some unknown artifact.

The simplicity of the bone tools and ornaments seems to agree with that of the other artifacts at the Hat Creek site. Only the projectile points are really objects of craftsmanship. It appears that, except for projectile points, almost no effort at all was made to improve or finish an artifact.

ECONOMY

The animal bones from the Hat Creek site have not been thoroughly analyzed. A preliminary analysis showed that, numerically speaking, rabbits were most frequently killed, then deer, followed by salmon. Bird bones were present in the midden, but their fragmentary condition did not permit an immediate identification as to species. Almost all the animal bones were broken and a great many of them were partially burned. The proportion of fish bones found at the Hat Creek site was smaller than that at any other site excavated in the McNary region. As will be shown in the description of material culture, specialized fishing was apparently not developed at the Hat Creek site. The relative scarcity of fish bones bears out this observation.

Ethnographic reports tell of fish being taken with clubs, with lances, and with bow and arrow. It is quite possible that techniques of this sort were employed during the occupation at Hat Creek since no net weights were recovered.

SITE 35-UM-3

About 2 miles west and downstream from Hat Creek on the same (Oregon) side of the river is site 35-UM-3. It is situated on a hillside that slopes toward the river and is 30 or 40 feet above the normal river level. The site itself is in and around a large sand blowout, some 150 feet long and 75 feet wide (pl. 31, *a*). In the center of the blowout there was an erosional remnant of midden capped with a thick stratum of volcanic ash that in turn was capped with a stratum of sandy loess.

The volcanic ash is part of the same ashfall that is present at Hat Creek and Cold Springs. At 35-UM-3 it was undisturbed except for occasional rodent burrowing. The sand over the ash was sterile and contained no habitational debris. Beneath the ash there were some signs of occupation, but it could hardly be called a midden. The animal bones and flakes were thinly scattered through some 2½ feet of sandy deposit. On both sides of the erosional remnant the wind had blown out about 6 or 8 feet of sand and ash. The surface of the blowout was paved with flakes, broken rock, mussel shells and occasionally an artifact. It cannot be proven, but it is suspected that the cultural debris came from beneath the volcanic ash.

Test excavations beneath the ash recovered a few flakes, a spall flake scraper or knife, and a basal section of a projectile point. The latter, leaf shaped with a convex base, would fit easily into the collection from Hat Creek. The test excavation was not large, and a very small sample was recovered, but it demonstrated that the situation at Hat Creek was not unique. On the surface of the blowout a small frag-

ment of bone was found. It was incised in exactly the same way as were the two fragments from the Hat Creek site. The few chopping tools from the surface were also similar but contemporaneity cannot be proved.

SITE 35-UM-7 (COLD SPRINGS)

The Cold Springs site (35-UM-7) lies about 3 miles east and upstream from Hat Creek. Situated on the south bank of the river, the site can be detected by its numbers of pit-house depressions, mussel-shell fragments, and broken rock on the surface.

The site occupies a terrace which was not inundated except by the highest floods, such as occurred in 1903 and 1948 (pl. 34, *b*). Its composition is for the most part fine silt and wind-blown sand, although no small part of the volume is made up of the midden debris of man, shells, and broken rocks. This terrace is rightly 150 feet wide and 1,500 feet long. The midden material, where tested, averaged some 5 to 5½ feet in depth.

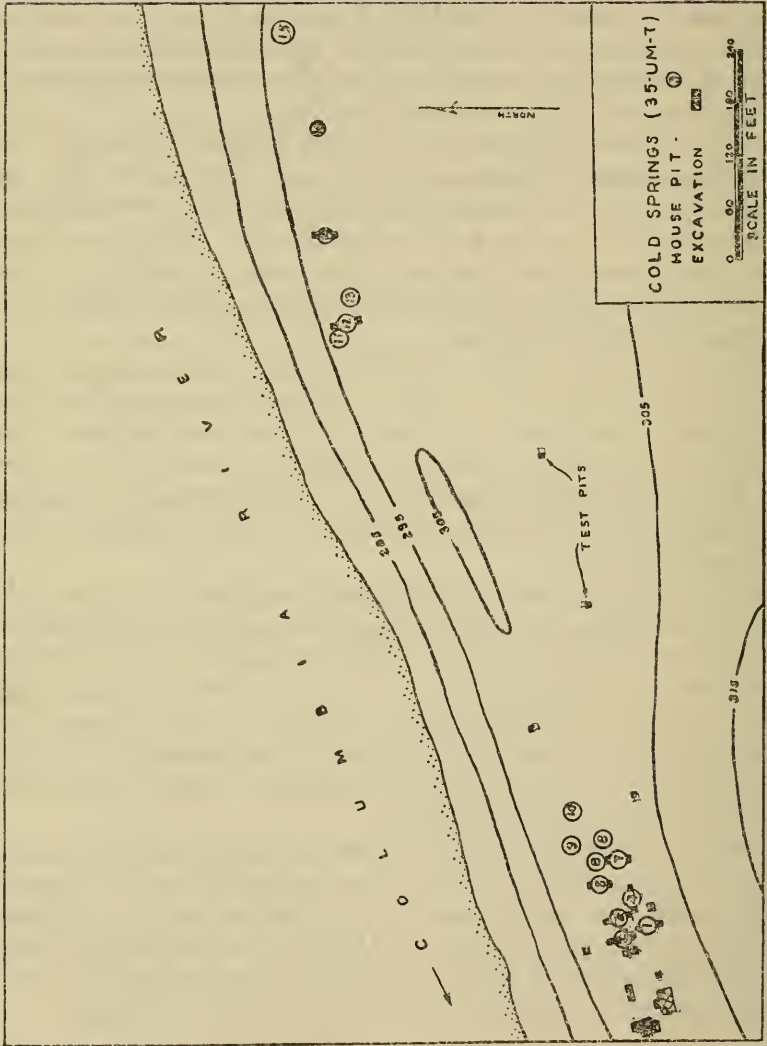
Beneath the midden, but not altogether in stratigraphic conformity with it, lay a stratum of volcanic ash. This was the same stratum that was exposed at Hat Creek, and that covered the midden there. Although there had been some slight erosion of the ash at Cold Springs, and it had been severely burrowed through by rodents, it formed an excellent point of orientation in relating the Cold Springs artifacts to those from Hat Creek.

Another stratum, somewhat weakly developed in certain parts of the site, was composed of shells of the fresh-water mussel (*Margaritifera margaritifera falcata* (Gould)). This stratum was more or less continuous over most of the site in the form of contiguous lenses and lay between 2 and 3 feet below the surface (pl. 34, *a*). Its thickness varied from about 1 inch to nearly 1 foot, and it was made up of tightly packed shells, some burned and some unburned. Practically nothing else was to be found in the shell layer.

Since the Cold Springs site was excavated prior to the excavation of the Hat Creek site, the Cold Springs materials were reexamined. In 1952, additional testing was done at Cold Springs, and a larger sample of artifacts was recovered. Altogether, some 2,500 man hours were spent in excavating the site, but only a small collection of artifacts was recovered. Less than 200 specimens were cataloged.

ARCHITECTURE

No traces of dwellings had been found at the early sites 35-UM-5 (Hat Creek) or 35-UM-3. It was at the Cold Springs site that the first evidence of architecture was found. Houses in the McNary Reservoir region are poorly preserved, and not much information can be recovered from their excavation. The more recent houses



MAP 3.—Cold Springs (35-UM-7).

showed a surface depression that was saucer shaped. The older houses often had no surface indications at all. Most of the dwellings in the region had traces of floors that could be picked up only near the center of the houses. The floor level, when present, was found as a charcoal and ash stain that did not extend to the edges of the house. (Map 3.)

House pit 3, at the Cold Springs site, showed a depression on the surface of the ground and was carefully excavated (fig. 25). Although there was little direct evidence of it, there were apparently two or more occupations of the house site.

During the excavation, no trace of a floor was found until a depth of 3 feet was reached. At first it was believed that the deep floor belonged to the surface depression. However, the contour of the depression plotted before excavation did not match the contour of the deep floor. The floor center proved to be more than 7 feet southwest of the center of the depression. Furthermore, artifacts found just above the deep floor were of a type associated with the earliest occupation of the site; they included two of the large basalt knives. It follows therefore, that the depression that plainly showed on the surface belonged to a house that had been occupied at a later time. Another reason for this conclusion was that the thick layer of discarded mussel shells that blanketed this portion of the site was not present in the fill of the house pit. This showed that the house had been occupied during or after the period in which the shells accumulated. Since an average of about 3 feet of midden had accumulated before the deposition of the shells, the shell layer was stratigraphically later than the early artifact complex found both in the midden and in the earliest house. In brief, the house was occupied at a time when the earliest material culture at the site was being used. Later, the thick layer of shells accumulated. The final occupation of the house came after the shells had accumulated, and the occupants apparently cleaned the trash out of the house pit before living in it.

Time did not permit the full excavation of the deep floor but a good profile was obtained. It showed the house to be bowl shaped, sloping up toward the surface with no vertical walls. No features were observed. This negative evidence that was to be repeated in nearly every house excavated in the region was actually of some significance. It limited the type of superstructure to something that may be visualized. Obviously, there was no heavy structure of wood, for there were no postholes. A roof entrance would hardly have been possible without interior posts. A flat roof flush with the ground would not have left more than 2 or 3 feet of space under it, even in the center of the house. What is indicated here is light framework, perhaps of small poles, covered with mats. Mats are mentioned in all of the early travelers'

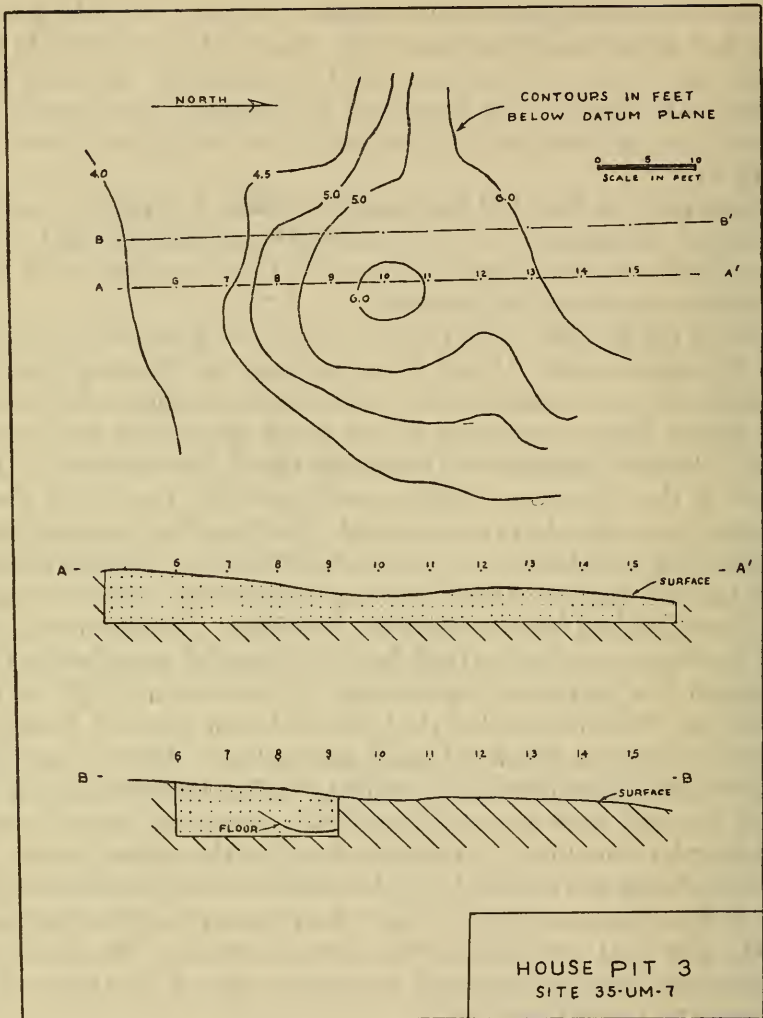


FIGURE 25.—House pit 3, site 35-UM-7.

reports, and traces of them have been found in most of the McNary sites, including Cold Springs.

In most cases there is a slight rise or mound around the perimeter of the house pits. While it might be no more than back dirt from the house, there is reason to suspect that this earth may have been banked against the lower edges of the matting. If this were the case it would eliminate the necessity of sinking posts into the ground for stability.

There is no direct evidence of a doorway in any of the houses. However, in three houses that were carefully contoured, one side, the one facing the river, was slightly lower than the rest of the perimeter.

This may reflect only the slope of the terrace toward the river, but it is the only evidence indicative of an entranceway.

Reoccupation of old houses seems to have been a pattern. It would be far easier to clean out an old house depression than it would be to dig a new one. This could account for the lack of material culture found in the house fill. Apparently, every so often, as the house began to fill with trash, it was cleaned out to the depth desired.

Traces of another house that probably should be assigned to the early period were found during the excavation of the midden. It was approximately 50 feet southwest of house pit 3. Badly disturbed by later occupation, the floor that remained consisted of only a thin charcoal stain about 3 feet in diameter. No surface depression was evident and practically no information could be gained from working about the remains of the floor.

House pit 12, located at the eastern extremity of the site, had been occupied at least two times. The earlier floor was in the form of a deep bowl (fig. 26), and the later floor was more saucer shaped. Unfortunately, the only artifacts associated with the deeper floor were ubiquitous hammers and choppers, so that the house could not be assigned to any period. The shell layer that was so prominent at the western end of the terrace did not extend as far east, so it could not be involved in the stratigraphy. As near as could be determined, the earliest indistinct floor of house pit 12 was of about the same size and shape as the early floor in house pit 3. The later occupation of the pit left almost no traces; only a slight discoloration near the center of the depression.

House pit 4 (pl. 36 and fig. 27) presented another picture of multiple occupations. The earlier floor of the house was saucer shaped as far as it could be traced, and had a small fireplace in the center. There were two strata of mussel shells just outside of what seemed to be the edge of the dwelling, and they appear to represent two periods of occupation of the house. A later house utilized at least part of the depression of the first house, but was centered approximately 7 feet to the east. The later house was larger (43 feet in diameter), and was stratigraphically later than the two thin layers of mussel shells. If it was correct to correlate the shell layers with the occupation of the earlier floor level, that occupation may in turn be correlated with the deposition of the thick shell layer that covers the central portion of the site. The shell layers near the house were proved to be parts of the major shell deposit.

After the later house had been abandoned, the depression of house pit 4 was used for the construction of a large earth oven.

Large lens-shaped concentrations of fire-cracked rock were found at three different places on the site. In each case the concentration was

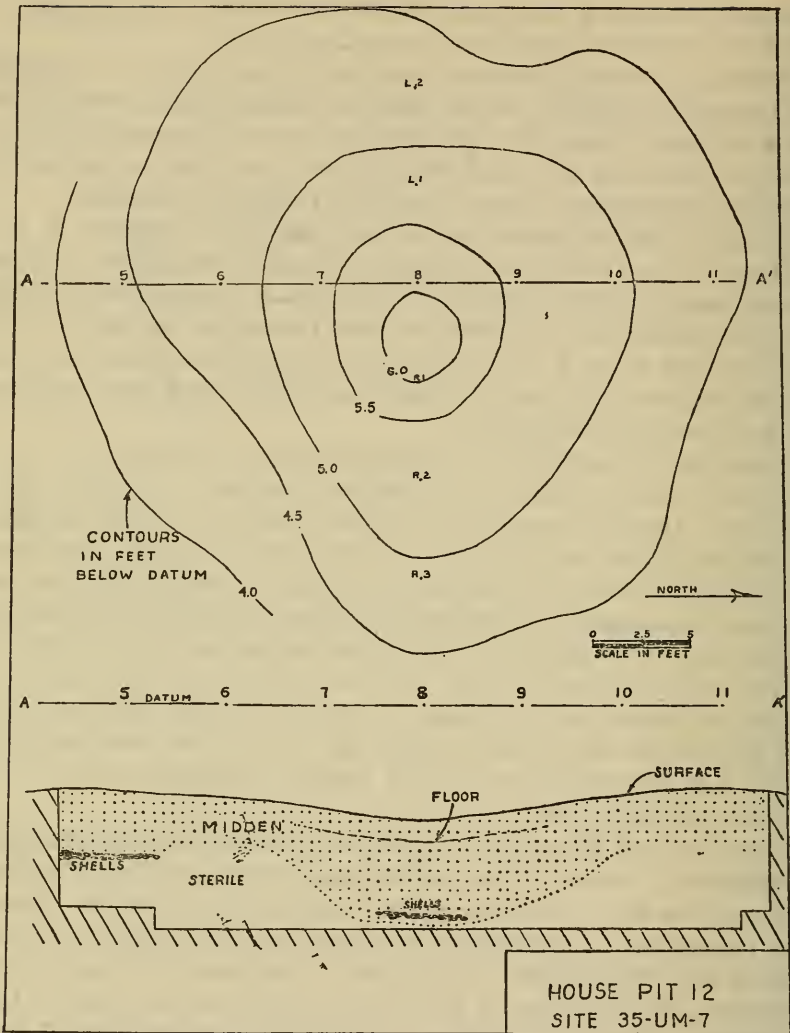


FIGURE 26.—House pit 12, site 35-UM-7.

just beneath the surface and for this reason they are believed to belong to the latter part of the occupation of the site.

The first of the features, which have been called earth ovens, was approximately 4 feet in diameter and about 5 inches in depth. The second (pl. 36, *b*) was about 6 feet in diameter and the third was 11½ feet long and 5 feet wide. Small quantities of charcoal were scattered through the first two features and a large concentration of charcoal was present in the third feature. While the first two earth ovens were unassociated with other features at the site, the large one was found in the center of house pit 4. There is no question as to its

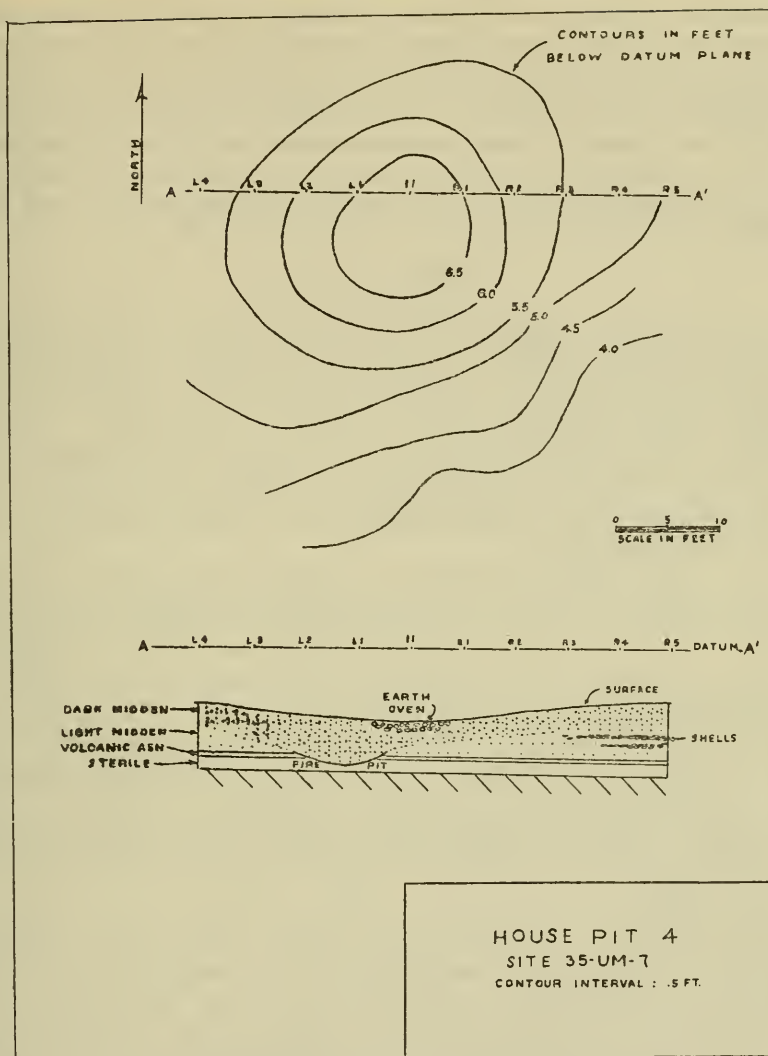


FIGURE 27.—House pit 4, site 35-UM-7.

relationship to the house, as is shown in the discussion of that house. It obviously was constructed in the depression after the house had been abandoned.

To understand the use of an earth oven it would be best to quote the experience of Collier and his associates in the Grand Coulee Reservoir area:

We observed the process of cooking camas in an earth oven at the house of Rosie Seymour, 84 year old Okanogan-Lakes woman living at Kelly Hill in the hills north of Kettle Falls. A pit four feet square and ten inches deep was dug. The pit was covered with timbers and rocks were piled on top of the timbers.

The timbers were fired, and when they had burned down and the rocks had fallen into the pit, the latter were leveled and covered with green tule. The six sacks of camas were placed on the tule and covered with tule and damp grass, then with a layer of earth, and finally with a carefully laid layer of sod. Over the resulting mound was piled wood, which was in turn covered with green willow branches and leaves to prevent rapid combustion. The top fire was kept going nearly forty-eight hours and then the camas bulbs were removed. The remaining pile of burned and cracked stones resembled precisely the burned rock areas described above. [Collier, Hudson, and Ford, 1942, p. 38.]

MATERIAL CULTURE

In the earliest trash that accumulated above the volcanic ash, the stone and bone artifacts were practically identical with those recovered at the Hat Creek site. These artifacts included cobble hammerstones, cobble choppers, flake scrapers, and leaf-shaped projectile points. The early trash in this case is considered to be approximately the first 12 inches of midden that accumulated above the ash. This must be approximate, for there was no even distribution of trash over all the site at all times.

The closest similarities between the artifacts of Hat Creek and Cold Springs are to be found in projectile points and scrapers. Both were made of like materials, jasper and basalt, and both were flaked in the same manner. Five leaf-shaped points were recovered in the first foot of the postash deposit (pl. 35, *b*, bottom row). They varied from 41 to 48 mm. in length, which compares favorably with the 39 to 51 mm. of the projectile points from Hat Creek. The same tendencies toward planoconvexity and serrated edges were present at Cold Springs as had been noticed at Hat Creek. All in all there is so close a similarity between the points of the two sites that a continuity must be considered.

Some differences must be noted. At Hat Creek 2 of the 12 classifiable points had concave bases, a variety that was not found in the early midden at Cold Springs. Furthermore, at Cold Springs, associated with the five projectile points just described, was one side-notched point with a concave base. It will be recalled that none of the points from Hat Creek were notched or barbed. This single specimen might be termed the earliest (in our collection) of a type that became more numerous, and soon replaced the leaf-shaped type.

Not much can be said of the hammerstones and choppers. These crude tools apparently were used and discarded at will. The most frequently used material was a tough fine-grained basalt. Hammers were either unaltered cobblestones from the river gravel or choppers that had been worn and dulled. The tools classified as choppers were also river cobbles, but had been roughly flaked to a jagged cutting edge. There is little chance that either the hammerstones or the choppers had been hafted—their shapes would have made it most diffi-

cult—and there was no sign of grooving. In comparing these tools with those from Hat Creek, a few general observations may be made. The Hat Creek specimens were of inferior manufacture and showed less use than those from Cold Springs. In most cases, the cobbles selected for use at Cold Springs were more symmetrical and would have been easier to handle.

A new type of chopping tool appears at Cold Springs, and stratigraphically shows up in the early part of the occupation. It is made on flat oval or round river cobbles. The diameter is usually between 60 and 100 mm. and the thickness between 10 and 15 mm. Basalt was usually the material used, but it is not of the tough fine-grained variety that was preferred for the cobble choppers. This tool that may well have been used for scraping and fish scaling, as well as chopping, was made in several forms. The edge of the flat stone was flaked from both sides to produce a tool with a single bit, or one with a double bit, or occasionally one with a cutting edge all the way around. The early or deepest portion of the midden showed only the type with the single bit, and the others appear to develop somewhat later. Altogether 10 of these tools were recovered at the Cold Springs site, and the minority, about 4, were assignable to the early portion of the midden.

Three kinds of net weights were found at the site, and each type appeared early in the occupation. The type of which the most specimens were recovered was the notched net weight (pl. 41, *b*). It was made from the same kind of flat river-worn rocks that were used for the chopping tools described above. The materials selected were the same as for the chopping tools, but there was a preference for more oval stones in preparing net weights, and more circular stones for the choppers. The notched net weight was prepared, as the name suggests, by notching both ends of the flat oval stone, so that it could be secured to the net. In most cases there is evidence that the sharp edges of the notch were abraded in some way, so that they would not cut the binding cords. Perhaps five notched net weights could be assigned to the early part of the occupation. At least two specimens apparently were discarded or lost shortly after the occupation began at the site.

Another type of net weight was of the same general proportions but about twice as large. It was bored through with a hole 15 mm. in diameter placed near one end, but otherwise it was unaltered. Several artifacts of this type have been picked up on the surface along the banks of the Columbia, but none besides this one seem to have been found in direct association with other archeological materials.

The third type of net weight was an ovate river-worn stone with dimensions 16 cm. by 13 cm. by 7 cm. Plate 41, *b*, shows a similar specimen. The material is quartzite, and it has a shallow groove

circling the smaller diameter. As with the other types of net weights, the only alteration of the stone was in creating a means of fastening it securely to the net. One girdled and one pierced net weight were found, both of them associated with the early part of the occupation.

Stone knives used during the early occupation of the Cold Springs site were of two general types (pl. 35, *a*). One type was a basalt blade, long and slender, with overall chipping. The chipping was rough and appeared to be of the percussion type. Each of the three complete specimens was pointed at each end, although the bases were blunter and somewhat thicker in cross section. One of the three had a deliberately made shoulder on one side only. This specimen bears a striking resemblance to the Sandia point of New Mexico; however, it is longer, more slender, and probably considerably later in time. The lengths of the complete artifacts varied from 12.7 cm. to 14.5 cm. There was a slight curvature of the longitudinal axis prominent in two of the knives, but not in the specimen that was shouldered. In addition to these, there were two fragmentary knives (midsections) that seemed to conform in size and shape, and were also made of basalt.

The second knife type, represented by two specimens, is considerably shorter and wider than the first. One of these was 7.7 cm. long and 3.8 cm. wide, and the other was 8.3 cm. long and 4.9 cm. wide. Both were of basalt, were well made, and had convex bases.

Besides these two knife types there were found two large rough blades made on primary flakes. Only one edge of the flake was deliberately shaped, so these specimens were not classified as a diagnostic type of knife.

Stratigraphically later than most of the material described above were 15 side-notched projectile points (pl. 35, *b*, top two rows). This point type apparently came into use after the site had been occupied for a while, existed side by side with the leaf-shaped point, and then replaced it entirely. Besides the five leaf-shaped points described for the early part of the midden, three more of them were associated with the side-notched points. There is considerable variation in the size of the side-notched projectile points. The range is from 3.2 to 6.6 cm. in length, but with no significant size variation according to depth below the surface. Even the smallest of these points are larger and heavier than the small types found in late sites. Thirteen of the fifteen side-notched points have concave bases, and the rest of the bases are either straight or slightly convex. All kinds of materials were used for the side-notched points, with basalt most frequently employed. Obsidian, jasper, and chalcedony were about equally distributed.

There were two pieces of carved stone associated with the upper part of the midden. One of these was a small oval piece of steatite

that had been drilled for suspension but had not been finished. The second was a carefully made steatite tubular pipe. It was bell shaped with a short stem that had a small flanged mouthpiece. A nearly identical specimen found at site 45-BN-3 is shown in plate 43, *b*.

Bone tools were relatively scarce. Since large numbers of animal bones were recovered at all levels, preservation is probably not a factor. Those tools that were recovered were for the most part crude and showed that little attention had been paid to their preparation. They included a tip of a broken flaking tool and the tip of an antler tine that may have been used for the same purpose. Two slender tips of splinter awls had been ground to fairly sharp points but received little treatment along the shaft. One bone bead, apparently from the leg bone of a large bird, was nearly identical in size and shape to one recovered beneath the volcanic ash at the Hat Creek site. It was 1.9 cm. long and 0.6 cm. in diameter. Another bird leg bone had been girdled for breaking but had split during the operation.

The only specimen of marine shell found was a bead of *Olivella biplicata* with the tip ground off so that it could be strung. It was probably associated with the later part of the occupation of the site, and represents the earliest occurrence of seashell in the McNary region that has been recognized.

One of the most unusual artifacts found at the Cold Springs site was a bone projectile point. It had been carved in such a way that it appeared to have been chipped from stone. Its size and shape were identical with several of the side-notched projectile points, and had it not been for its light weight, it could easily have been mistaken for a stone projectile point.

Here and there about the Cold Springs site were evidences of a late occupation. The materials associated with it—large glass heads and rolled copper tubing—were indicative of a post-European contact period. The type of bead found here is not the earliest kind that was traded into the area, and is believed to be of the historic period. The material culture of the Cold Springs site, excluding this late occupation, is typologically earlier than that of two other sites, 35-UM-17 (Techumtas Island) and 45-BN-53. These last two in turn, judging from trade goods, are earlier than the last occupation of the Cold Springs site.

What is indicated, then, is an abandonment of the Cold Springs site and a later superficial reoccupation. Several houses, Nos. 5, 7, and 14, were apparently cleaned out and reoccupied. Besides the glass and copper several new artifact types came into the picture. Projectile points associated with this occupation were small and thin, averaging between 20 and 25 mm. in length. Three specimens were side notched,

two were barbed, and the other was leaf shaped. Choppers were carefully made with symmetrical double bits, and a chipped stone fetish was associated with these materials. This last artifact requires some discussion (see pl. 37, *a*, bottom row, center).

Admittedly, there is some question as to the use of the artifact, but there is no reasonable explanation of it as a tool form. It was made by splitting a small discoid pebble of quartzite that was from 3 to 7 cm. in diameter. Two opposite edges of the spall were then chipped away until the outline was wider at one end than at the other. Two arcs of the original circle are left, one larger than the other. In the edge and at the center of the larger arc a small notch was cut. Usually, when preservation permits, red ocher is found rubbed into the notch.

An Indian at Celilo Falls, Oreg., identified one of these objects as a "good luck stone" formerly carried by young men. He stated that it was an effigy of a man (actually it looked more like a headless torso), and that the broader arc represented the shoulders and the notch represented the neck.

ECONOMY

Unfortunately, the large collection of animal bones recovered at 35-UM-7 were not examined thoroughly by an expert. A preliminary examination, however, led to the identification of a number of animals that were probably used for food. The bones of fish were the most numerous of all. Salmon, trout, and sucker were identified. Among the mammal bones, the most frequent were those of deer, followed by the brush rabbit and the jackrabbit. Bones of elk, mountain sheep, porcupine, and several kinds of birds were also present. Due to incomplete analysis, it is not possible to state whether or not there were changes in the type of game sought through the duration of the occupation. It was noted, however, that fish bones were numerous at all depths in the midden.

The river mussel was used for food at all times. During one short span, apparently toward the end of the major occupation, there was heavy reliance upon river mussels for food. At this time, the thick layers of shells were discarded over a large portion of the site. Whether this was caused by a failure of the annual salmon run or not it is impossible to determine.

Specialized tools that could have been employed in gathering vegetable foods were not recovered. Several flat stones showed evidence of having been used for grinding some substance. These were not mortars, but slightly used slabs of basalt. Specialized hunting and fishing artifacts were numerous, as can be seen in the section on material culture. Both the long slender basalt knives and the discoid choppers could have been used in preparing meat and fish for drying. In spite of the lack of data on gathering, it must be assumed that a

balance existed between hunting, gathering, and fishing. The latter was very likely the most important to the economy.

FURTHER OBSERVATIONS

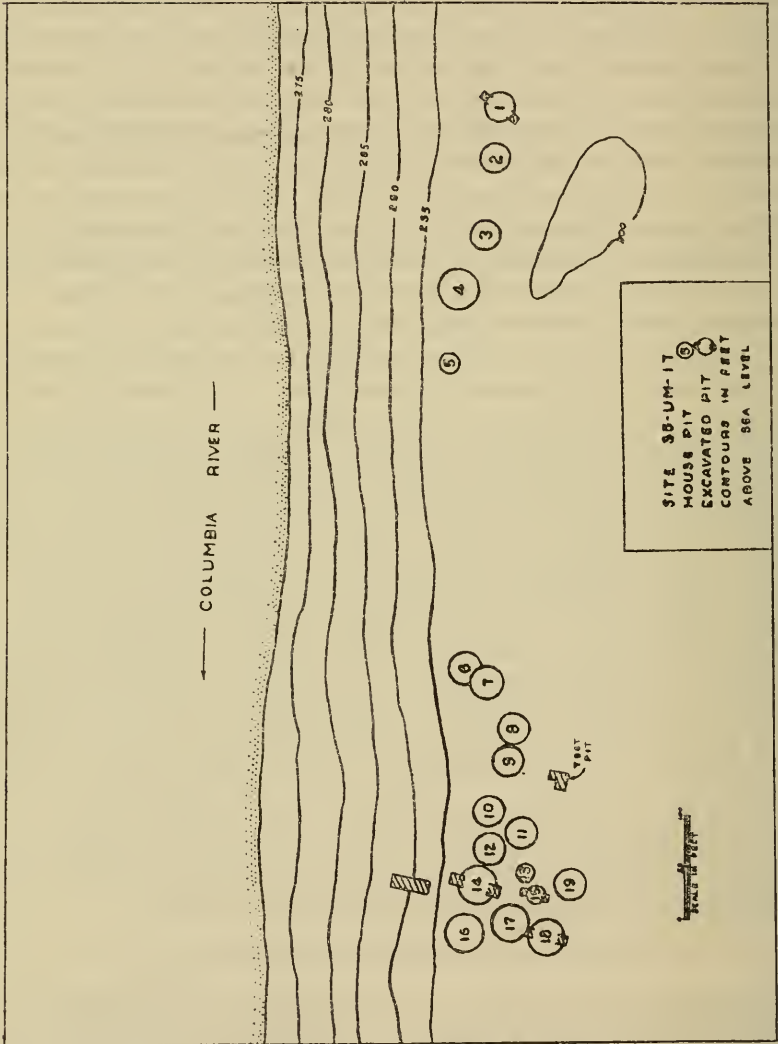
Rodent activity at the Cold Springs site had been extensive. It showed clearly in all profiles, for many of the burrows contained the dead white volcanic ash from the substratum that contrasted sharply with the gray sandy midden. One thing did a great deal to prevent wholesale mixing of the midden; that was the thick dense layer of mussel shells which interposed itself approximately halfway between the volcanic ash and the surface of the site. Thus, burrowing above the shell layer rarely penetrated below it. The burrows below the shell layer seemed to be confined to the period prior to the shell deposition. In spite of the labyrinth of holes, most fireplaces, house floors, and other features were still discernible. Fishbones were often still articulated, and fragments of fiber matting were in situ.

A peculiar feature that did not lend itself to categorical treatment was found at a depth between $2\frac{1}{2}$ and 3 feet. It consisted of a carefully piled mass of 79 flat river-worn cobbles. The stones were 4 to 7 inches in diameter and $1\frac{1}{2}$ to 3 inches thick. They showed no evidence of burning, flaking, or hammering. Centered beneath the cairn was a single scapula of an elk and nothing else. There is, of course, room for much speculation on the interpretation of this feature. No reference to such practice could be found in the ethnographic literature.

There were one or two things evident in the settlement pattern at the Cold Springs site. First, the material which seemed to be relatively early was concentrated at the western and west-central portion of the site. The later materials were found there, as well as considerably farther to the east. The exact limits of the earlier part of the occupation were not determined. The pit houses on the site, that is, the surface depressions, were divided into two groups (map 4). There were 11 houses at the western end, 6 houses at the eastern end, and a space of 500 feet in between. If there were houses in the space between the two groups, no surface indications remained.

SITE 35-UM-17 (TECHUMTAS ISLAND)

The Techumtas Island site is located about $1\frac{1}{2}$ miles northeast and upstream from the Cold Springs site. The island, which is also known as Hoodoo or Sweitzer's Island, is approximately 9 miles upstream from the McNary Dam. From east to west it is just under 3 miles in length, and it varies between $\frac{1}{4}$ and $\frac{1}{2}$ miles in width. During most of the year, the channel on the southern side is dry, so that only during the late spring and early summer does it really become an island.



MAP 4.—Site 35-UM-17.

On the channel side and near the downstream end of the island there is a small exposure of basalt bedrock. Otherwise, the island appears to be built up from a large gravel bar with a topsoil of river sand and aeolian deposits. Actually, the whole island is a flat terrace. Recent cultivation has taken place near the central part of the island, but the rest is covered with sage (*Artemisia tridentata*), grasses, and weeds. There has been much wind erosion, and duning is well developed in several places. Along the main river channel the bank slopes steeply to the water's edge. The shingled beach is composed of river gravel, well sorted by the current.

The site itself is located about 500 yards from the downstream end of the island, and is on the side facing the main channel. Nineteen well-preserved house pits and several discontinuous midden areas are scattered along the top of the bank for a distance of 850 feet. The house pits are divided into 2 groups, with 14 pits situated at the downstream end of the site and 5 pits at the upstream end (map 4). In the intervening space of 275 feet there was a small amount of midden debris but no trace of architecture. A close examination of the area led to the conclusion that it was all one site.

Some trash had been scattered about on the surface, but there are indications that most of it probably went over the bank toward the river. This pattern was recognized from the results of a great many small test pits which were excavated in a grid pattern over the length and breadth of the site. They revealed that the maximum depth of trash on the terrace was slightly more than 1 foot. The deepest penetrations into the terrace were the houses themselves, which ranged from $2\frac{1}{2}$ to 3 feet. The shingle beach extended up to within a few feet (3 to 6) of the level of the terrace and clearly showed that any over-the-bank dump would be swept away by the spring floods.

ARCHITECTURE

House pit 14 was oval shaped, 40 feet long and 30 feet wide, according to surface measurements (pl. 37, *b*). Like the majority of houses in the McNary area, the long axis was parallel to the river as well as to the prevailing wind.

The first floor encountered was found at a depth of less than 1 foot below the surface (fig. 28). It was a clearly defined saucer-shaped area of charcoal and ashes, with a fire depression in the center. Unfortunately, however, it did not extend to the extremities of the house, but was confined to an area approximately 15 feet in diameter. As near as could be determined, the floor followed the surface contours of the house pit.

The remnant of an earlier floor was $2\frac{1}{2}$ feet below the surface and roughly at the center of the house. It was from 6 to 7 feet in diam-

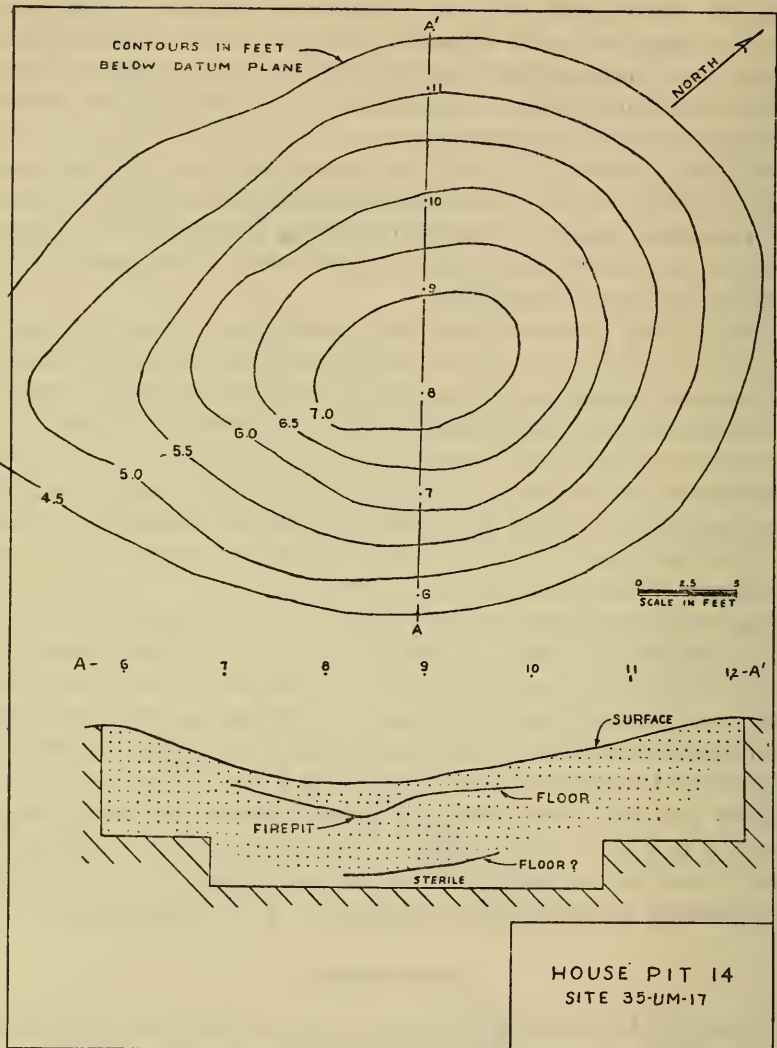


FIGURE 28.—House pit 14, site 35-UM-17.

eter and less clearly defined. As usual, it was recognized by a thin dark stain of charcoal. Below the earlier floor the soil was sterile.

House pit 15 was nearly circular and about 14 feet in diameter. The occupation level, or floor of the house, was found below the surface, and was in nearly every respect similar to house pit 14. Below the floor of the house only sterile soil was found, so that it is believed that there was a single period of occupancy.

Tests in houses 1, 9, and 18 failed to discover a living level, and excavation was discontinued. These three structures failed to produce any diagnostic artifacts. Only an occasional flake or spall

could be found, although the depressions clearly were the remains of dwellings.

The houses of the Techumtas Island site were slightly smaller than those at Cold Springs; the latter averaged 30 feet by 28 feet, and the Techumtas Island houses averaged 28 feet by 26 feet. At both sites the longer axis of the house normally was parallel to the river. Furthermore, at both sites there was a dual division of the village into two parts with the smaller group at the upstream end of the site. Naturally, it was disappointing not to recover information on the type or types of superstructures employed at the site, but such data were not to be found. It is almost certain that the superstructures were of light flimsy materials such as poles and mats.

The midden trash at the Techumtas Island site was thin and unevenly distributed. It would appear that since the occupation was a relatively short one, trash had not accumulated to any extent on the terrace. The over-the-bank dump, being subject to stream erosion, was not permitted to accumulate. However, the heavier artifacts were not readily swept away, and some collections were made on the surface of the bank immediately below the house pits. These will be treated in the discussion of material culture.

MATERIAL CULTURE

It was hoped that significant differences could be found between the artifact collections associated with the two floor levels in house pit 14. Unfortunately, they were not apparent. The lower floor had 12 artifacts associated with it, and 6 of these were unaltered spalls that had probably been used for cutting and scraping. Also found at this level were a small cobble chopper, two crude flake scrapers, and a notched net sinker.

On the upper or most recent floor, 22 artifacts were recovered. Six of them were unaltered spall flakes, and eight others were crude flake scrapers. Only two of the scrapers had been prepared for use; the others were primary flakes. Four projectile points came from the upper floor (pl. 37, *a*). Three of them were side notched with concave bases and averaged 20 mm. in length. The fourth, simply triangular with a straight base, was 31 mm. long. There were also three complete bone awls on or near the floor, each awl a different type (pl. 37, *a*). One was made from a long bone of deer. It tapered slightly, and had a conical point much like that of a sharpened pencil. Another was made of a scapula spine, probably of deer, and was similarly pointed. The third, much smaller, was made from a deer fibula, and tapered smoothly to a point. The first awl described above was finished along the shaft and had a small hole about 3 mm. in

diameter drilled through the shaft near the butt. The others had been only slightly smoothed along the shaft.

The last item from house pit 14 was a typical chipped stone fetish similar in size and shape to the one described for the late Cold Springs occupation (pl. 37, *a*).

House pit 15 had six artifacts associated with the single floor. They included two rough cobble choppers and a cobble hammer, all of basalt. A tip of a bone tool and a thumbnail scraper were also associated with the house. One small glass trade bead was recovered near the floor of house pit 15. It was of the tubular type that is believed to be early in the region. Although there is always the possibility that it could be intrusive (via a gopher hole), it suggests a late precontact date for the house. The other artifacts at the site, small points and fetishes, would tend to confirm this dating.

A number of artifacts were found in the midden trash adjacent to the houses. One test section just south of house pit 9 uncovered what may have been a cache of fishing equipment. However, the 18 notched net weights and 1 grooved weight were in no particular order, and were associated with a quantity of discarded mussel shells and some fire-cracked rocks. Also associated with the group were two cobble hammers, a cobble chopper, and a spade-shaped stone, which may have been a boring tool. This flat basalt tool is unique in the region. All of the artifacts were closely associated on a single level less than 1 foot below the surface.

Tests on the bank between the houses and the river produced very little. Artifacts recovered included a small triangular projectile point, a thumbnail scraper, a stone fetish, and a few hammers and choppers. Although there was some stratification in the trash, the cultural materials recovered were far too few for any conclusions to be drawn.

Two years after the excavations were made on Techumtas Island, there was new erosion of the bank immediately below the lower group of houses. The river swept away the sand, but dropped the larger stones almost in place. The artifacts collected from the surface there almost certainly belonged to the over-the-bank dump from the houses, and should be considered part of the complex. This group of artifacts included nearly 100 notched net weights and 6 ovoid grooved net weights. There were about 40 discoid choppers and 60 spall flakes, as well as 12 or more cobble hammers and choppers. Three stone fetishes were also found on the eroded surface.

All of the above were artifact types that matched those found in the houses. There were a few artifacts in the surface collection that did not duplicate those from in or near the house pits. They included a miniature stone mallet, $3\frac{1}{2}$ inches (9 cm.) in height, and part of

a full-sized mallet. The former, which may have been a toy, is similar to, but smaller than, those illustrated in plate 42, *b*. Two small projectile points found there were corner notched with straight stems.

This is the first appearance of the stone mallet in the local sequence. Mallets, or mauls as they are sometimes called, are among the most carefully made artifacts in the region. Ground and polished from basalt, porphyry, and diorite, these tools are about the size and shape of a milk bottle with the handle often suggesting a phallic symbol. The earliest mention of mallets in the literature is from the Lewis and Clark journals (Thwaites, 1904-5, vol. 3). When these explorers were on their way to the coast in 1805, Clark visited a village near the juncture of the Snake and Columbia Rivers. He reported seeing a stone mallet used in conjunction with an antler wedge for splitting timber. His description makes it clear that the artifact was of the type being discussed here. Fine ground mallets have been reported from The Dalles, Oreg. (Strong et al., 1930), from the upper Columbia (Collier et al., 1942), and from the Yakima River (Smith, 1910).

The small, rather delicate, corner-notched projectile point becomes the typical one for the historical period. How much earlier than that it occurs is difficult to say, but corner-notched points appear in quantity in sites that have no European trade goods.

ECONOMY

Most of the tools that could be assigned to a particular economic pursuit were obviously designed for fishing. The large number of net weights in and around the houses attested to a considerable reliance on fishing, as did the number of fishbones. Animal bones included those of deer, rabbit, various birds, antelope (*Antilocapra americana*), bison, but no horse (Osborne, 1953, p. 261). Projectile points were present although not really plentiful, but there was no direct evidence of vegetable foods. Shellfish were apparently consumed in quantity, although not to the extent that was evident at Cold Springs (35-UM-7).

SITE 45-BN-53

This large village site was excavated by Douglas Osborne in 1948, and was reported in full in his doctoral dissertation.⁵ It was not a large or a lengthy excavation, and not many diagnostic artifacts were recovered. Because of these things only a brief summary of the results is presented here.

One of the largest villages anywhere in the middle Columbia region, 45-BN-53 was situated on a long flat terrace about 5½ miles upstream

⁵ See footnote 3, p. 164.

(east) of the McNary Dam (map 2). The terrace is on a semidetached island on the north (Washington) side of the Columbia River and is nearly opposite the Hat Creek site. The local physiography is almost identical with that of Techumtas Island—sandy loess soil, steep shingle beach, and some shifting sand dunes.

ARCHITECTURE

The village itself was approximately 300 yards long, parallel to the river, and 35 yards wide. It consisted of 182 houses or house depressions. Since only a few were excavated, almost nothing can be said about the relative ages of the houses or the duration of the occupation. The evidence tends to indicate that it did not extend over a long period of time, but that evidence is not conclusive.

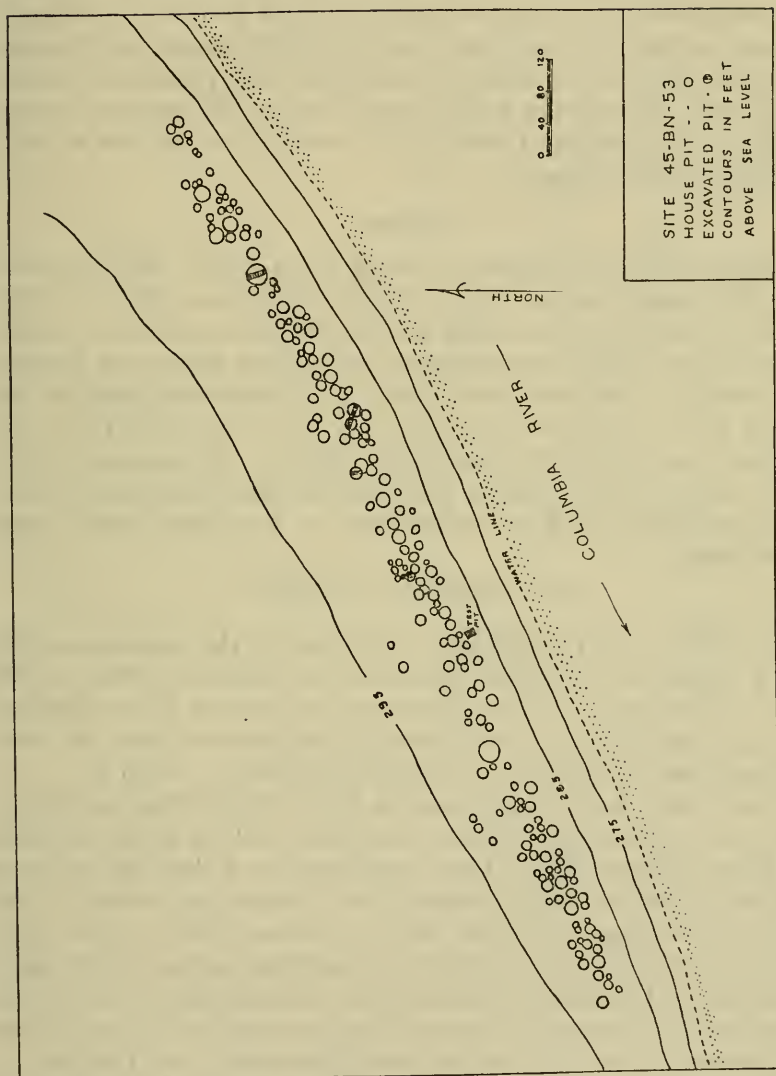
The house pits of various sizes were scattered along the terrace in no particular pattern. No streets or significant groupings of houses could be detected, although some information might be forthcoming if the ages of most of the houses were known. (Map 5.)

Six of the house pits at 45-BN-53 were excavated or trenched. Houses Nos. 11, 49, 70, and 168 were completely excavated, while Nos. 52 and 169 were only trenched. The results of the excavations were nearly identical to those at Cold Springs and Techumtas Island. Occupation levels were found, but no postholes or traces of superstructure could be detected. East-west diameters were generally greater than north-south diameters, making the long axis in line with the prevailing wind. Median diameters were north-south, 16 feet, and east-west, 19 feet. These are smaller than the averages for the houses at Techumtas Island and Cold Springs.

Generally, there were several occupational levels in each house, and apparently the houses were not cleaned out from one occupation to the next. Fireplaces were usually in the center of the saucer-shaped floors. They were informal fireplaces, a few rocks and a concentration of charcoal and ash. Entrances were not detected, and the only trace of building material was in the form of mat fragments found on the floor. Occasionally pairs of houses were side by side so as to suggest contemporaneity, but the poor preservation of floors and structural details prevents their reconstruction.

MATERIAL CULTURE

Most of the work at 45-BN-53 was concerned with the excavation of house pits. About 12 working days with a crew of 12 men were spent at the site, so the list of materials recovered is small. Of the 209 artifacts recovered, 129 were of the large coarse type such as hammers, choppers, or net weights. The others were so similar to the materials from Techumtas Island (35-UM-17) that there is little



MAP 5.—Site 45-BN-53.

reason to go into detailed description. They included projectile points, awls, scrapers, and drills. Although no trade goods of European origin were found in the houses, a few glass beads were uncovered in the midden tests. This is, of course, no proof that the site should be dated by these finds. Later utilization of the terrace could have been responsible for the occurrence of the trade beads. However, the material culture, especially the small projectile points, strongly suggests that the site was occupied during the late prehistoric period. Trade beads might have found their way into the area as early as 1740 or 1750. Osborne (1953, p. 263) would date the site as early 18th century at the latest.

ECONOMY

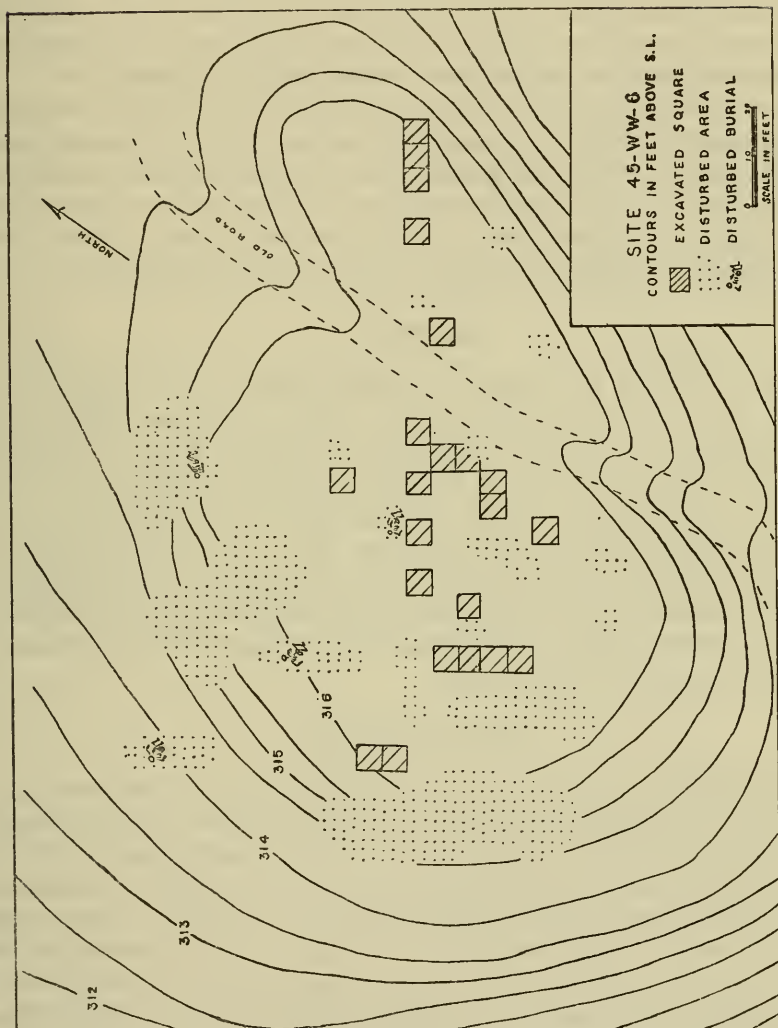
Among the animal bones recovered at 45-BN-53 were those of deer, elk, rabbit, various birds, dog, fish, and bison (*ibid.*, p. 261). Horse and antelope bones were absent. Fishbones were not as numerous as one might have expected, and suckers were more common than salmon. The horse was absent in all precontact sites in this region; it was not found at Techumtas Island (35-UM-17), a site believed to be contemporaneous with 45-BN-53. The economy, therefore, was apparently identical with that described for site 35-UM-17. Hunting, fishing, and gathering seem to have had nearly equal importance.

SITE 45-WW-6 (WALLULA)

The Wallula site (45-WW-6) was located at the confluence of the Walla Walla and Columbia Rivers, in the southeast corner of the State of Washington. The village was built on a slight elevation about 50 yards from the east bank of the Columbia, and the same distance from the north bank of the Walla Walla. (Map 6.)

About a mile downstream from the Walla Walla River the Columbia flows through a considerable gorge, the result of cutting through the Horse Heaven Hills. Local tradition has it that the hills once dammed a deep lake within what is now a large open valley. Thousands of years ago, the water burst the natural dam, cut the gorge and drained the lake, all according to local "authorities." How much of this is based on scientific examination of the geological facts it was not possible to ascertain. At any rate, the broad flat valley is there and supports the small cities of Pasco, Kennewick, and Hanford.

The site itself was approximately 200 feet long and perhaps 60 to 80 feet wide. The subsurface material was coarse river gravel, with a 2- or 3-foot layer of yellowish sand on top of the gravel. The midden was about 3 feet in depth near the center of the site, and rested directly on the sterile sand. Toward the edges of the site the ground sloped away gradually, and the midden thinned out proportionally.



MAP 6.—Site 45-WW-6.

Pot hunting has created a great deal of damage at the Wallula site. At least one-third of the surface has been potted, and no fewer than four burials were robbed. The latter expression is appropriate in this case, for only the crania and long bones were taken, along with most of the artifacts. Screening in the irregular disturbed areas recovered vast quantities of beads and small human bones. Unfortunately, the excavations carried on during the 2 weeks that River Basin Surveys spent on the site did not uncover a single undisturbed burial.

In spite of the beliefs of the local residents, the Wallula site was not primarily a burial ground but a fishing village of the late prehistoric and early historic periods. In some places the soil was black, almost greasy, with charcoal, and salmon vertebrae were present in vast numbers. Most of the artifacts were utilitarian, and the 500 square feet of surface excavated yielded only midden trash.

ARCHITECTURE

Site 45-WW-6 was subject to spring floods. In May 1950, the writer was forced by a normal spring flood to abandon work on the site and move out. Surface erosion was evident over all of the site, and it is believed that traces of houses had been obliterated. If the Wallula site had been a summer fishing village, the surface mat house (to be described later) would have been used. The slight depression left by a summer mat house would be erased quickly by flood erosion. Large areas of charcoal were found all through the midden, but none of them conformed to a house floor. Therefore, no definite information was obtained on architecture.

MATERIAL CULTURE

Projectile points were numerous at 45-WW-6 in spite of other indications that it was primarily a fishing village. Out of 70 specimens recovered, 48 were sufficiently intact to permit classification (pl. 38, *a*). Most of the points were small, between 18 mm. and 27 mm. in length, and were barbed. Nine specimens were of a simple leaf shape with rounded bases. They were similar in outline to the projectile points from the Hat Creek site, but were generally smaller. They lacked the serrated edges and were not planoconvex in cross section. The accompanying chart gives the distribution according to types set up by Strong, Schenck, and Steward (1930, p. 78).

The small stemmed and barbed projectile points are typical of the late prehistoric and early historic periods all over the Plateau. Those at the Wallula site were made of petrified wood (17 specimens), basalt (12 specimens), agate (9 specimens), and jasper (5 specimens). Only two projectile points were made of obsidian.



Type:	NAb1	NBb2	NBc	SBb	SCa1	SCb1	SCb2	SCb3
No:	9	1	1	13	1	15	7	1

There is nearly always room for argument over whether certain chipped tools are to be called projectile points or knives. At the present time there is no way of being certain about some specimens. With the materials from the Wallula site there seemed to be a preference for small barbed points. Others were leaf shaped and small, and some were intermediate in size. There were still others, five in number, that were considerably larger and heavier, and in this case have been called knives. Ten more blades were of shapes that have not been associated with projectile points, but have been found (at 45-BN-3) with knife handles still intact. All 10 of these knives are variations of a lozenge shape with straight, concave, or convex bases. The materials included basalt (7 specimens), petrified wood (6 specimens), agate (1 specimen), and jasper (1 specimen). Blades similar to the lozenge-shaped knives were found in north-central Oregon, by L. S. Cressman. He said in referring to his specimens:

I believe these latter to be end scrapers on the basis of experience in classifying numerous similar specimens in early collections for The Dalles region of the Columbia River. Microscopic examination showed pitch on the sides of the contracted portion, obviously evidence of hafting. [Cressman, 1950, p. 378.]

Cressman's explanation may be correct, but the specimens from 45-BN-3 were hafted with the pointed end exposed for use. There is no reason why a tool of this sort might not be used either way.

Flake scrapers found at the Wallula site were not significantly different from those described earlier. They were of essentially the same materials as the projectile points, and there was no attempt at shaping. A few of the flakes may have been deliberately removed, but the majority are the result of having been used for scraping. The 22 specimens recovered at the site are primary flakes, with an average diameter of about 3 cm.

Spall scrapers, which were abundant at the Techumtas Island site (35-UM-17), were represented at the Wallula site by only four specimens. These tools are almost always made of quartzite, perhaps because the quartzite cobbles in the Columbia River tend to have such well-defined cleavage planes. The spalls are always thin, having one surface which is weathered and one which is the cleavage plane. The edges usually show some crumbled battering. It is likely that the spall was a sort of general utility artifact, easy to make, handy to use, and

expendable. The same was probably true of the other chopping and hammering tools.

Stone weights for seines and nets were abundant in the midden, on the surface, and on the gravel beach of the Columbia River (pl. 41, *b*). The description of the 2-notched stone weight given for those from the Cold Springs site holds perfectly well for 31 specimens excavated at the Wallula site. A variation on the type makes its appearance there with 18 specimens that have 4 notches instead of 2. These quadrilaterally notched weights are about 25 percent longer and wider than the laterally notched variety, but otherwise do not differ significantly. No evidence could be found to show that either variety was stratigraphically older than the other, for both were randomly distributed through the midden. There does seem to be a proportional increase in the 4-notched variety as one proceeds upstream from the McNary Dam.

Girdled net weights were made by pecking a shallow groove around the smallest diameter of a large ovate river cobble (pl. 41, *b*, center). Granite porphyry and quartzite were preferred or at least were readily available in the river gravel. The three grooved weights from the midden averaged 16 cm. in length and 13 cm. in width.

Coarse stone tools such as hammers and choppers were particularly abundant all over the region, and certainly no less so at Wallula (pl. 40, *b*). Of the 78 specimens that had been used for hammering, 34 had been intended for use as hammers only. The remaining 44 hammers had originally been chopping tools which, after becoming dull, were used as hammers. As explained earlier, these basalt river cobbles were roughly flaked to a single edge for chopping tools, or used without alteration for hammers. Twenty-six cobble choppers saw no subsequent use as hammers, and were discarded with no further alteration. All the cobble tools were apparently fashioned for use without hafting. No grooves or other hafting devices were employed.

The discoid chopping tools, flat river-worn pebbles with chipped edges, were represented by 38 specimens (pl. 40, *a*). A trial division of these tools into four subtypes seems to be justified, for there is no gradation or overlapping in the division. The simplest, and incidentally the smallest, subtype is chipped on one edge, and the bit takes up approximately one-fourth of the circumference. Another, slightly larger, has bits of the same size on opposite sides. A third, still larger, is chipped three-quarters of the way around the circumference, and the last is chipped all of the way around. The gross size of each tool is thus directly proportional to the amount of the bit or cutting edge. It is perhaps significant that discoid choppers are often associated with notched net weights, suggesting some use in the fishing complex.

Two problematical objects that were recovered in the midden could have been used as adzes or hoes (pl. 41, *a*). They were flaked from

basalt spalls of exfoliation and utilized the plane surface of exfoliation (or perhaps frost wedging) as one side of the tool. By rough percussion flaking from the flat side, a planoconvex tool with an outline like that of an ax blade was formed. The broad end of the tool was retouched and quite sharp, but the sides of the tool were blunted. If the tool were hafted by lashing a T-shaped handle to the flat side, the blunted edges would lessen the chance of the lashings being cut during use, and there are slight polished areas on the surface where the lashings might be expected to cross. One of the tools is 22.8 cm. long and 9 cm. wide, and the other is 21 cm. long and 8.6 cm. wide. Such a tool would be most useful in hollowing out canoes, in digging houses and graves, and perhaps for other purposes. Nearly identical tools have been found in the region during surface surveys, and one was found associated with the late occupation of the Cold Springs site.

Two smaller basalt artifacts were probably used as wedges. One had been prepared by striking two long flakes from a more or less cylindrical pebble, and the other was a basalt fragment whose planes of frost wedging created a natural wedge. Both had been battered at the blunt end. The chipped specimen is 5.1 cm. long and 2.2 cm. wide, while the other is 11.8 cm. long and 5 cm. wide.

Occasionally some of the large river cobbles were used as lapstones or anvils. The two stones used in this manner at the Wallula site were river-worn cobbles of granite porphyry, each about 24 cm. in diameter and 10 cm. thick. The battered surface was in the center of one of the nearly flat sides and perhaps 6 cm. in diameter. Had the battering scars not been in the form of sharp pits, these objects might have been called mortars. One of the anvils had been flaked to a rough cutting edge over a third of its diameter in the manner of the cobble choppers. The heavy 2-handed chopper may have been made before or after its use as an anvil; it was not possible to determine which took precedence.

There were two types of chipped stone drill bits found at the Wallula site, but only one representative of each type. One of these is long (3.3 cm. without the tip) and slender (9 mm. in diameter). In cross section it is oval, almost circular. The other type is shaped like an automobile key, having a broad rounded base with a sharp bit. The basal diameter is 2.1 cm., but the tip of the point is missing. Both types were probably hafted, but it would be entirely possible to use the "key" type unhafted. No data are available on whether a bow was used with a hafted drill bit or the shaft was twirled between the hands.

Objects made of ground and polished stone are rarely found in midden deposits in the McNary region. Those recovered there are

usually fragmentary. We were fortunate in recovering six such artifacts at the Wallula site, even though five of the six were broken and incomplete. Two fragments of basalt pestles that were found consisted of the blunt grinding ends only. They had been pecked to shape but worked only to a fair polish. A third specimen was complete but of poor workmanship. It had been pecked to shape but the pecking scars had not been polished away. The length was 18.3 cm., the diameter was 6.4 cm., and it tapered slightly. Another pestle, not classed as ground stone, was a long cylindrical river stone of basalt that had been used with no alteration.

Two fragments of stone bowls were in the midden deposit. Though not part of the same bowl, the two pieces are of nearly the same size and shape, each being about one-quarter of the original specimen. One would have had an outside diameter from 14 to 16 cm., and the other from 13 to 15 cm. Overall height of each would have been approximately 7 cm. Both bowls had been hollowed out of river cobbles, one of quartzitic sandstone and the other of granite. The interiors were exceptionally well smoothed, and the bases were flattened for stability. One of the bowl fragments was in close association with several cobble hammers and one of the pestle fragments.

Only one fragment of a stone pipe was found at Wallula, and it was a part of the bowl of a two-piece type. This type consists of a parabolic bowl with a female flange fitting for the insertion of the stem. The stem is in line with the pipe, so that it is merely a variation of the regular tubular type. The specimen recovered in the midden was of dark gray talc schist, well polished, but too fragmentary for measurement. Several pipes of this kind were found on Sheep Island by Garth (1952 b) in 1950.

Altogether, 34 artifacts of bone and antler were recovered at 45-WW-6. As with nearly every class of artifacts that is represented in the area, many of these tools are generalized, and one can only speculate as to their use or uses. Nevertheless, they have been divided tentatively into six categories: wedges, bone awls, flaking tools, bone projectile points, needles, and dice.

The wedges, eight in number, are all of deer or elk antler (pl. 39, *b*). The antler, in most cases, was split longitudinally; it was ground and polished to a rounded bit at one end and had a blunt striking surface at the other. Wedges of this sort, as previously mentioned, were observed in use and described by Lewis and Clark in October 1805 (Thwaites, 1904-5, vol. 3), a few miles from 45-WW-6. They were used in conjunction with stone mauls for splitting timber. All but one of the Wallula wedges are flat in cross section and have oval bits. The exception is round in cross section with a pointed rather than a flat bit. Antler, especially the cancellous tissue, is extremely susceptible to decay, and for this reason, many of the specimens are

not complete. The average wedge appears to have been between 8 cm. and 12 cm. long and between 2 cm. and 4.5 cm. at the maximum width. A considerable variation can be noted in the quality of workmanship in that some of the wedges are well made and polished while others are exceedingly rough.

Within the class of bone awls there is no end of variation (pl. 39, *a*). Some are almost certainly awls; others may have had another use. Some are carefully shaped and polished, while others are only abraded at the tip. There seems to be little point in going into the individual details of all the specimens, since no two are really identical. It should be pointed out that besides the variation in shape and size a number of materials were used. Awls were made from various bones of deer: scapula, fibula, and metacarpal or metatarsal. Deer ribs and one of the long bones of a large bird were also used. Thirteen specimens of awls were recovered, and less than half of them could be considered well made.

Flaking tools were presumably used in flaking projectile points, knives, scrapers, and drills. Two of them were tines of deer antler showing wear at the tip; the third flaker was fragmentary and of bone. Only the tip remained, but it approximated the antler tines in shape and wear.

The three bone artifacts that had been classified as bone projectile points were all approximately the same size: 55 mm. to 58 mm. long, and 8 mm. to 10 mm. wide. One of the group was but a slightly abraded bone sliver that was keenly pointed at one end and beveled at the other. The other two were more carefully fashioned and were quite symmetrical (pl. 39, *a*). In cross section they were rectangular with only a slight beveling of the edges. These points had been ground all over with a rough abrasive such as scoria or sandstone but had not been polished. It would be possible to mistake them for flaking tools except that the tips show no greater degree of abrasion or wear than do the shafts. While they may be spear tines, there is no apparent way for them to be hafted. Bone points or the trident fish spear usually show beveling near the base in order to facilitate hafting. Since these points were apparently constructed to be hafted singly, they have been classified as projectile points.

In the use of the term "needle" to describe the four long slender artifacts of bone, it is not meant to imply that they were necessarily employed in sewing. The two specimens that were complete had no eyes, nor was there any direct evidence that eyed needles were used at the site. These tools were simply too long, slender, and fragile to have been used as ordinary awls (pl. 39, *a*). It is suggested that they may have been employed in constructing twilled or coiled basketry, twilled mats, and in making small perforations in hides. Since the average width is but 5 mm. and the average thickness only 3 mm., rough usage

would result in breakage. The complete specimens probably averaged over 8 cm. in length.

One incomplete specimen, carved and polished from deer or elk antler, is obviously a gambling device. Its outline is a symmetrical long slender ellipse, and it is also elliptical in cross section. One surface is smooth and plain, while the other is covered with an estimated number of 18 small shallow pits that were drilled into the surface. It is estimated that the die had an original length of 8.5 cm. and a width of 2 cm.

The only ornaments of non-European manufacture that could be found were two small shell beads. One of these was a short section of *Dentalium* from the Pacific Ocean; the other was a small disk from river mussel shell and drilled slightly off center. Because of their small size, both of these ornaments could have been lost during the occupation. They were not associated with the late burials in the site.

The European trade goods were restricted to a depth of only 1 foot below the surface. The other 2½ to 3 feet apparently dated from pre-contact times. Of the four glass beads found in the midden, three were of the cylindrical type that is believed to be the earliest in the region. The other was shaped like a doughnut and was identical with those beads found in the burials and those recovered in the ruins of Fort Walla Walla (Garth, 1952 b). There were two bits of sheet copper, one an irregular flat fragment and the other a rolled tubular bead. Another copper object is believed to be a stud used for joining leather harness of some sort. The last item of European origin was a broken fragment of a clay pipestem.

The small assortment of trade goods is nevertheless significant, since it is highly indicative of a time relationship with site 45-BN-3 on Berrian's Island. The aboriginal artifacts are also very similar.

BURIAL CUSTOMS

The burials at the Wallula site constitute a minor problem. Their presence, before being robbed, was clear because of the numbers of small human bones and ornaments left behind. About all there is on which to speculate is the large collection of glass and porcelain beads that was salvaged. The group of beads differs considerably from those found in the graves at 45-BN-3. The latter were nearly all blue and white, the blue beads constituting 64 percent of the total. Most of them were of cylindrical shape, although there was considerable variation. Site 45-BN-3 and its trade material is believed to date from the middle and late 1700's and possibly in the early 1800's (Osborne.⁶ The dating appears to be upheld by the Wallula site where the earliest trade goods are identical to those from Berrian's Island.

⁶ See footnote 3, p. 164.

The beads from the burials at Wallula are nearly all of the doughnut shape. About 50 percent are white, and the rest nearly equally divided between black, blue, green, yellow, red, and pink. The best chance of a date comes from Fort Walla Walla which was established in 1818.

ECONOMY

The midden at the Wallula site contained more animal and fish bones than any of the sites described so far. Most of the bones were salmon vertebrae, but bones of deer and elk were numerous. Since no complete analysis of the animal bones has been made, nothing more can be said of that phase of the economy. The presence of pestles and stone bowls suggests that vegetable foods such as seeds and berries may have been prepared by grinding. Gathering is known to have been important in historic times, and was probably no less so at Wallula.

HISTORICAL DATA

The Wallula site is the first of the series under discussion that can be related to historical events. Therefore an attempt will be made to date the site by use of early journals.

In October 1805, Lewis and Clark left the mouth of the Snake River, and proceeded down the Columbia by boat. They mentioned Indian camps on the islands and on the mainland, but at the mouth of the Walla Walla River, they noticed only a "small rivulet" (Thwaites, 1904-5, vol. 3, p. 131). Had lodges been there at the time, Lewis and Clark could have hardly missed seeing them.

On April 29, 1806, Lewis and Clark landed at the confluence of the Walla Walla and the Columbia, and proceeded about a mile up the north bank of the former. They wrote, "There are twelve other lodges on this river a little distance below our camp" (*ibid.*, p. 337).

This may have been an occupation of the Wallula site, for in the first mile upstream from the Columbia River only the Wallula site is a suitable camping spot. From these data we can imply that the site was not occupied in October 1805, but that it may have been used the following April. In October 1805, when Lewis and Clark first reached the Columbia River, they remarked that the Indians wore quantities of bright blue and white beads, copper, and brass. From these data, we may speculate that the Wallula site had ceased to be a permanent village by the time Lewis and Clark came by.

If the Wallula site was a seasonal camp, the vast quantity of fish bones and fishing equipment in the midden would indicate that it was a fishing camp and should have been occupied during the summer and fall. Furthermore, the shortage of European trade goods in the mid-

den seems to prove that it was not a permanent village in 1806 and thereafter.

In 1812, Robert Stuart mentioned the Walla Walla River. "On this stream and its neighborhood live the nation from whom it derives its name" (Rollins, 1935, p. 62). Stuart, however, did not specifically mention the mouth of the Walla Walla.

Fort Nez Percé (later called Fort Walla Walla) was built in 1818 on the east bank of the Columbia River about 500 yards north of the Wallula site. It was a trading post surrounded by a stockade and protected by a company of armed men. Some years after he was in command of Fort Nez Percé, Alexander Ross wrote an excellent account of life at the post. He tells that by 1818 the Indians had guns and horses, iron knives, and all sorts of trade goods. Most of these had been acquired after 1805, for Lewis had reported the Indians to be terrified at the sound of a gunshot. Ross mentioned that the nearby territory belonged to the Cayuse and the Walla Walla tribes, but he did not mention a permanent village at the mouth of the Walla Walla River.

By 1818, the Indians were probably using part of the Wallula site as a burial ground. The beads found in the graves are of bright-colored porcelain, and are identical with beads found in the excavation of Fort Walla Walla by the National Park Service (Caywood, 1951, personal communication). In view of the evidence cited earlier from Lewis and Clark, it would seem that the bodies were interred some 15 years after the site was no longer being occupied.

SITE 45-BN-3 (BERRIAN'S ISLAND)

Site 45-BN-3, on Berrian's Island, was about 5 miles east of McNary Dam and opposite a point equidistant between 35-UM-3 and 35-UM-5. Berrian's Island was separated from the north bank of the river by a narrow channel, and the site was located at the downstream end of the island facing the main channel on the river. The site was used for both habitation and burial, the latter being the most important use as judged on the basis of few signs of habitations and many burials.

ARCHITECTURE

The owner of the property on which the site was located reported that there had been three or four house pits on a slight ridge just north of the burial area. However, during the spring flood of 1948, these pits were washed away or covered up. Test pits in that vicinity failed to uncover any sign of houses. Occupational debris was found on the western side of the burial area, but no houses were detected.

MATERIAL CULTURE

The archeology of the site had been reported in detail by Douglas Osborne, who was in charge of the excavation. The present discussion, therefore, will be limited to such a description of the material culture as reported by Osborne ⁷ and by use of field notes.

Some trenching was done in the thin midden area east of the main burial area, but little was found beyond a few glass and copper beads. The bulk of the artifacts came from the graves themselves, which were 52 in number.

A comparison of the artifacts from the graves at 45-BN-3 with those of other sites is difficult because of the difference in quality of the artifacts lost or discarded, and those used as burial furniture. The fine carved stone and bone, as well as most of the ornaments, usually found their way into graves. Crude stone tools such as hammers, choppers, and net weights were seldom found in the graves, but were very common in the midden trash. There was a little overlap in chipped-stone artifacts, and occasionally broken fragments of the better made artifacts were recovered in trash.

The projectile points from the graves were mainly of two general types, side notched and barbed (pl. 42, *a*). These points were very similar to those found in the late occupation at Cold Springs, at Techumtas Island, and the Wallula site. They were small, thin, and well made. Another type of blade, considerably larger, may have served as a projectile point or as a knife. This type graded from a simple triangular outline to that of a lozenge with a flat base. Whereas the small points, the notched and barbed type, varied around 2.5 cm. in length, the triangular blades varied around 4.0 cm. in length.

Several large knives were found (pl. 42, *a*). Five or six of them were between 5 and 7 inches long (12.5 to 17.5 cm.), and were in the form of a long slender triangle. The material (tabular petrified wood) and the workmanship were practically identical to that of the triangular blades described above. A few blades, about half a dozen, were leaf shaped with flat or rounded bases. Some of the larger blades were found with remnants of wooden handles still in place. Nearly all of the larger blades were made of petrified wood, while jasper, obsidian, and some petrified wood were used in making the small projectile points.

Three types of drill bits were used. A small one, of chipped stone, was pointed at both ends. Another type, long and slender, had a slight expansion at the base. A third was of the "key" type which was described for the Wallula site.

⁷ See footnote 3, p. 164.

Chipped-stone scrapers were not found in the graves. Those from the midden were of the usual primary flake type, showing more the results of having been used than having been deliberately prepared for use.

Nearly all of the coarse stone tools came from the midden area or were being washed out of the riverbank on the edge of the site. The list included hammers, choppers, and spall flakes as well as two-notched and four-notched net weights. The choppers were of the cobble as well as the discoid type, and four out of every five net weights were of the two-notch type. Net weights littered the gravel along the waterline the whole length of Berrian's Island as well as the island adjacent to it on which 45-BN-53 is situated.

Objects of ground and polished stone were frequently placed in the graves. The large stone mallets which have been described earlier were among these (pl. 42, *b*). Four mallets were recovered, as were five long tapered pestles of diorite. The pestles were from 7 inches (18 cm.) to 15 inches (38 cm.) long. Since no stone mortars were found, it was assumed that mortars may have been made of wood. The pestles from the graves were better made and more finely polished than those found at the Wallula site.

Five stone pipes of soapstone (steatite) had been placed with the burials (pl. 43, *b*). Three of the five were of the tubular type, slightly restricted near the mouthpiece and flaring into a flanged mouthpiece. Another pipe had a bulbous bowl and a straight narrow stem without the flange. The last one, only 3.5 cm. long, had a foreshortened bowl and flange, and must have had a separate stem which fitted into it. All of the pipes were carefully made and exceptionally well polished. Three pipes were decorated with small notches around the mouthpiece; one had hatched triangles incised on the bowl.

Chipped-stone fetishes were not found in the graves, but were found in quantities on the eroded section of the midden and on the terrace just east of the burial area. There is every reason to believe that they are of the same age as the burials even though they were not found in the graves.

Antler wedges were represented by about six specimens (pl. 43, *a*). There were no significant differences between these and the wedges found at the Wallula site. The antler was split, ground to a chisel point at one end, and left blunt at the other. It is believed that these tools were used with the ground-stone mallets for splitting wood.

Bone awls were numerous in the graves, and several were of excellent workmanship (pl. 43, *a*). A number of awls were of the splinter type, unfinished except at the tip of the point, and made of split sections of long bone. One was made of a deer ulna with the proximal end used as a handle. At least three awls were finished and polished

all over. They were round in cross section and tapered smoothly to a point. Classifying these three as awls is only a presumption, for they may have been hair ornaments. One or two bone tools had been used as flakers and were partially smoothed along the shaft. Other bones, principally the leg bones of large birds, had been cut off into cylindrical sections for use as beads. They were of many sizes but averaged around 3.0 cm. in length and less than 1.0 cm. in diameter. Beads made from the hollow leg bones of birds were found at Hat Creek and Cold Springs and are considered typical ornaments in the region.

This brief description of the material culture covers those types of artifacts that have been found and described for the other McNary sites up to this point. The series of artifacts to be described next are typical of the burials at 45-BN-3, but are types that were not found in the other sites. It should be clearly understood that these are not necessarily unique at 45-BN-3, but were recovered there only because that site was a burial area. The same artifacts were probably part of the material culture assemblage at the Wallula site and other contemporary sites, but were not lost or discarded in the trash; at least they were not recovered in the excavations.

Several polished stone blades that were found in graves are believed to be celts or adz blades (pl. 43, *b*). They are flat and thin with the edges beveled from one or both sides. The material is a very dense nephrite which is greenish black in color. Excellent workmanship is exhibited in these tools, for the surfaces and beveled edges are well polished. In size these tools vary from 2 inches (5 cm.) in length and 1½ inches (4 cm.) in width, to 5 inches (14 cm.) in length and 2 inches (5 cm.) in width. Polished stone celts like these, without a hole or groove for hafting, have been found all along the Columbia River by collectors. A few of these were found during the archeological survey.

Other pieces of carved stone included a steatite ball about 4 cm. in diameter with a hole drilled through it (pl. 43, *b*, left center). It may have been an ornament, but it would have been a very heavy one to wear. Small disk beads were carved from steatite and had a single hole drilled through the center (pl. 15, third from the left). They were about 1 to 2 cm. in diameter. A spoon made of soapstone was made in effigy of a seashell (*Glycymeris* sp.), and the hinge served as the handle. A pendant, also of steatite, was made from the flanged mouthpiece of a tubular pipe. Apparently the pipe had been accidentally broken, and the mouthpiece had been reworked into an ornament.

A new kind of fetish was found with the Berrian's Island burials. It was carved and polished from a piece of tabular slate (pl. 43, *b*,

second from right). The designs incised on the fetishes are more easily pictured than described. Some of them are illustrated below.



In nearly all cases red ocher had been rubbed into the designs. Strangely enough, some of the chipped-stone fetishes had red ocher rubbed into the notch, and at a site (35-WS-5) near The Dalles, Oreg., a great many chipped-stone fetishes had been similarly treated. Some explanation should be forthcoming. It can be shown that no chipped-stone fetishes have been found in graves, and no polished-stone fetishes have been found outside of them. Perhaps the latter were reserved for burial furniture.

There were two kinds of sandstone shaft smoothers found in the graves (pl. 43, *b*). One was carefully made in block outline with a diagonal groove. This type was from 15 to 22 cm. long and was made of tuffaceous sandstone. The second type was made of fine sandstone, and was probably used by employing matched pairs and sliding the shaft between the two. The groove was parallel to the long axis, and this type was slightly smaller than the other.

Among the objects made of bone and antler were several artifacts that had not been found in other McNary sites. All of these things had been reported by ethnologists as being typical artifacts of the area, and most of them were seen by early travelers in the Plateau. The antler digging-stick handle is one of these (pl. 43, *a*). It is a curved tine with a hole bored through it at about the center. The digging stick was passed through the hole, so that the antler served as a sort of crutch handle. There is no explanation as to why an antler tine was used. Three such handles were recovered from the graves.

A bone fleshing tool, used for removing hair and flesh from hides, was made from a long bone of deer or elk. The handle was smoothed and one end was toothed like a small hand rake. Whistles were made from the wing bones of the Golden Eagle in the form of a straight tube with holes cut in the shaft (pl. 43, *a*, center). Numbers of teeth and claws were used as ornaments. Elk teeth were drilled for suspension in the manner of those worn by members of a large fraternal

organization. Both the teeth and the claws of bears and wolves were used for ornaments.

Most of the shell at 45-BN-3 was of marine origin, and all of it was ornamental (pl. 45, center). Whole shells of the *Olivella biplicata* were strung into necklaces. Half shells of *Glycymeris* sp. were pierced at the hinge and worn as necklaces or bracelets. *Dentalium* sp. was strung whole or cut into sections, and some of the shells were incised. Disk beads were cut from various unidentified marine shells. Most of the shell pendants were made of *Haliotis* (abalone), cut into various shapes, and usually pierced for suspension. Apparently the only nonmarine shells used were those of the river mussel (*Margaritifera*), which were occasionally made into pendants but were generally too fragile for beads. All in all, shells were among the most numerous of objects recovered at the site.

In the case of many of the artifacts described earlier there may be some question as to use, but most of the ornaments were found in situ; that is, in association and positions that made their identification conclusive. The burials were carefully excavated and the position of artifacts most carefully noted.

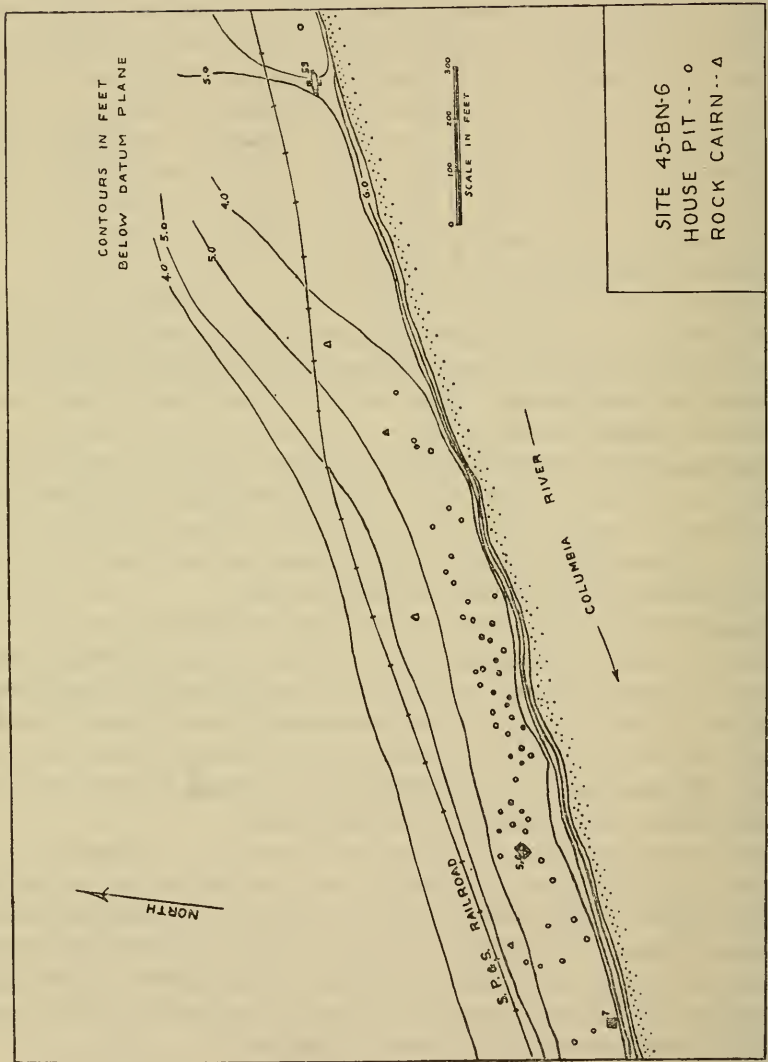
Vast quantities of trade goods of European origin were found in and around the burials. After good statistical samples of the glass beads were taken, no special effort was made to recover them all; they existed by tens of thousands (pl. 45, right). Since the glass beads were discussed earlier, no further mention need be made.

Nearly all the metal recovered was of rolled sheet copper, and was in the form of tubular beads or flat pendants (pl. 45, second from right). The copper was not all of the same gage, but every piece examined by metallurgists turned out to be of European manufacture. The beads were usually 4 to 5 mm. in diameter and from 1 to 7 cm. long. All sizes and shapes of pendants were found with various decorative holes and knobs punched into the metal.

Iron was apparently well known, but most of it was badly deteriorated. Identification was possible on a few knives, arrow points, and bracelets. Many other bits of iron were too rusted for classification. Several metal buttons that were found appear to have been from (or for use on) military uniforms. They were of brass, and were either flat or hemispherical. Other metal objects included a brass thimble, bits of silver, and fragments of pewter.

BURIAL CUSTOMS

Some of the graves were simple interments, others were in a plank-lined cist (pl. 44, *a*). The latter form is interesting. Apparently, the grave was dug and the mat-wrapped body deposited in it. Afterward the grave was lined with upright cedar planks about 4 inches



MAP 7.—Site 45-BN-6.

wide and 1 or 2 inches thick. The grave was then filled in and the protruding planks were burned off level with the ground. In one burial glass beads and food had been thrown in the fire, presumably as an offering. Generally the bodies were flexed (pl. 44, *b*) or semi-flexed, on the back or side, with the head oriented to the west (downstream).

ECONOMY

Most of the information that was recovered from site 45-BN-3 pertained to material culture and burial customs. While it is possible that a group large enough to be responsible for all the burials actually lived on the site, there is reason to believe that the site was not primarily residential.

SITE 45-BN-6

Directly across the Columbia River from Techumtas Island there is a long flat terrace. Site 45-BN-6, which was situated on the terrace, stretched along parallel to the river for one-half mile (map 7). The site was 9 miles east of the McNary Dam and 1 mile east of the small town of Mottinger, Wash. Except for being on the mainland instead of on an island, 45-BN-6 was very similar to site 45-BN-53. The house pits were scattered along the terrace at random with no apparent pattern. Basalt cliffs rose abruptly behind the houses, and the terrace fell off into the river with a steep bank and little or no beach.

ARCHITECTURE

The village included 59 semisubterranean pit houses and one long mat house. Besides testing for midden trash, three of the house pits and the mat house were excavated. Apparently the village trash was dumped into the river, for no midden worthy of the name could be found. Almost all of the artifacts came from the houses, as was the case at 45-BN-53.

The architecture at 45-BN-6 was little different from that described for other sites in the region. House pit 7 was more typical of the houses in the village. House pits 5 and 6 were possibly occupied at the same time and may have been a single house over two pits. House 59 was a very large mat lodge and the only one excavated by River Basin Surveys.

House pit 7 had been approximately 17 feet long and 15 feet wide (fig. 29). The remains of several floors were clearly discernible near the center of the house but faded out near the edges. As near as can be estimated, the subterranean portion of the house was approximately 2½ feet deep. Each of the floors was saucer shaped without abrupt walls at the sides of the house. There were three distinct occupational levels in the house, each marked by a black accumulation of charcoal

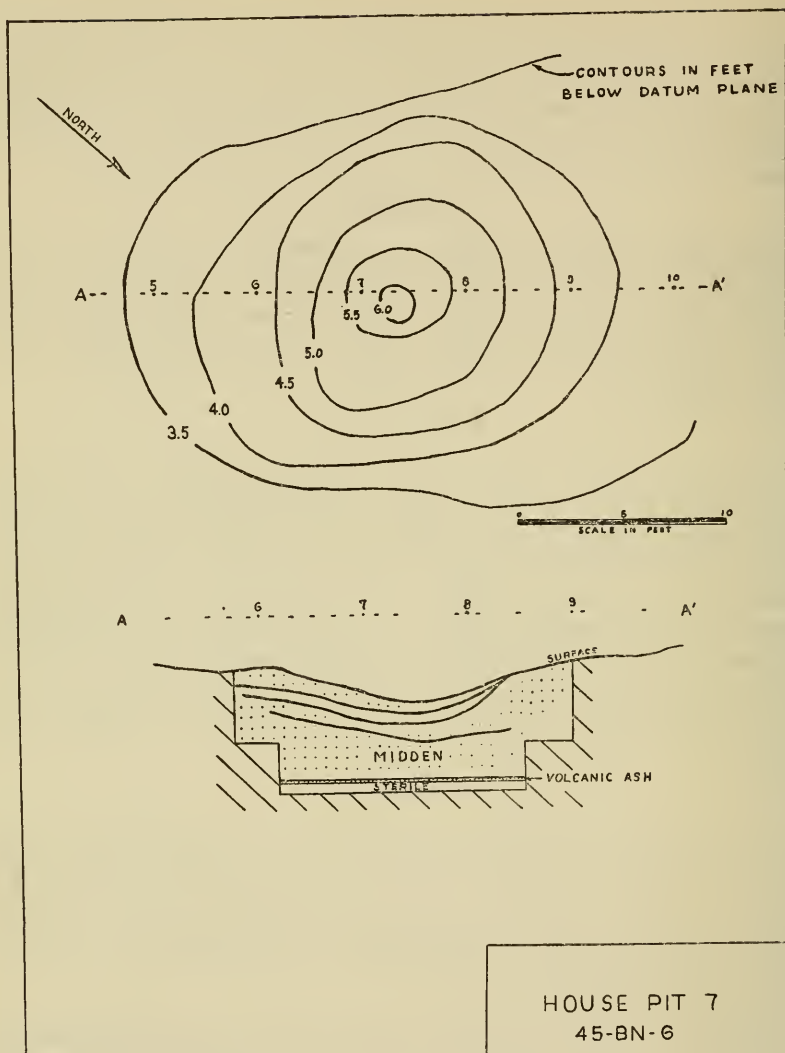


FIGURE 29.—House pit 7, 45-BN-6.

and ashes less than 1 inch in thickness. The floors were from 6 inches to 1 foot apart vertically, and each one more or less paralleled the others. The earliest floor had been built on a slight accumulation of trash that included a few animal bones, some charcoal, ashes, and flakes of stone.

Typical of houses in the McNary region, house pit 7 gave no indication of the kind of superstructure used. There were no postholes or remnants of construction materials. The side of the house nearest the river was slightly lower, indicating a possible entrance there, but there was no substantiating evidence.

Houses 5 and 6 were both considerably smaller than the average for the village or the region (fig. 30). House pit 6 was 13 feet long and 12½ feet wide, and house pit 5 was 16 feet by 12½ feet. The pits were tangent, and in neither pit was there evidence of backdirt from the construction of the other. This led to the belief that the two were occupied contemporaneously. The few artifacts found in the two houses showed no significant differences, but there is still no proof that they represented a single dwelling. No timbers or other evidence of superstructure were found, nor were postholes detected.

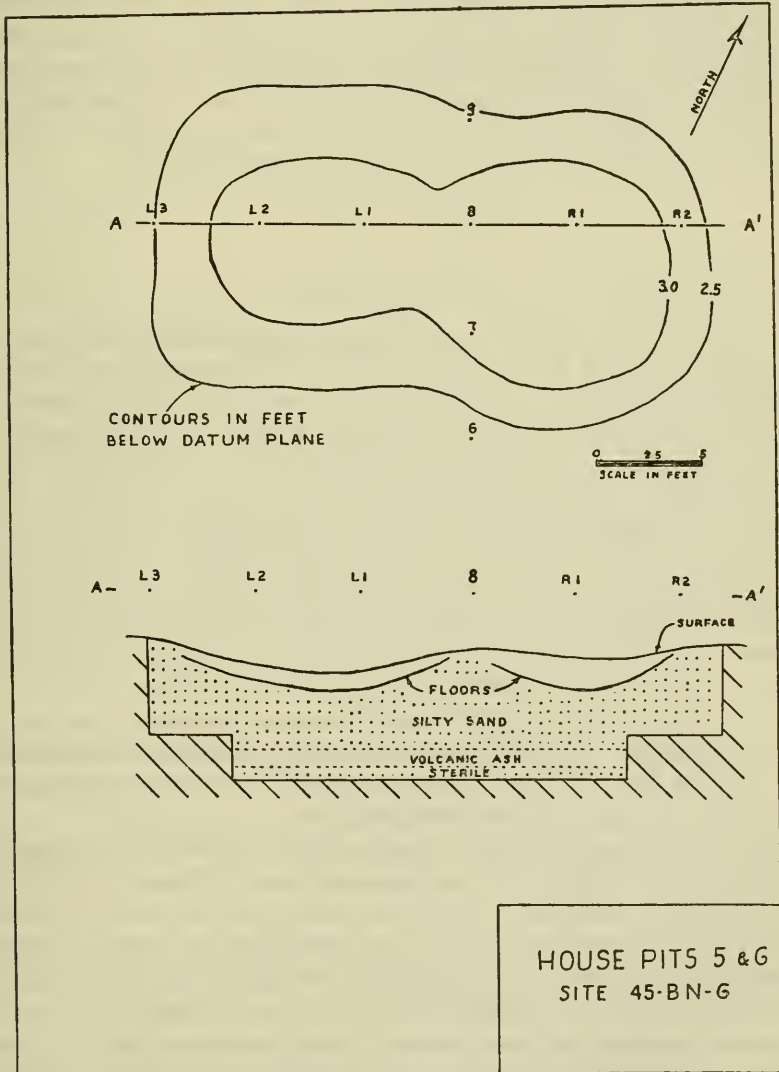


FIGURE 30.—House pits 5 and 6, site 45-BN-6.

As in house pit 7, the side of house pit 6 nearest the river was lower, suggesting an entranceway there. None of the houses, 5, 6, or 7, were deep enough for a roof entrance to have been used.

House 59 was quite different from any other structure excavated in the McNary region. It was nearly 65 feet long and 16½ feet wide, in the form of a rectangle with rounded ends (pl. 46, *a*). The floor was less than 1 foot deep except where a small firepit had been dug into the floor. The dimensions of this house were almost identical to those of the multifamily units reported by Ray (1939, pp. 136-137), Lewis and Clark (Thwaites, 1904-5, vol. 3), and others for the historic period. Ray's informant reported that the mat lodge was usually 60 feet long and 16 feet wide, rectangular in floor plan with rounded ends. The superstructure was an inverted V section covered with mats, although there was often a gap in the roof, the length of the house, through which smoke might escape. Several families could live in each mat house, each with its own fireplace.

MATERIAL CULTURE

Although there were several occupations of houses 5, 6, and 7, the artifacts recovered from the various levels of occupation showed too few differences to suggest any change in the material culture. In house pits 5 and 6 the non-European artifacts were mostly cobble choppers and hammers. An awl made of wood, a thumbnail scraper, and two elk rib fleshing tools were also found. The fleshing tools were simply sections cut off a rib and used without special preparation.

In house pit 7 about the same kinds of materials were found. Besides cobble choppers and hammers, a crude bone awl and a notched net weight were recovered. House pit 59, the long mat house, was more productive. Twelve projectile points from the floor included three that were small and triangular, four that were small and corner notched, two that were side notched, and three broken unclassified points. These small projectile points made of obsidian, jasper, and petrified wood are typically those of the late prehistoric and early historic periods. A few flake scrapers and a hammerstone were also recovered in house pit 59, as was a basaltic pebble that appeared to have been used as an arrow-shaft polisher.

The assemblage of European trade goods associated with the houses was significantly different from that of either 45-BN3 or 45-WW-6. Instead of glass beads and copper, the trade goods included fragments of tin cups in house pits 5, 6 and 7; bits of glass, possibly window glass, in house pit 59; and a fragment of canvas in house pit 7. Other trade items included a large caliber rifle or pistol ball, a fragment of a square nail, and a horseshoe and a machine-made mother-of-pearl button. The horseshoe and button were in the fill of the houses and

could represent a utilization of the site after the main occupation had ended. However, the general character of the assemblage of trade materials suggests that the houses were occupied after white men were living in the vicinity. There were four glass trade beads in house pit 59, and all were of the type found at Wallula, which are believed to be from Fort Walla Walla.

Scattered about the terrace were four or five piles of medium- to large-sized rocks. Excavation revealed nothing beneath them and no structure associated with them. Piling up rocks was one of a number of tasks given to boys who were in training for the spirit quest (Spier and Sapir, 1930). The custom was based on the idea that the spirit quest was not only a very serious affair, but one which required careful preparation. Thus, small boys were given tasks which were difficult as well as frightening in order to test their strength and their courage. They would be sent out alone on a dark night to some remote spot to leave some object or pile up stones to show that they had been there. This may be an explanation for the rock piles.

BURIAL CUSTOMS

Several test pits were excavated in the steep bank at the river's edge in hope of finding an over-the-bank dump. In one of the test pits, however, a complete burial was found. The remains were of a male somewhat over 50 years of age who had been interred without any burial furniture. All metrical measurements and morphological observations fell within the expected ranges, and no anomalies or pathological conditions could be seen. The teeth were in extremely poor condition, which would be expected for an individual of that age. Erosion of the bank also washed out a stone bowl that was practically identical with those recovered at the Wallula site.

ECONOMY

A complete analysis of the animal bones was not available at the time of this writing. Osborne, however, reported the presence of horse and bison bones in considerable numbers and the absence of antelope bones (Osborne, 1953, p. 262). Bones of fish and deer were recovered in quantity, as is usual in McNary sites. In addition to the bones, the artifacts showed that both hunting and fishing were important. Net weights and projectile points were found in the houses, and were eroding from the riverbank. Data on foods obtained by gathering are always difficult to recover and other than one stone bowl none were found at site 45-BN-6. The stone bowl may have been used as a small mortar for grinding seeds and berries.

Even though evidence of gathering was lacking, it is known from historical data that it supplied a large share of the food that was consumed.

HISTORICAL DATA

There is one historical reference that probably applies to site 45-BN-6. In 1812, Stuart was on his way up the Columbia River, and stopped at an Indian village to trade horses. His biographer placed this village just east of the town of Mottinger, Wash. (Rollins, 1935, p. 61). The location fits site 45-BN-6, for there are no other sites within 3 miles in either direction and 45-BN-6 is definitely post-contact. The horse bones found in the house pits offer further evidence that site 45-BN-6 was the village that Stuart visited.

SITE 45-BN-55 (SHEEP ISLAND)

Sheep Island is situated approximately one-half mile downstream from Techumtas Island and approximately one-fourth mile upstream from the Cold Springs site. The island is a large gravel bar about 300 yards long and 200 yards wide. Its size, of course, fluctuates with the height of the Columbia River. The downstream end of the island is considerably higher and has a sandy loam deposit stabilized by vegetation.

There have been two archeological investigations carried out on Sheep Island. The first of these was an excavation in 1949, sponsored by the Whitman College Museum and Department of History, and the fieldwork was done by Thomas R. Garth (1952 a, p. 348). The second excavation was by a River Basin Surveys crew in the summer of 1950, and was under the direction of Douglas Osborne. Garth's work brought to light two large cremation pits and several burials with a series of stone and bone artifacts associated with each of them. Osborne found a series of burials that were also stratigraphically older than the cremations. The burials unfortunately had no artifacts associated with them.

Since the excavation of the cremation pits was not done by River Basin Surveys crews, the associated materials were not available for comparison with materials from other McNary sites. The illustrations in Garth's publication do not show anything, however, that differs significantly from late prehistoric sites in the region (Garth, 1952 a, p. 348).

The stone materials included small delicate projectile points seemingly identical with those from site 45-WW-6 and lozenge-shaped knives similar to those from sites 45-BN-3 and 45-WW-6. A tubular stone pipe and several fragments of pestles were also found. Artifacts of bone included several small incised fragments of ornaments and a number of points of awls or needles.

Garth found 10 burials that were stratigraphically older than the cremations. Grave goods were found with six of the burials, but the majority of the artifacts accompanied just one of them. These artifacts also consisted of materials that were practically identical with those of late prehistoric sites in the region. The small projectile points and knives are of identical shapes and were associated with tubular pipes, stone mallets, pestles, and antler wedges. None of the materials that Garth found would be out of place at the Wallula site (45-WW-6) or at 45-BN-3. The proportions of projectile-point types are more like those of 45-WW-6 than those of 45-BN-3. Since no European trade goods were found on Sheep Island, it would be expected that the Sheep Island material culture would more closely resemble that of the Wallula site which was in part prehistoric.

The burials found by Osborne are apparently of the same group as those excavated by Garth. Osborne, however, found no artifacts associated with the graves, so that materials for comparison are still not available. His analysis of the skeletal material has not been published as yet.⁸

Since no European trade goods accompanied the graves and cremations, it is reasonable to assume a precontact date for the site. This would undoubtedly be prior to A.D. 1750. Since material culture is similar in every respect to late prehistoric sites that contain a few glass beads and bits of copper, the site is probably not a great deal earlier than 1750. It is impossible, however, to fix a more precise date.

CULTURE CHANGE IN THE McNARY REGION

In view of the fact that the time factor is understood only in a relative sense, the rate of culture change in the McNary region cannot be estimated. It can be demonstrated rather clearly that certain artifact types gave way to other types as time went by. During this span there were also modifications of economic pursuits and of the residence pattern. How much time is involved is not known. All that can be done at the present time is to review the type and nature of the changes as they are reflected in the archeological record. It must be understood, then, that patterns of change must be based on a certain amount of speculation that is due to normal incomplete recovery of the cultural picture at any one stage of development. To speak of a development in regard to the McNary region I believe is justified, for the results of the excavations demonstrate just that. The total change between the earliest material and the latest is considerable. Each site or sites which follow in sequence add a few traits toward the development of

⁸The report on this work, "The Sheep Island Site and the Mid-Columbia Valley," by Douglas Osborne et al., is being published as River Basin Surveys Paper No. 24, this bulletin (Bur. Amer. Ethnol. Bull. 179).

a peak which was reached around A.D. 1800. At this time the aboriginal population appeared to be in its best adjustment to its environment. This adjustment was quite different from that of the earliest group in the local sequence.

The people who lived along the south bank of the Columbia River at a time prior to the ash fall utilized fish but had no specialized fishing equipment. They must have had a tradition of hunting, for their most skillfully made tools were projectile points. Other than their ornaments, the remainder of their material culture was of the expendable variety, simple tools that required little or no preparation prior to use. In this category were the crudely made hammers, choppers, and flake scrapers. These kinds of tools are seldom carried along on a movement or migration. They can be produced quickly as the need arises, and can be as readily discarded.

The people who lived on Hat Creek hunted rabbits, deer, and birds, caught a few salmon and shellfish, and probably gathered a certain amount of vegetable foods such as seeds, roots, and berries. They seemed to have lived in flimsy houses of a type that left no remains, and they made considerable use of red ocher paint. This is all that has been learned of the earliest group of people whose record has been picked up in the McNary region.

After the settling of the volcanic ash or pumicite, a group of people began to live on a terrace about 5 miles to the east of Hat Creek, a site now called Cold Springs. It is not possible to say how much time elapsed between the two occupations, but it appears to have been a very short time. This assumption is based partially on the close conformity of ash and midden at both sites, as well as the close continuity of material culture. Every type of artifact that was found at the Hat Creek site was also found deep in the midden at Cold Springs.

Before the village at Cold Springs had been in existence very long, two kinds of change had taken place. Certain artifacts had been improved, especially in workmanship, and certain new artifacts had been added to the inventory. Hammers and choppers were made by removing more flakes and using more careful flaking techniques. Specialized fishing equipment was added to the inventory. Notched, grooved, and perforated net weights were adopted, and the nets that were used are responsible for the great increase in the number of fish bones.

The projectile points were carried over from the Hat Creek period unchanged except that the concave-based type was no longer made, and obsidian was now used. Scrapers and knives were unchanged, but the long basalt knives became more numerous. Red ocher was still used, but it had been refined in some way and was pressed into tablets. Bone beads and bone awls were retained as they were into later times, and into the historical period.

Later on, the leaf-shaped projectile point was replaced by a side-notched point. This is the first appearance of notching of any type in the region. Along with side-notched points came the use of discoid choppers. The earliest of these were not specialized, in that the size of the cutting edge or bit had not yet become stabilized. Discoid choppers did not replace the cobble choppers, but were an addition to the inventory. About that time, the long basalt knives began to drop from use. A few of them were associated with side-notched points but the majority were lost or discarded when the midden was still shallow.

It is not clear when the first permanent houses were built. The earliest house found at Cold Springs was probably assignable to a time toward the end of the earliest occupation or about the beginning of what might be termed the middle part of the occupation. From that time on, semisubterranean pit houses were standard.

The middle period saw the introduction of the first marine shell and the first carved stone, the latter represented by a small steatite pendant and a short steatite tubular pipe. The rest of the material culture shows no change. Thus, in transition from the early part of the occupation of Cold Springs to the middle, leaf-shaped projectile points are replaced by side-notched points, and discoid choppers, new ornaments, and carved stone are added.

By the time people were living on Techumtas Island and across the Columbia at 45-BN-53, more changes had taken place. There may have been a time interval between these villages and the abandonment of Cold Springs, but the record is not clear. At least the people were no longer making the large side-notched points, and had replaced them with small delicate corner-notched or triangular projectile points. Some side-notched points were made but they were half the size of those used at Cold Springs (see pl. 46, *a*, for relative sizes). Small thumbnail scrapers made their appearance at this time, although the flake scrapers continued in use. Chipped-stone fetishes were found at the Techumtas Island site for the first time, and the stone mallet was probably introduced into the area then. Discoid choppers were numerous and probably specialized in form, although too few specimens were recovered for analysis. Spall flake scrapers or knives became more numerous than ever.

There seems to have been little change in the economy except for a decreased use of shellfish. Fishing and hunting were important, and it must be assumed that gathering of vegetable products was always carried on. The only change in architecture detectable is a slight decrease in the size of houses. The pattern of dual division of the village seen at Cold Springs was continued at Techumtas Island but was not apparent at 45-BN-53. Some time during the occu-

pations of Techumtas Island and 45-BN-53 the first glass trade beads may have filtered into the region, probably well ahead of actual European penetration.

Farther upstream, the Wallula site seems to have been contemporaneous with the two villages just described. There is reason to believe that the village at the mouth of the Walla Walla River lasted longer, possibly until about A.D. 1800. The material culture there shows no significant change from the assemblage given for sites 45-BN-53 and 35-UM-17. There were some artifacts found at the Wallula site that were not found at the other two. These differences, however, are slight and most of them are probably due to chance recovery. The large stone adzes or hoes and the stone bowls may be of more recent vintage than the artifact assemblages of sites 45-BN-53 and 35-UM-17. A stone adz was associated with the very late occupation of Cold Springs terrace, and a stone bowl was found at 45-BN-6, a site of the historic period. Chipped-stone fetishes and stone mallets were not found at the Wallula site; they should have been, for these artifacts existed both earlier and later than the occupation of the Wallula site.

At Wallula there was no apparent shift in economic pursuits except for evidence of more fish being caught. The large number of projectile points and the quantity of animal bones attested that hunting was still important. Shellfish were still used but in small numbers, as they were at 45-BN-53 and Techumtas Island. Since no trace of architecture was found at Wallula, nothing can be said of it.

The burial site, 45-BN-3 (Berrian's Island), dates from approximately the same period as does the Wallula site. The elaborate collection of burial furniture included a number of artifacts that had not been found in earlier sites. These were:

- Antler digging-stick handles
- Bone fleshers
- Carved fetishes
- Long triangular knives
- Sandstone shaft smoothers
- Marine shells in great quantity
- Teeth and claws as ornaments

Of the group the antler digging-stick handles and the carved slate fetishes seem more likely to be new additions, but without earlier graves it is not possible to be sure. One thing is certain: with the appearance of trade goods in quantity, the old ornaments and tools were not replaced but only supplemented. Practically all the artifacts that were made earlier were retained, with the result that iron and stone knives were found in the same grave, and both glass and shell beads were strung on the same necklace.

Whereas the occupation of site 45-BN-3, together with the graves and their furniture, seems to be a climax of aboriginal culture, site 45-BN-6 appears to show a decline. Site 45-BN-6 is certainly later than the occupation at 45-BN-3. The types of European trade material and the existence of horse bones indicate a late site. There is evidence that the village existed in 1812 and may have lasted until the middle of the 19th century.

The material culture of 45-BN-6 was more utilitarian than that of earlier sites, and most of the artifacts were of chipped stone. They included the usual array found at the other sites except for the better made artifacts such as pestles, mallets, celts, pipes, and the like. The presence of iron, galvanized iron, glass, and leather suggests that artifacts of European origin were beginning to replace some of the aboriginal tools. By this time, white civilization was probably exercising its usual influence on native culture, and the latter was rapidly deteriorating.

In order to show at a glance how certain artifacts appeared and disappeared in the McNary region, charts were prepared. These are somewhat simplified and conventionalized, but reflect the stratigraphy found by River Basin Surveys excavations. Figure 31 shows the time distribution of chipped-stone artifacts, and figure 32 does the same for ground-stone and bone. The position of each artifact vertically is an indication of the relative time that it appears in the McNary region. In most cases, the relative order of appearance of artifacts is better known than the order of their disappearance.

There are only two points in time that are definite: the time of the ash fall and the calendar year 1805. The reference to the ash fall as a point in time does not mean that we are able to give it a calendar date, but rather that it is an event that happened at one point in time and can be recognized at several different localities. The indefinite point in time is the beginning of the late prehistoric period. From all evidence discussed so far, this point would appear to be closer to 1805 than to the time of the ash fall.

The artifact drawings are not to scale since they included specimens from less than 1 inch to specimens as large as 15 inches in size.

Figures 33 to 40 give the areal distribution of certain artifacts. Only artifacts from documented excavations are shown, since amateur collectors so often forget where they find their relics. Only artifacts from the late prehistoric period are shown in these figures. The earlier periods are poorly documented in the Plateau.

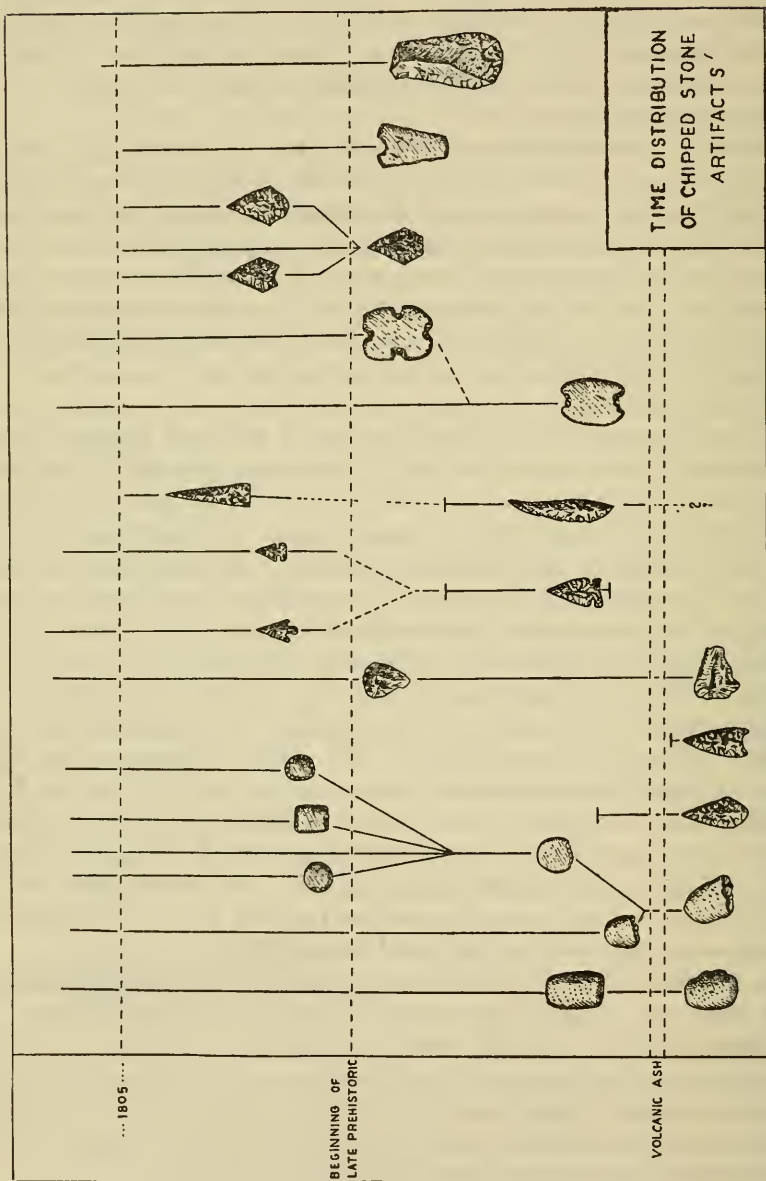


FIGURE 31.—Time distribution of chipped-stone artifacts.

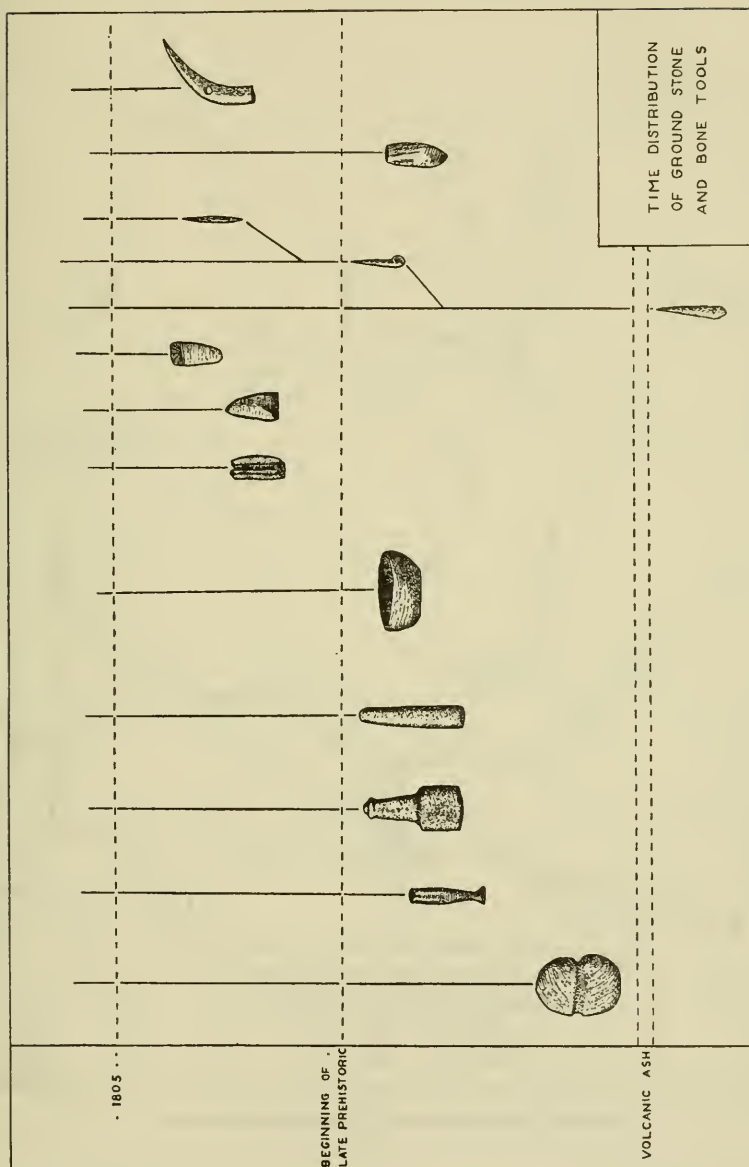


FIGURE 32.—Time distribution of ground-stone and bone tools.

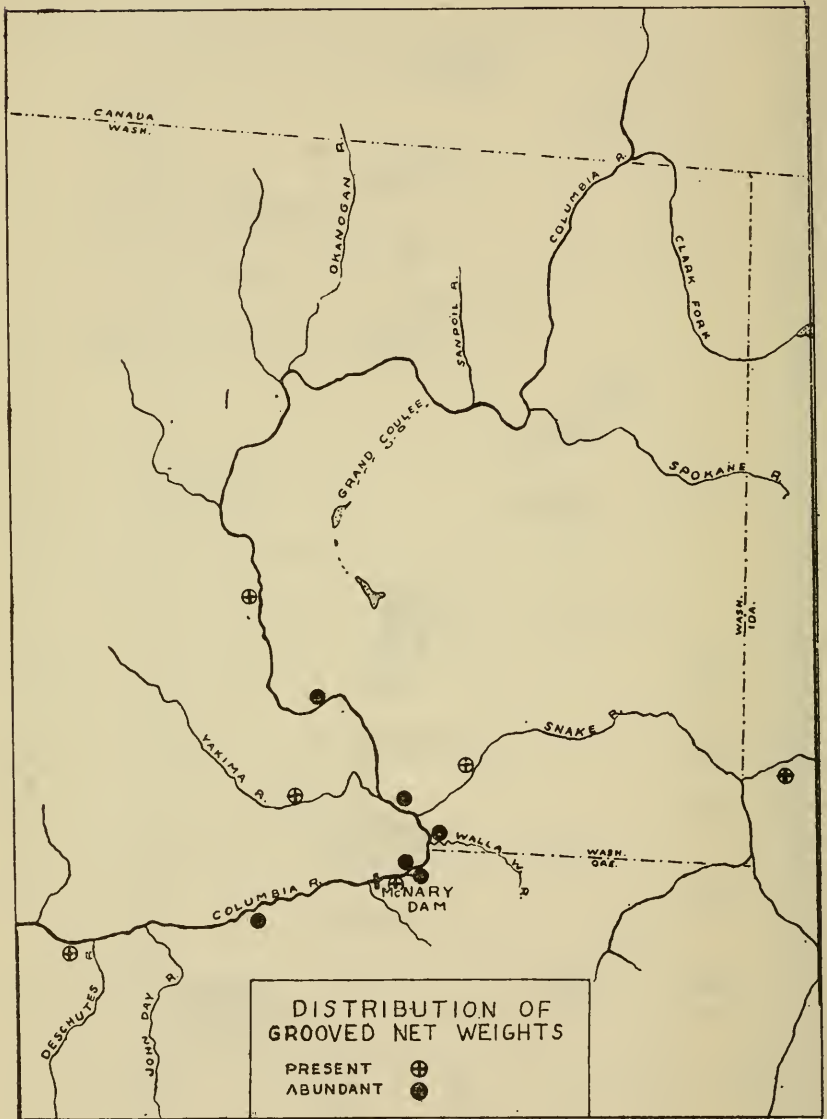


FIGURE 33.—Distribution of grooved net weights.

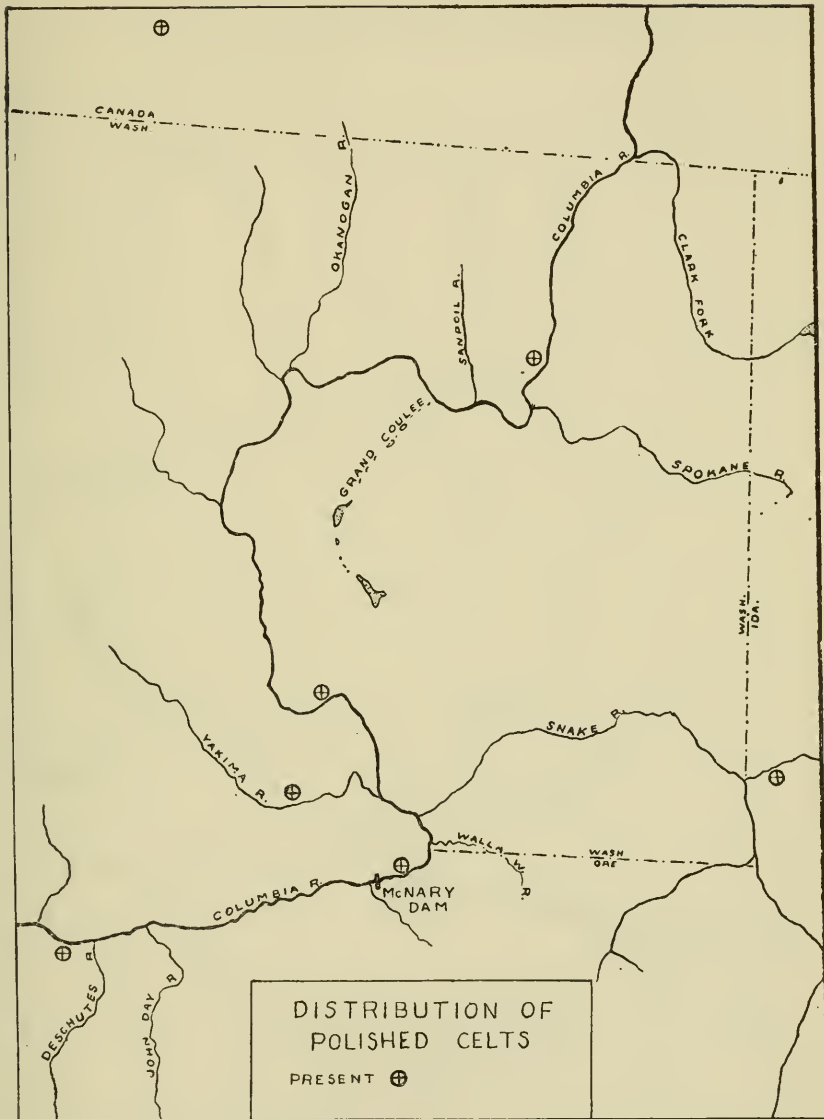


FIGURE 34.—Distribution of polished celts.

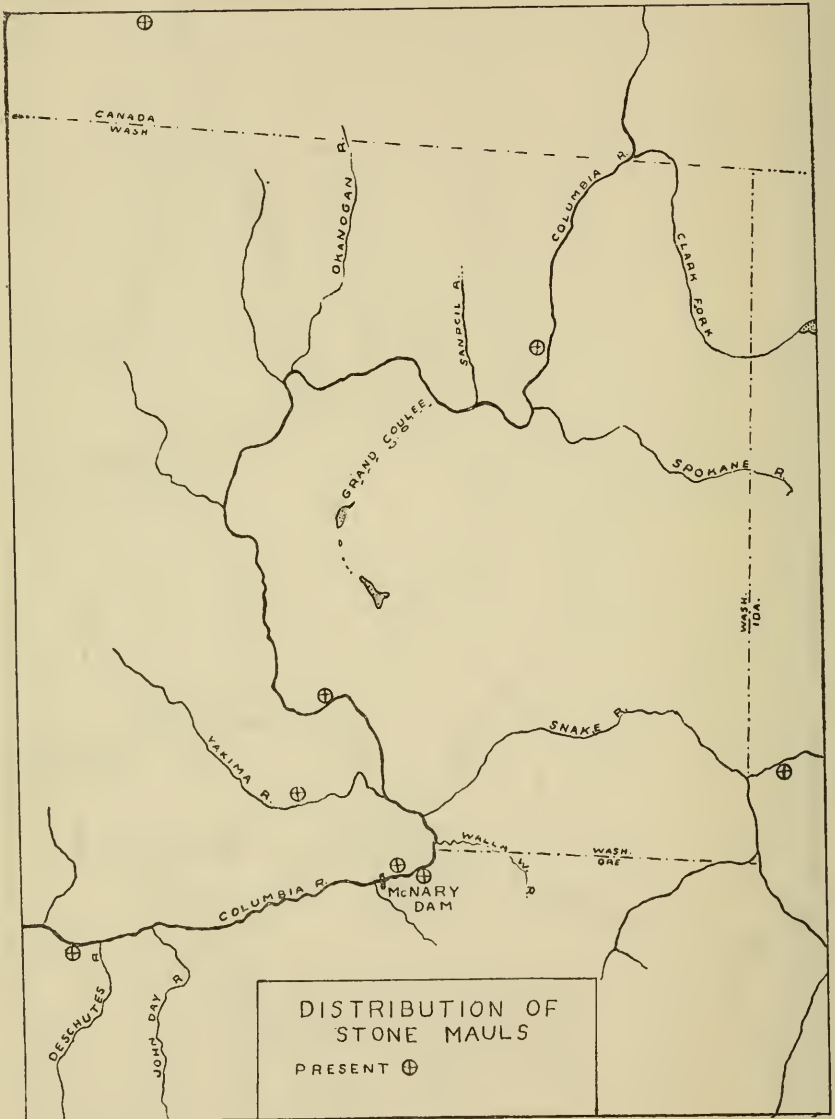


FIGURE 35.—Distribution of stone mauls.

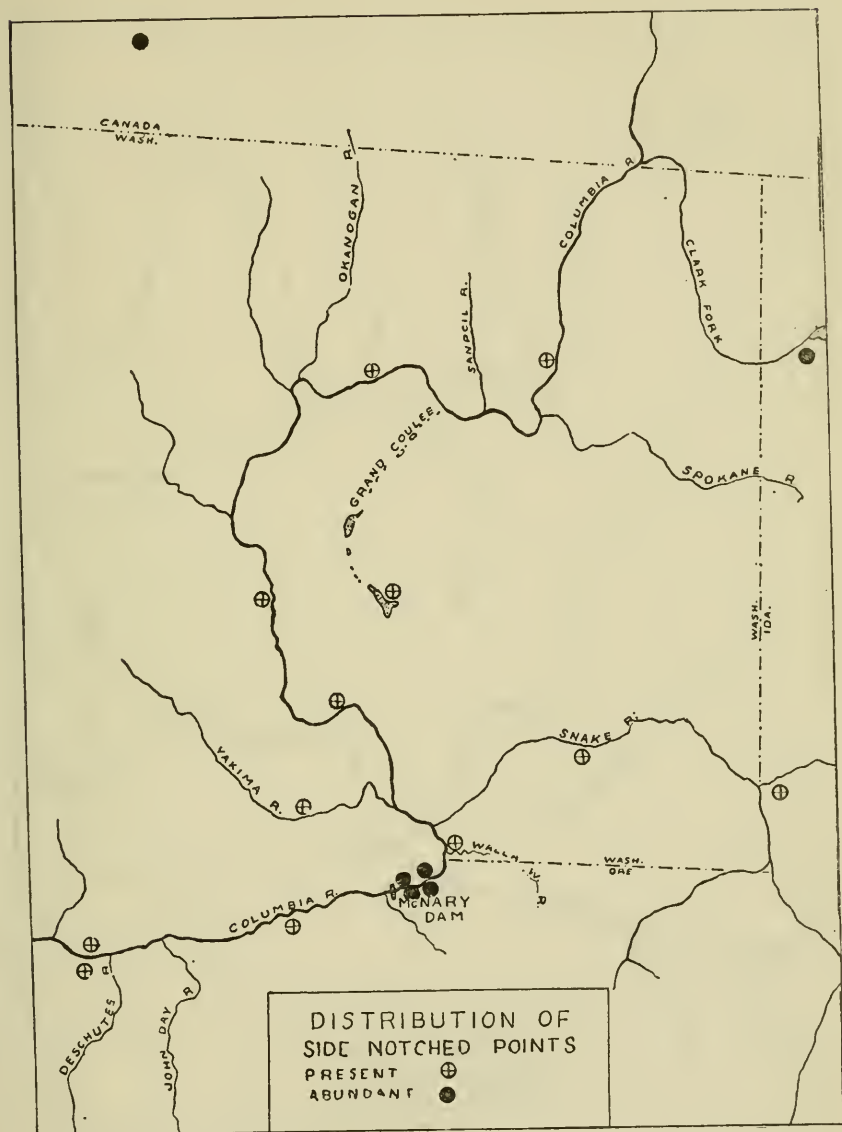


FIGURE 36.—Distribution of side-notched points

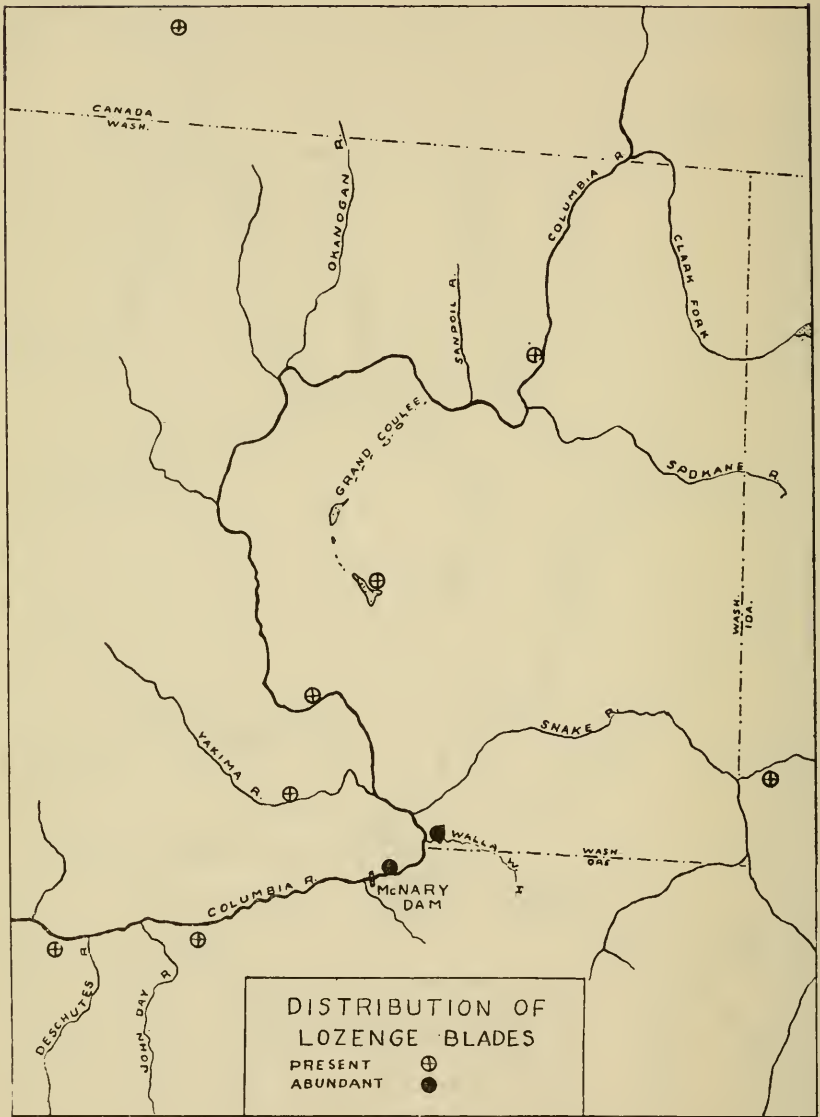


FIGURE 37.—Distribution of lozenge blades.

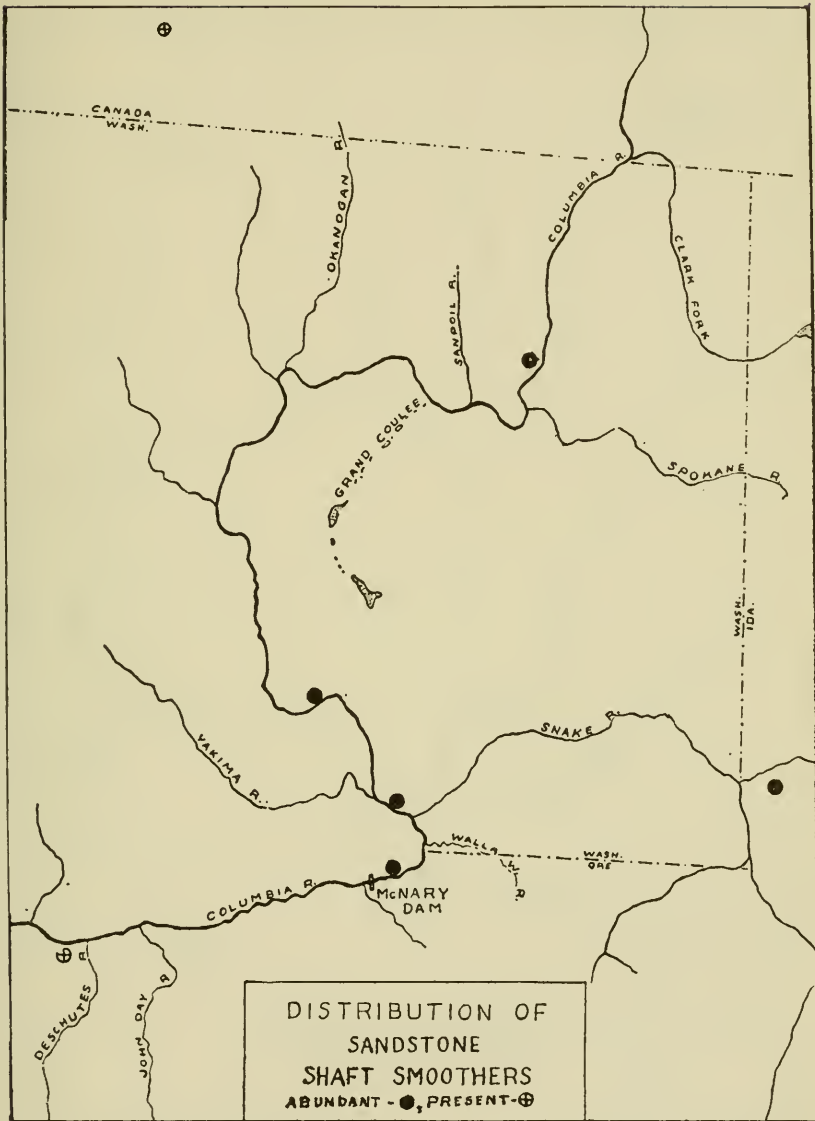


FIGURE 38.—Distribution of sandstone shaft smoothers.

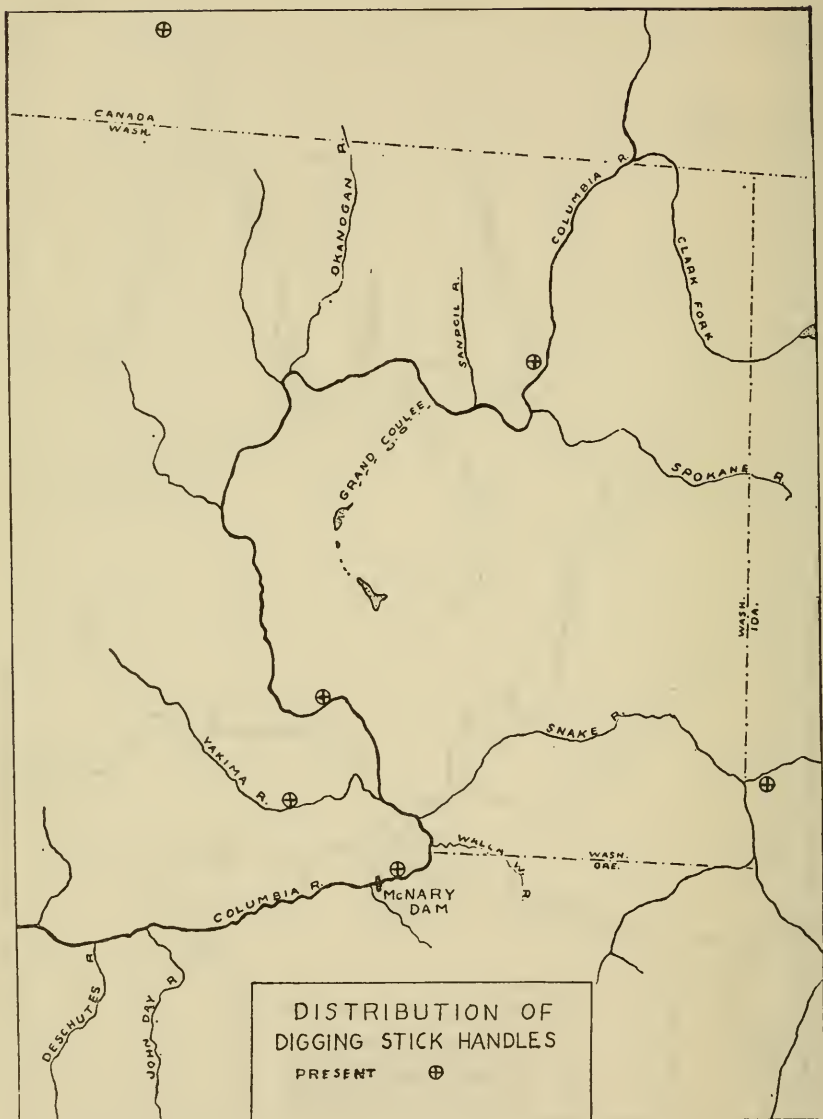


FIGURE 39.—Distribution of digging-stick handles.

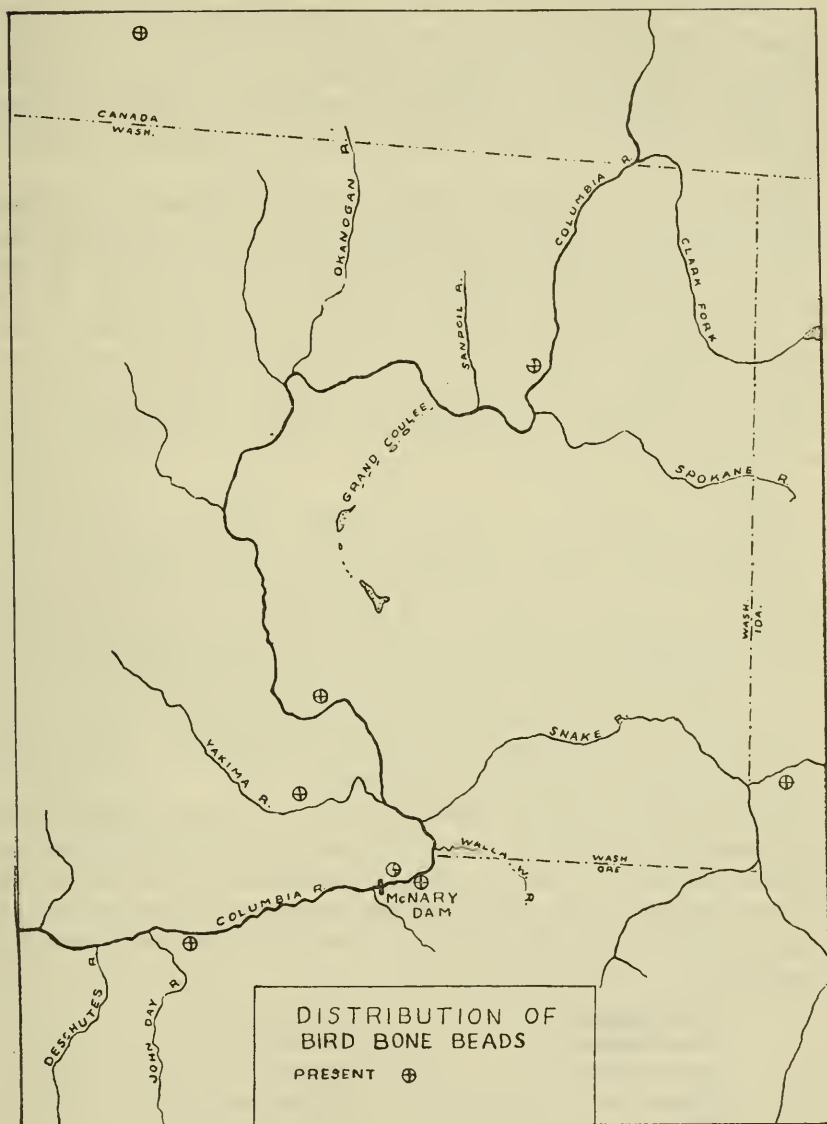


FIGURE 40.—Distribution of bird-bone beads.

COMPARATIVE PLATEAU SITES

The scarcity of published material on archeological excavations in the Plateau is unfortunate. Almost all the existing reports have been concerned with sites of the late prehistoric and early historic periods. This may be due to the earlier sites being less numerous and difficult to locate. However, one should not overlook the fact that late sites usually contain more spectacular artifacts and larger quantities of them.

There are several ways in which the material culture of one area may be compared with that of another. One of the most widely used methods is the trait list which records presence and absence of artifact types. Trait list comparisons are valid within limits. If the two artifact collections are of the same general time horizon and consist of large enough samples, reasonably good conclusions can be reached. There are, of course, certain pitfalls. Presence and absence listing usually does not account for the abundance of an artifact type in one area and its rarity in the other. This must be done by some additional notation.

Statistical treatment of trait lists for the derivation of coefficients of correspondence usually is unsatisfactory. The results can be no better than the data used, and who can be sure that equal weight should be given to each trait? The sample from each area is seldom, if ever, completely random, and rarely are collections large enough to be good statistical samples. For these reasons it is believed that a list of traits for each area accompanied by observations is suitable for the purpose of comparison. In considering the other documented sites in the Plateau this practice is followed.

Certain artifact types are found all over the Plateau; especially are they associated with the late prehistoric and the early historic periods. To save repetition, a list of artifacts common to all sections of the Plateau is given below. It is to be understood that these are present at all of the sites to be discussed, and are not, therefore, useful for comparison.

Cobble hammers	Antler wedges
Cobble choppers	Splinter awls
Polished pestles	Two-notched net weights
Stone mallets	Chipped-stone drills
Small corner-notched points	Leaf-shaped blades
Flake scrapers	Dentalium shell
Tubular pipes	

THE DALLES REGION

Downstream from the McNary Reservoir, there are several documented sites that are comparable. At The Dalles and vicinity, on the

western edge of the Plateau Area, a considerable amount of work was carried out by Strong, Schenck, and Steward (1930). Their methods consisted of extensive test excavations, surface collecting, and examination of private collections.

Although the sites tested were of different ages, some with European trade goods and some without, no local sequence was developed. The time factor was not ignored, but the report was one which considered the area and its artifacts rather than making any attempt at chronology. Nevertheless, a horizon comparable to the late prehistoric period in the McNary region is recognizable. Earlier horizons are not isolated in The Dalles region. Table 2 lists artifacts common to both regions as well as those found exclusively in each.

TABLE 2.—*Artifacts found in The Dalles and McNary regions*

Artifacts	Both regions	McNary only	The Dalles only
Grooved net weights.....	×		
Shaft smoothers.....	×		
Lap stones.....	×		
Stone bowls.....	×		
Discoid choppers.....	×		
Side-notched points.....	×		
Lozenge blades.....	×		
Bone needles.....	×		
Chipped-stone fetich.....	×		
Olivella and ballotis shells.....	×		
Ground-slate fetich.....		×	
Polished celts.....		×	
Four-notched weights.....		×	
Digging-stick handles.....		×	
Bird-bone beads.....		×	
<i>Glycymeris</i> shell.....		×	
Baked? clay.....			×
Deep bowls.....			×
Fancy carved bone.....			×
Sculptured stone.....			×
Bone harpoons.....			×
Harpoon sockets.....			×
Polished-stone chisels.....			×
Bone labrets.....			×
Shouldered points.....			×

Although table 2 seems to show a number of differences in material culture between The Dalles and the McNary regions, the similarities are more striking. Sculpture in stone and bone, especially anthropomorphic forms, was in vogue at The Dalles but rare in the McNary. However, all of the fancy stone art illustrated by Strong is from private collections. Elaborate pieces of sculptured stone have yet to be found in documented excavations, but are very common in private collections. Sufficient samples of fairly good stone sculpture have been found to show that sculpture was practiced in the region, but the really elaborate pieces are subject to question. Anthropomorphic bone carving, on the other hand, has been documented. Small clay tablets with designs pressed in with a sharp instrument are documented for The Dalles region and are unique there. The polished stone chisels

described for The Dalles region are very similar in material and workmanship to the McNary celts. Apparently, however, they were used in some other manner. Strong did not list chipped-stone fetishes for the region, but the writer found them in two sites including one site tested by Strong.⁹

HOBO CAVE

This deep stratified cave is situated on the south bank of the Columbia River, about 35 miles east of The Dalles and about 5 or 6 miles east of the John Day River. It was excavated in 1950 by the University of Oregon, under the supervision of the writer. The cave deposit, with a maximum depth of 9 feet, showed almost continuous occupation. A local sequence, at least for projectile points, was developed, and is the only sequence in the entire Plateau available for comparison with that of the McNary region.

Briefly stated, there were three distinct levels, each characterized by diagnostic projectile points. The top level (0 to 0.88 m. below the surface) yielded 58 projectile points, nearly all of them small and corner notched (average length 25 m.). They were practically identical with points from Wallula (45-WW-6) and contemporary sites in the McNary region. The exception is that there were no side-notched points recovered in Hobo Cave.

The second level (0.88 to 1.65 m. below the surface) was characterized by larger points (average length 38 mm.). Of 35 points recovered in this level, 31 were corner notched, and most of them had straight bases. The size difference between the points of the first and second levels is clearly shown in plate 46. There is an interesting parallel with the situation in the McNary, for in both places the small points are preceded by a point type that was half again as large. Although all of the McNary points (from Cold Springs) were side notched and nearly all of the second-level points in Hobo Cave were corner notched, the trend is the same.

Between 1.65 m. and 1.70 m. there was a stratum of sterile sand in Hobo Cave. It stood in sharp contrast to the rest of the cave fill, which is composed of silt, charcoal, ashes, and occupational debris. Beneath the sand was a third cultural level that was characterized by projectile points with shoulders, but no notches or barbs (see pl. 46, *a*, third row from top). Only 12 projectile points were recovered in the third level. Ten of these were shouldered points (average length 41 mm.), one was a basal fragment of a leaf-shaped blade, and the other was a corner-notched point which was typical of the second level. A comparison between these projectile points and those of the McNary

⁹ Strong et al., 1930, p. 20. This was Strong's site 14. In 1952, Shlner recovered 65 chipped-stone fetishes among some 1,300 artifacts from the site.

region finds the general trend of simple unnotched and barbless points being earlier in both places.

Below the cultural level which contained the shouldered points were several other artifacts. Among these were two obsidian points of the corner-notched variety, but they differed from those of the second level. With them were nine disk shell beads and a flake scraper. This, the lowest level of the cave, is poorly defined because of the scarcity of artifacts, and no attempt can be made to relate it to other cultures.

Besides the projectile points, numerous other artifacts were recovered in Hobo Cave. They did not, however, differ significantly from one level to the next. Level 1, which had the small projectile points, is compared with the late prehistoric material culture of the McNary region in table 3.

TABLE 3.—*Comparison of artifacts of level 1, Hobo Cave, with late prehistoric material culture of the McNary region*

Artifacts	Both regions	McNary only	Hobo Cave only
Lozenge-shaped knives.....	×		
End scrapers.....	×		
Discoid choppers.....	×		
Bone needles.....	×		
Bone flakers.....	×		
Bird-bone beads.....	×		
Disk shell beads.....	×		
Side-notched points.....		×	
Notched net weights.....		×	
Grooved net weights.....		×	
Pestles.....		×	
Chipped-stone fetish.....		×	
Ground-slate fetish.....		×	
Polished celts.....		×	
Tubular pipes.....		×	
Shaft smoothers.....		×	
Lap stones.....		×	
Fish spear tines.....			×
Bone disk beads.....			×
Baked? clay.....			×

Since Hobo Cave was situated high on a hillside, it can not be considered the same sort of occupation that would be found on a river terrace. The cave may have been used by hunting parties, but it was not a normal residence. Therefore, many of the utilitarian artifacts, especially the heavy ones, would not be expected there. This can explain the absence of net weights and the scarcity of hammers and choppers. The more carefully made artifacts, such as tubular pipes, mallets, celts, and digging-stick handles normally are found only in graves. The absence of side-notched points, however, must be due to cultural preference. One of the traits, baked clay, cannot be explained fully. Clay sherds, which resembled pottery, were recovered in the second and third levels. The material was not true pottery, but no one has been able to identify it.

Hobo Cave thus gives a sequence which follows the trends shown by the projectile points in the McNary region. Relatively simple points are replaced by notched points, and those are followed by a sharp reduction in size. At the present time it is not possible to demonstrate contemporaneity for the changes in both regions, but European trade goods are associated only with the small projectile points in each region.

JOHN DAY RESERVOIR

The Columbia River Valley between Hobo Cave and the McNary Dam is within the limits of the proposed John Day Reservoir. As a potential reservoir, it was surveyed by River Basin Surveys in 1950. Not very much was recovered in the way of material culture during the survey since the area is subject to constant search by relic hunters. However, 88 archeological sites were recorded and the surface collections from those sites compared closely with materials from the McNary region. The collections included many projectile points, net weights, scrapers, hammers, and choppers.

THE WAHLUKE SITE

Upstream from the McNary region along the Columbia River, there are several archeological sites that have been scientifically excavated and reported. One of these is a site known as Wahluke, which was excavated by Herbert Krieger (1928) in 1926. Wahluke was a village of some 30 houses and a burial area. It is situated on the west bank of the Columbia River about 60 air miles northwest of the Wallula site.

The Wahluke site was apparently of the late prehistoric period. Although specimens of copper were recovered, Krieger identifies it as native copper (*ibid.*, p. 13). Nevertheless, the total artifact assemblage is clearly that of the late period just prior to European influence. As in the case of the artifacts of The Dalles region, the tools and ornaments common to all of the Plateau during the late prehistoric are not listed; otherwise, table 4 gives a comparison of the artifacts of Wahluke and the McNary region.

The close similarity of the material culture of Wahluke to that of the McNary region is apparent. Krieger's report does not give the frequency of artifact types, but the illustrations clearly show the similarities. While he may not have recognized chipped-stone fetishes as diagnostic artifacts, the polished-slate fetishes would have been apparent. No one else in the Plateau seems to have recognized them as artifacts, even when they were numerous in the region. The appearance of elbow pipes in a prehistoric site is puzzling. Since Krieger did not always make it clear which artifacts were recovered in situ and which artifacts were merely typical of the region, it would be

TABLE 4.—*Comparison of artifacts of the Wahluke site and the McNary region*

Artifacts	Both regions	McNary only	Wahluke only
Four-notched net weights.....	×		
Grooved net weights.....	×		
Discoid choppers.....	×		
Polished celts.....	×		
Side-notched points.....	×		
Lozenge blades.....	×		
End scrapers.....	×		
Sandstone shaft smoothers.....	×		
Bone whistles.....	×		
Bone flakers.....	×		
Bone beads.....	×		
Digging-stick handle.....	×		
Bone dice.....	×		
All kinds of shell.....	×		
Lap stones.....		×	
Stone bowls.....		×	
Chipped fetish.....		×	
Polished-slate fetish.....		×	
Bone needles.....		×	
Elbow pipes.....			×
Shouldered points.....			×
Native copper.....			×
Stone clubs.....			×

reasonable to suspect that elbow pipes were not in direct association with the Wahluke occupation. Elbow pipes are not a typical Plateau trait until the Plains influences with horse and gun come in. Native copper is not reported from any other archeological excavations in the area. Minor differences can be seen in types of projectile points and the artifacts mentioned above, but the bulk of the material culture shows close affiliations with the McNary region. This is especially true of the heavy stone tools used for net weights, hammers, and choppers.

THE YAKIMA REGION

The Yakima River enters the Columbia from the west, about 10 miles north of the mouth of the Snake River. It rises in the Cascade Mountains about 120 miles away, and flows through an open valley most of the way. The fieldwork and report by Harlan I. Smith were accomplished between 1908 and 1910 (Smith, 1910). His method was a combination of surface survey, excavation, and examination of private collections. The region that he investigated extended nearly 100 miles from Ellensburg, Wash., to the Columbia River. Part of the Yakima region lies just north and west of the McNary region and south of the Wahluke site. Since the Wahluke material culture was so similar to that of the McNary region, it might be expected that the Yakima materials would also be similar. The similarities were found, and are shown in table 5.

The Yakima region appears to differ slightly from the McNary region in material culture. The differences are in almost the same traits that distinguished the McNary from The Dalles.

It is remarkable that Smith did not find bone whistles and sandstone shaft smoothers in the Yakima Valley. These artifacts have been re-

TABLE 5.—*Comparison of artifacts in the McNary and Yakima regions*

Artifacts	Both regions	McNary only	Yakima only
Four-notched net weights	×		
Grooved net weights	×		
Discoid choppers	×		
Stone bowls	×		
Polished celts	×		
Side-notched points	×		
Lozenge blades	×		
End scrapers	×		
Bone beads	×		
Digging-stick handle	×		
Bone dice	×		
Bone needles	×		
All kinds of shell	×		
Chipped fetish		×	
Polished-slate fetish		×	
Sandstone shaft smoothers		×	
Bone whistles		×	
Stone clubs			×
Elbow pipes			×
Sculptured pipes			×
Elaborately carved bone			×
Elaborately carved pestles			×

covered both north and south of the Yakima region, and Smith was unable to explain their absence. It is possible that the elaborate carving in stone and bone belonged to a late period, perhaps as late as 1875, to 1900. Smith opened several graves which were quite recent at the time. Most of the complex sculpture was in the hands of private collectors, and thus of unknown provenience. With these exceptions, however, the Yakima material culture is nearly identical to that of the McNary region.

THE CHIEF JOSEPH RESERVOIR

About 100 air miles north of Wapluke, considerably farther via the Columbia River, is the Chief Joseph Reservoir. It is downstream from the Grand Coulee Dam. During the summer of 1950 (Osborne, Crabtree, and Bryan, 1952), River Basin Surveys parties excavated several sites along the river. Although some information on architecture was recovered, artifacts were few in number. All the sites appeared to be late, and even the graves were poorly furnished. Too few artifacts were found to permit a systematic comparison with those of the McNary region, but the ones that were found did not differ significantly.

THE UPPER COLUMBIA REGION

Archeological reconnaissance in the Grande Coulee Reservoir began in 1939, after the dam was under construction, and because of the rising water, was not carried to completion. The salvage archeology of Collier, Hudson, and Ford (1942) recovered representative collections of artifacts but little information on prehistoric architecture. Their region included both banks of the Columbia River from the Grand Coulee Dam almost to the Canadian border, and it is referred to as the Upper Columbia region.

Although some of the sites were without European trade goods, none of them appeared to be earlier than the late prehistoric period. This makes all of the material culture suitable for comparison with that of the McNary region. Table 6 compares the material culture of the two regions.

TABLE 6.—*Comparison of artifacts of the Upper Columbia and McNary regions*

Artifacts	Both regions	McNary only	Upper Columbia only
Lozenge blades.....	×		
Small side-notched points.....	×		
End scrapers.....	×		
Spall flakes.....	×		
Tubular pipes.....	×		
Polished celts.....	×		
Grooved net weights.....	×		
Discoid choppers.....	×		
Sandstone shaft smoothers.....	×		
Digging-stick handles.....	×		
Bone points.....	×		
Bone needles.....	×		
Bone dice.....	×		
Bone beads.....	×		
Bone whistles.....	×		
Chipped fetish.....		×	
Polished-slate fetish.....		×	
Stone bowls.....		×	
Four-notched net weights.....		×	
Large corner-notched points.....			×
Barbed harpoon points.....			×
Stone clubs.....			×
Grooved mauls.....			×
Elbow pipes.....			×

The close similarity between the two regions is clearly indicated, but a few reservations should be made. Notched and grooved net weights are present in the Upper Columbia region, but are not at all numerous. The same is true of nearly all of the hammering and chopping tools made from river-worn cobbles. In the Upper Columbia most chopping tools were chipped all over, and were made of cryptocrystalline stone. As was the case in nearly every region outside of the McNary, carving in stone and bone was important in the Upper Columbia. In spite of the differences in numbers of certain artifacts, it is clear that both the McNary and Upper Columbia regions shared many material culture traits. The traits included all types of artifacts, utilitarian as well as decorative, and in most cases were nearly identical in every small detail.

BRITISH COLUMBIA

Harlan Smith's archeological investigations in British Columbia were part of the Jesup North Pacific Expedition, and were carried out in 1897 (Smith, 1899). Smith explored burial places and villages along the Fraser and Thompson Rivers, and also examined private collections. The bulk of the material culture illustrated in his report came from a burial ground near Lytton, British Columbia. The

graves contained no articles of European manufacture, but appeared, according to Smith, to be of the late prehistoric period. The close resemblance of the artifacts to those of the late prehistoric period in the McNary region tends to confirm his conclusion. Table 7 compares the Lytton material culture with that of the McNary region.

TABLE 7.—*Comparison of Lytton material culture with that of the McNary region*

Artifacts	Both regions	McNary only	Lytton only
Lozenge blades.....	×		
Side-notched points.....	×		
End scrapers.....	×		
Polished celts.....	×		
Stone bowls.....	×		
Sandstone shaft smoothers.....	×		
Lap stones.....	×		
Digging stick handle.....	×		
Bone needles.....	×		
Bone dice.....	×		
Bone beads.....	×		
All kinds of shell.....	×		
Chipped fetishes.....		×	
Polished slate fetishes.....		×	
Disk choppers.....		×	
Four-notched net weights.....		×	
Grooved mauls.....			×
Eccentric points.....			×
Fancy carved bone.....			×
Harpoon sockets.....			×

Unless Smith failed to illustrate most of the Lytton projectile points, there are few resemblances to be seen in the points of the two regions. Since Lytton is situated in the extreme northwest corner of the Plateau, some 350 miles from the McNary region, it is significant that the similarities in material culture are so great. There is no way of determining the relative frequency of the different types of artifacts from Lytton. However, the presence of so many complex artifacts that are identical in detail with those from all over the Plateau indicates close cultural connections.

THE SNAKE-CLEARWATER REGION

Spinden's investigations among the Nez Percé Indians were made between 1897 and 1900, with additional work done in 1907 (Spinden, 1908). In the region extending from the forks of the Clearwater River to and along the Snake River, he examined excavations made by railroad construction. He also made surface surveys and studied collections that belonged to private collectors. Spinden, like H. I. Smith, was more interested in presenting an areal view of the material culture, and somewhat neglected the time factor. However, from the stratigraphic studies made in the McNary Reservoir, it is possible to give time placement to most of Spinden's materials. In table 8, similarities and differences in the material cultures of the McNary and Snake-Clearwater regions are listed.

TABLE 8.—*Similarities and differences in the material cultures of the McNary and Snake-Clearwater regions*

Artifacts	Both regions	McNary only	Snake River only
Four-notched net weights.....	×		
Grooved net weights.....	×		
Discoid choppers.....	×		
Polished celts.....	×		
Side-notched points.....	×		
End scrapers.....	×		
Lozenge blades.....	×		
Sandstone shaft smoothers.....	×		
Stone bowls.....	×		
Lap stones.....	×		
Bone whistles.....	×		
Bone flakers.....	×		
Bone beads.....	×		
Digging-stick handles.....	×		
Bone dice.....	×		
Bone needles.....	×		
All kinds of shell.....	×		
Chipped fetish.....		×	
Polished-slate fetish.....		×	
Elbow pipes.....			×
Gorge hook.....			×
Spear tines.....			×

The correspondence of the material culture of the Snake-Clearwater region with that of the McNary is probably closer than that of any other region discussed to this point. The similarity may actually be more in the nature of identity. Chipped-stone fetishes were not listed by Spinden, but may have been present in the Snake-Clearwater region.

The elbow pipes, which were reported for that region, very possibly are typical of the historical period and not of the late prehistoric. Gorge hooks and fish-spear tines have not been recovered in the McNary region, but early travelers' journals give the impression that both were typical artifacts of that region (see section on historical period, pp. 164-165). The gorge hook is a short piece of bone, pointed at each end, and secured at the center to a fishing line. The bone turns sideways in the throat of a fish, and thus acts as a hook.

If these differences can be eliminated, the Snake-Clearwater and the McNary regions would have been nearly identical in material culture. Historical sources have verified the resemblances of the Walla Walla, Umatilla, and Nez Percé Indians for the period from 1805 to 1835, so a correspondence in prehistoric times might be expected.

Comparable materials were available from all sections of the Plateau except the northeast. Archeological surveys and test excavations were made there by River Basin Surveys, but insufficient artifacts were recovered for comparison (Shiner, 1952 a). From the limited collections made, there is good reason to believe that the region from Coeur d'Alene Lake north to Pend Oreille Lake differed significantly in material culture from the rest of the Plateau. The region, although within the Columbia Basin, is atypical. It is heavily wooded and is

well provided with lakes and running streams. Although Ray's analysis of Plateau political and social organization indicates that the region had strong Plateau affinities (Ray, 1939, p. 145), its cultural position in prehistoric times cannot be defined until further excavations are made there.

EARLY PLATEAU SITES

Here and there in the Plateau there are traces of cultures that are probably much more ancient than the materials from the Hat Creek site. Cressman (1953, personal communication) has recently recovered evidence of Early Man near The Dalles, Oreg. Details are lacking at the present time, so comparisons cannot be made. At Lind Coulee, near Moses Lake, Wash., Daugherty has recently recovered evidence of Early Man (Daugherty, 1956). Again, details are not available, but Daugherty states that his materials bear no resemblance to the artifacts from Hat Creek. Radio carbon dates for the Lind Coulee site averaged in the neighborhood of 8,700 years.

The theory that a widespread Paleo-Indian culture existed in the northwest was first advanced by Cressman. Although the majority of his fieldwork has been carried on in the northern Great Basin, Cressman until recently has been the only active archeologist in the Pacific Northwest. He has, therefore, been an authority on the Plateau, the northern Great Basin, and much of the Northwest Coast. Cressman's interest has centered in Early Man and in the many problems connected with such a study. Availability of comparative material for a time focused his attention to the south. He made comparative studies of Oregon cave materials with early cave materials of the southern Great Basin and with certain artifact types from the southwest. He did not, however, lose interest in the areas to the north and northeast of the northern Great Basin.

Cressman had formulated a theory that early man in the western part of North America was divisible into two culture types (Cressman, 1950, p. 369). East of the Rocky Mountains was a hunting type of culture typified by Folsom man. On the west of the mountains the culture represented was a mixture of hunting and gathering, characterized by an abundance of grinding tools. The presence of these tools in the west spelled a fundamental difference in culture to Cressman. He felt that out of the early hunting and gathering culture of the West, there developed a group of localized cultures, and that the development of these had little if any relationship to the Folsom and later developments east of the Rocky Mountains. Looking to the future, he wrote:

We shall eventually, by systematic extension of this work north and south and east and west, discover whether there was a province of culture west of the Rockies extending from far toward the Southwest well toward the Plateau re-

gion of the north, and, if there was such a province, what the cultural substratum was from which the later localized types of culture developed. [Cressman, 1940, p. 15.]

Daugherty's discoveries seem to be bearing out Cressman's predictions except for the fact that grinding tools were not an integral part of the Lind Coulee culture. In fact, grinding tools of stone may not even exist north of the Columbia River. They did not appear in any of the Columbia and Snake River sites investigated by River Basin Surveys. This does not prove Cressman to be wrong. He was searching for the geographical limits of the northern Great Basin culture, and it now appears that the northern limit may be the Columbia River. In fact, it has been reported (Cressman, oral communication, 1953) that Cressman found grinding tools in an early site on the south bank of the Columbia River near The Dalles, Oreg.

Where the materials from sites like Hat Creek fit in the picture, it is not possible to say. The culture of that period could not be called Plateau, for it was not adjusted to Plateau ecology. It supports Osborne's theory about the early prehistoric period:

My present impression is that the Plateau was originally occupied by groups similar in culture to the Great Basin (the Plateau is, in many ways, little more than an extension of the Great Basin). [Osborne, 1951, p. 302.]¹⁰

Until Cressman's and Daugherty's new materials are studied, and other Early Man sites are excavated in the Plateau, the nature of Paleo-Indian culture in the area cannot be properly determined.

SUMMARY

Other than the comparison between the early levels of Hobo Cave and the Cold Springs site, it is not possible to discuss cultural developments elsewhere in the Plateau. The late prehistoric period, however, is well represented by sites all over the area. Tables 2 to 8, which were given for sites and regions in nearly every part of the Plateau, clearly indicate that the late prehistoric period was one of widespread uniformity of material culture. Some of the artifacts listed were crudely made and more or less generalized. Many of them, however, were highly specialized and of complex form.

It is the wide distribution of the specialized artifacts that is significant, for they are far less likely to have been independently invented. A large series of complex tools, which are similar in small detail, spread all over the Plateau, is substantial evidence of the homogeneity of Plateau culture in the late prehistoric period.

In addition to the list of artifacts common to the entire Plateau, others can be given which are almost as widespread. Lozenge blades vary slightly in shape from region to region, but are present in each.

¹⁰ See footnote 3, p. 164.

Sandstone shaft smoothers were found in every region except the Yakima valley. Bone beads and polished celts were recovered in every region except The Dalles. Hobo Cave did not give a rounded sample of material culture, but did have a large collection of projectile points. Side-notched points did not appear in the cave but were present elsewhere in the Plateau.

PLATEAU CULTURE IN THE EARLY HISTORICAL PERIOD

A survey of historical references to Plateau Indian culture is essential for several reasons. First, it establishes that certain items of material culture were used in certain ways, and, second, it gives a trait list for the historical period which can be compared with that of the prehistoric period. In view of changes that take place in material culture through time, it is vital that the culture described for the historical period be limited in its time span.

When the Plateau is spoken of as a culture area, reference is made not to present-day culture, but to culture of the period prior to European acculturation. Knowledge of the Plateau Area was first available when Lewis and Clark returned from their expedition in 1806. Fortunately, they were careful observers, and were not primarily interested in trade or religious conversion. Other travelers followed in rapid succession, and more than a few of them wrote of their experiences. It is difficult to determine just when the early contact period ended in the Plateau. Ray, in reference to the middle Columbia Basin, wrote:

A few villages in the area had been abandoned as the result of white encroachment as early as 1880, but major displacements did not occur until after the turn of the century. [Ray, 1936, p. 99.]

This, however, has little bearing on the problem of acculturation. The disturbance of aboriginal Plateau culture began even before Lewis and Clark, at the time that European trade goods began to appear in quantity.

The earliest trade goods of European origin were glass beads and bits of copper. They were probably traded into the Plateau by other Indians who obtained them from eastern fur traders. The earliest post nearby was established at Nootka on Vancouver Island by John Meares in 1787 (Winther, 1947, p. 25). This would have given Plateau Indians a source of trade goods only 350 miles away. In 1791, Robert Gray entered the Columbia River in a ship named *Columbia*. He named the river after his ship, and traded extensively with the Indians (ibid, p. 25). Among the things he carried were copper sheets, iron bars, and buttons. It was about 1811 to 1812, when trade

goods in large quantities began to reach the central part of the Plateau. At this time, parties from the post at Astoria (at the mouth of the Columbia River) traveled up and down the River, trading as they went (Thwaites, 1904-5, vol. 6). In 1818, Port Nez Percé was established near the mouth of the Walla Walla River, and other posts were soon scattered throughout the area.

By 1835, when the Rev. Samuel Parker toured the Plateau, it was rather clear that acculturation had taken place. His account is full of details of Indian life, although colored by religious philosophy (Parker, 1845). Parker's observations, several of which will be discussed later, lead to a conclusion that about 1835 to 1840 should mark the close of the early historic period. Parker, and soon afterward, Marcus Whitman, began to convert Plateau Indians away from their religion. Settlers, traders, and trappers, by this time, had begun to push the Indians around, and European tools and weapons had become common over most of the area.

By the 1840's, around the Hudson Bay posts:

Schools for the native children are attached to all the principal trading posts, and particular care is extended to the education of the Half-breed children, the joint offspring of the traders and the Indian women, who are retained and bred, as far as possible, among the whites, and subsequently employed, when found capable, in the service of the company. The policy of course is obvious. The savage is gradually cured of his distrust and coaxed into new connections. He abandons the use of his bows, his arrows and all his former arms, and the result is that he soon becomes an absolute dependent upon those who furnish him his guns, ammunition, fish-hooks, blankets, etc. [Wilkes, 1845, p. 86.]

Therefore, as far as the present discussion is concerned, between 1835 and 1840 will be considered the end of the early historic period and the "ethnographic present." The following quotations and comments will apply to that period, beginning in 1805 and ending about 1835 or 1840.

SEASONAL MIGRATION

None of the writers on Plateau archeology have properly evaluated the effect of seasonal migration on archeological sites. There is evidence to show that practically all of the Plateau Indians made seasonal migrations in order to avail themselves of different kinds of food. In 1805, Lewis and Clark wrote of the Nez Percé:

During the summer and autumn they are busily occupied in fishing for salmon and collecting their winter store of roots. In the winter they hunt the deer over the plains, and towards spring cross the mountains to the Missouri for the purpose of trafficking for buffaloe robes. [Hosmer, 1905.]

Seasonal migration was noted in the same area by another observation:

The spot where we landed (on the Snake River) was an old fishing establishment, of which there remained the timbers of a house carefully raised on scaffolds . . . the property of the Indians who still remained in the plains hunting the Antelope. [Biddle, 1904, vol. 2, p. 185.]

On the Columbia River among the Tenino Indians the following spring, they noted:

Since we left them in the autumn they have removed their village a few hundred yards lower down the river, and have exchanged their cellars in which we then found them, for more pleasant dwellings on the surface of the ground. They are formed by sticks and covered by mats and straw. . . . [Ibid., vol. 2, p. 63.]

By the time they had arrived in Nez Percé territory again:

The salmon not having yet called them to the rivers, the greater part of the Chopunnish (Nez Percé) are now dispersed in villages through this plain, for the purpose of collecting quamash (camas) and cows (kouse). [Biddle, 1904, vol. 2, p. 83.]

There are numbers of references by other observers in the area, all pointing to seasonal shifts in habitation which meant the movement of the entire village. Even as late as 1885, the pattern was still being followed by some Nez Percé on the lower Snake River. According to one of the writer's informants, an early settler, the Nez Percé used to spend the winter in the river bottom and move out in the spring. Ray summed it up as follows:

On the whole, Plateau life involves wintertime occupancy of river villages and summertime camping at fishing, berrying and root digging spots. [Ray, 1939, p. 14.]

What would be the effect of seasonal migration on the archeological record? One result would be found in architecture, since only the semisubterranean pit houses would be preserved. The summer mat house would leave little or no trace after a few years. It is possible that the multiple floor levels found in the house pits at Cold Springs, Techumtas Island, and elsewhere are records of year-to-year occupation. After the pit became too shallow, it may have been cleaned out, and some of the floor levels may record only one winter's occupation. Doubtless, the seasonal migration pattern is an old one in the Plateau, for the Indians held to it long after other customs had disappeared. There is no way of determining how far back in time the custom was followed.

ARCHITECTURE

One of the best descriptions of Indian dwellings in the Plateau was also the earliest. In the spring of 1805, near the mouth of the Snake River, Lewis and Clark wrote:

The houses of the Sokulks are made of large mats of rushes, and are generally of a square or oblong form, varying in length from fifteen to sixty feet, and supported on the inside by poles or forks about six feet high: the top is covered with mats leaving a space of twelve or fifteen inches the whole length of the house, for the purpose of admitting light and suffering the smoke to pass through: the roof is nearly flat . . . , and the house is not divided into apartments, the fire being in the middle of the large room and immediately under the hole in the roof; . . . [Biddle, 1904, vol. 2, p. 189.]

The explorers also mentioned a Nez Percé sweat lodge, racks for drying fish, deep pit houses near The Dalles, Oreg., and a large burial vault on the Columbia River.

There is no early record of winter houses for the northern Plateau but summer mat lodges were described. In 1811, at the mouth of the Sanpoil River and near the present site of Grand Coulee Dam, David Thompson observed:

Their huts are of slight poles tied together, covered with mats of slight rushes. [Sperlin, 1913, p. 8.]

Farther downstream he mentioned a Wenatchee hut which was 209 yards long.

MATERIAL CULTURE

Actual descriptions of articles of material culture are rare in the early reports. Some of the closest observations were made of clothing which, being perishable, was not recovered in the archeological excavations. Lewis and Clark, in 1805, noted that the Indians near the mouth of the Snake River wore buffalo or elk-skin robes, beads and feathers, leggings, and moccasins. Also:

The dress of the women is more simple, consisting of a long skirt of argalia or ibex skin, reaching down to the ankles without a girdle: to which are tied small pieces of brass and shells and other small articles. [Biddle, 1904, vol. 2, p. 174.]

Stone mallets were apparently observed by Clark just above the mouth of the Snake River in 1805. He wrote:

He began by bringing in a piece of pine wood that had drifted down the river, which he split into small pieces with a wedge made of the elk's horn, by means of a mallet of stone curiously carved. [Ibid., p. 192.]

About the same time, Lewis mentioned a group of articles:

The rooms are ornamented with their nets, gigs and other fishing tackle as well as the bow for each individual, and a large quiver of arrows, which are headed with flint stones. [Ibid., p. 189.]

Bows and arrows were described by Henry, as of the year 1811. His remarks apply to the Plateau Indians in general:

The bows used by the natives W. of the mountains are neatly made, and of three kinds—the horn, the red cedar, and the plain wooden bow. The horn bow is made of a slip of ram's horn. . . . overlaid with several successive layers of sinew. . . . The red cedar bow is made of a slip of that wood overlaid with sinew and glue. . . . The plain wooden bow is of cedar, willow, or ash . . . it is well smoothed but not so much esteemed by the natives. . . . [Henry and Thompson, 1897, p. 713.]

The arrows are much longer than those of our Indians E. of the Mountains, being nearly three feet, very neatly made, slim pointed, and well feathered; they are usually tipped with flint, but of late iron has been secured for that purpose. [Ibid., p. 714.]

While there is no description of dice, John Work, in 1825, near the present city of Lewiston, Idaho, noted that :

There are about our camp near 250 or 300 Indians. . . . they pass the greater part of their time gambling, horseracing & footracing. [Work, 1825, p. 94.]

In a burial vault on an island in the Columbia River, Lewis and Clark saw an array of grave offerings :

From the different boards and canoes which formed the vault, were suspended on the inside fishing nets, baskets, wooden bowls, robes, skins, trenchers, and trinkets of various kinds, . . . [Biddle, 1904, vol. 2, p. 204.]

In passing, references to artifacts are rather common. The early journals frequently speak of baskets, pipes, bows and arrows, canoes, stone hatchets, and stone knives ; but no details are given.

BURIAL

Lewis and Clark made several references to Indian burials. In the spring of 1805, they noted :

The dead are wrapped up in robes of skins, and deposited in graves, which are covered over with earth and marked or secured with little pickets or pieces of wood stuck promiscuously around it. [Biddle, 1904, vol. 2, p. 178.]

Thirty years later, in the same vicinity, Parker wrote :

The grave was two feet deep. A mat was laid in the grave, and the body was wrapped in a blanket. A horn cup and a spoon was placed in it, and a mat of rushes above and then it was filled in. [Parker, 1845, p. 285.]

Another kind of disposal was that of the burial shed or vault. On Blalock Island, some 30 or 40 miles west of the McNary Reservoir, Lewis and Clark visited one of the vaults :

This place in which the dead are deposited is a building about sixty feet long and twelve feet wide, . . . so as to form a shed. We observed a number of bodies wrapped carefully in leather robes, and arranged in rows on boards . . . and in the center of the building was a large pile of them heaped promiscuously on each other. [Biddle, 1904, vol. 2, p. 203.]

These vaults were seen in later years, and had been so thoroughly robbed by collectors that no trace of the burials remains.

ECONOMY

Various journals mention the gathering of roots and berries by Indians all over the Plateau. Camas (*Camassia* sp.) and kouse (*Lomatium caus*) were staples. At one time or another, all of the early travelers subsisted on these tuberous rooted plants which grew in marshy lowlands. There are no details available on how these roots were gathered in the early historical period. Later on, it was noted that digging sticks and baskets were employed.

Preparation of food in the early historic period has been described (see p. 185, on earth ovens), but little mention was made of artifacts used for that purpose. Most of them must have been of a perishable nature, for no containers are found. Pestles are not rare, but no mortars have been recovered. If baking and roasting had been extensively used, containers would not have had to be plentiful. Most of the stone bowls that have been found have been far too small to have been used for cooking but may possibly have been used for serving. Almost any of the stone tools that have been classified as hammers and choppers could have been used in pounding roots, berries, and meat. Apparently many of the artifacts used for preparing food were either made of perishable materials or were of a generalized tool form.

Details are rare on hunting techniques although frequent mention is made of Indians engaged in that activity. Apparently the Plateau Indians employed techniques that were common over most of North America. They used disguises such as skins of animals (Thwaites 1904-5, vol. 3, p. 297), and such tactics as surrounding, driving and running down game on horseback (*ibid.*, p. 316).

Fishing is well documented all over the Plateau in the early historical period. One of the most detailed descriptions is from Lewis and Clark in 1806, near the mouth of the Walla Walla.

Near our camp is a fish-weir, formed of two curtains of small willow switches, matted together with withes of the same plant and extending across the river in two parallel lines, six feet asunder. These are supported by several parcels of poles in the manner already described, as in use among the Shoshonies, and are either rolled up or let down at pleasure for a few feet, so as either to suffer the fish to pass or detain them. A seine of fifteen or eighteen feet in length is then dragged down the river by two persons, and the bottom drawn up against the willows. They also employ a smaller seine like a scooping net, one side of which is confined to a semicircular bow . . . [Biddle, 1904, vol. 2, p. 80.]

While the bulk of the fish taken were probably captured with seines or dip nets, some were speared and others were taken by angling. Spear tines have been recovered in all regions of the Plateau, but no archeological evidence of hook and line has been recovered in the McNary region. Angling was reported at least twice in the region that is now within the McNary Reservoir. In 1806, Lewis and Clark described the use of a gorge hook:

Soon after we halted, an Indian boy took a piece of bone, which he substituted for a fish-hook, and caught several chub, nine inches long. [*Ibid.*, p. 74.]

Again, in 1811, just above the mouth of the Snake River, Ross described an Indian fisherman:

For this purpose, the fisherman cut off a bit of his leather shirt, about the size of a small bean; then pulling out two or three hairs from his horse's tail for a line, tied the bit of leather on one end of it, in place of a hook or fly. Thus pre-

pared, he entered the river a little way, sat down on a stone and began throwing the small fish, three or four inches long, on shore, . . . [Thwaites, 1904, vol. 7, p. 142.]

There is no doubt that by the beginning of the early historical period, the Plateau Indians were well versed in the art of taking fish. Nets, traps, spears, and angling were all used with skill.

It is not clear just where horses fitted into Plateau economy. There is little question but that the first Plateau horses came from the Shoshones. Haines' research on the subject showed clearly that the Shoshones were responsible for the transfer of horses both to the north and to the northeast of their territory (Haines, 1938, p. 453). Haines quotes the narrative of an early explorer to demonstrate that the first horses reached the Plateau about 1735. This date is acceptable for the first acquisition of horses, but there is good reason to believe that they did not become numerous or important to the economy until 50 years or more later. Horses were seen among the Walla Walla Indians at the mouth of the Snake River in 1805. Lewis and Clark noted that —

The sokulks possess but few horses, the greater part of their labours being performed in canoes. [Biddle, 1904, vol. 2, p. 191.]

Yet only a few years later, in 1811, Ross visited the same vicinity and observed:

The plains were literally covered with horses, of which there could not have been less than four thousand in sight of the camp. [Thwaites, 1904, vol. 7, p. 138.]

What seems to have taken place is a rapid buildup in numbers between 1805 and 1811. The increase would probably have to be attributed to raids rather than to natural multiplication. At any rate there is no direct evidence of many horses in the Plateau until 1811.

The archeological picture is much the same. Horse bones have been found in a number of Plateau sites, particularly in the McNary Reservoir. Osborne pointed out that in no case were horse bones found in prehistoric sites, but they were present in two late sites (Osborne, 1953, p. 262). In the two sites mentioned by Osborne, 45-BN-3 and 45-BN-6, there also were large numbers of glass beads, copper, and iron. Sites 454-BN-53 and 35-UM-17, which appear to be slightly earlier, contained no horse bones. This small amount of evidence tends to show that the archeological record of the appearance of the horse is little if any earlier than A.D. 1800.

Returning to Haines' statement regarding evidence of the horse in the Plateau by 1735, it should be noted that this observation was partly based on a statement made to David Thompson in 1787 by an Indian whom he estimated to be 75 or 80 years old (Haines, 1938, p. 435). If the Indian, who recalled seeing horses in his youth had been

a little younger than Thompson's estimate, and if his memory had not been of the best, the first occurrence of horses may have been nearer 1750 than 1735. This later date tends to fit better the archeological and ethnological evidence.

Travel on horseback did not, however, replace canoe travel, for Parker noted:

My three Indians were well acquainted with the river and the art of managing the canoe. [Parker, 1845, p. 133.]

Trade in the Plateau was most important at The Dalles, a situation recognized to date from prehistoric times. The Americans and the British, however, came out to meet the Indians. They established posts in various parts of the Plateau, and traveled up and down the rivers, trading as they went. The fur trade, which began on the coast in 1790 and in the Plateau by 1810, did not last much beyond 1830.

CEREMONY

Several ceremonies were witnessed by the early travelers, but only a few of them were described in any detail. The use of burial goods has been cited, and it conforms to archeological patterns. Evidences of other ceremonies however are less easy to recover archeologically. The "first fruits" ceremony was observed by Lewis and Clark in 1806. They wrote:

The whole village was filled with rejoicing today at having caught a single salmon, which was considered as the harbinger of vast quantities in four or five days. [Thwaites, 1904-5, vol. 4, p. 302.]

Puberty rites were also recorded for the early historical period. In 1806, Lewis and Clark wrote:

The daughter of the man is now about the age of puberty, and being incommoded by the disorder incident to that age, she is not permitted to associate with the household or kitchen furniture, or to engage in any occupation. [Ibid, p. 89.]

Lewis and Clark also mention several dances, but failed to describe them fully or to determine their function.

CONCLUSIONS

The argument over whether the Plateau should be considered a separate culture area or a peripheral area is not merely academic. It is not dependent entirely on the definition of what a culture area should entail, but on an understanding of Plateau Culture and Plateau Culture History. Certain misconceptions in the past have caused a few anthropologists to overemphasize extra-areal influence on the Plateau. One of the first to disparage the individuality of the Plateau

was Spinden, who characterized the Plateau from his observations among the Nez Percé. He wrote:

The culture of the Basin area, as shown by one of its representative tribes, was purely a transitional culture. Its elements were drawn in nearly equal proportion from the Plains and from the Pacific Coast. Only a small residuum autochthonous ideas are found when the borrowed ones are excluded. [Spinden, 1908, p. 270.]

Such an extreme view was not shared by Spier, who refuted the importance of the overlay of Plains traits.

There can be little doubt that much, if not all the overwhelming part of the Plains Traits among them (Nez Percé), dates only from the introduction of the horse into the Snake-Columbia basin sometime between 1750 and 1800. [Spier, 1930, p. 40.]

In addition to the fact that the list of traits from the Plains is of recent acquisition, there is another consideration. It seems to be common practice in the space-time consideration of traits, to look for sources. If a trait appears in a relatively unknown area, someone always seeks to trace it to an adjacent area which happens to be better known archeologically and ethnologically. This is done in spite of a complete lack of any information on how old the trait may be in either area. Some of the Plains traits in the Plateau can be shown to be recent, and to have been derived from that area. The horse, gun, tribal organization, honors by war achievement, and the elbow pipe have been proved to be of Plains origin (Ray, 1939, pp. 14, 146).

Kroeber apparently was not willing to concede that the Plateau was an authentic culture area. He considered it to be a hinterland of the Northwest Coast and influenced by the Plains Area since—

... the relatively poor subsistence conditions and consequent low level of culture along the Columbia and Snake would have strained out many of the more specialized traits, and most of all of the luxury developments, of both eastern and western culture. [Kroeber, 1931, p. 37.]

There is no doubt, now, that Kroeber made two mistakes. Since there were few data available on the culture of the Plateau, he assumed that it did not exist, except on a very low plane. Secondly, he was apparently misled by Boas' glowing descriptions of Northwest Coast culture. Beyond the spectacular "potlatch" ceremony, the large plank houses with elaborate wood carving, and the seagoing canoes, the Northwest Coast had only a few high cultural attainments, and these were restricted to a minority of coastal peoples, the Haida, Tlingit, and a few others. Most of the Plateau ceremonies were never recorded for comparison. Lacking wood over most of the Plateau, the Indians did not develop carving or elaborate houses.

Whether they did or did not, does not affect the question at hand. Relative attainment of culture is not involved, only classification. If Wissler's concepts were followed no one would question the fact

that the Plateau was a true culture area during the "ethnological present," the era referred to here as the early historical period. The problem has been to determine what the cultural situation was in prehistorical times. Can this be done through the historical approach to archeology?

From the data presented in the body of this paper, certain significant points may be made concerning the Plateau, both prior to and subsequent to European contact. Thus, in the late prehistoric period:

1. Cultural development leading up to the late prehistoric period was measured progressive.
2. Material culture was uniform.
3. Economy was similar over the entire area.
4. Influences from outside the area were much less important than in the early historic period.

Similarly, in the early historic period:

1. Plains traits were encroaching on the southeastern part of the Plateau.
2. Northwest Coast traits were influencing the southwestern part of the Plateau.
3. Influences from both areas were recent and superficial.
4. Political organization was homogeneous.
5. Social organization was uniform.
6. Material culture had widespread similarities.
7. Economy was the same over the whole area.

In order to present the data with which the nature of Plateau culture can be discussed, it is necessary to review the sources from which they were derived. The new materials, from which much of the discussion has been drawn, are the results of excavations and surveys performed by River Basin Survey between 1947 and 1952. From these materials, it was possible to construct a local sequence for the McNary region, and present a reasonably complete picture of Indian life during the late prehistoric period. By "reasonably complete" it goes without saying that no archeological reconstruction can really be complete.

Comparative archeological data were drawn from nearly every section of the Plateau, north, east, and west of the McNary Reservoir. The most useful data were those obtained from a series of excavations in a single region; as, for example, the work at The Dalles, by Strong, Schenck, and Steward (1930), and that of Collier, Hudson, and Ford (1942) on the Upper Columbia River.

The local sequence developed for the McNary Reservoir does not begin with Early Man. Paleo-Indian sites are present in the Plateau, but have not been found in the McNary region. The earliest culture in that region seems to bear a resemblance to the culture of the Great Basin. It was surely nonsedentary and more adjusted to hunting than to fishing or gathering. The fact that fish and shellfish were eaten indicated that some adjustment to Plateau ecology had been made. After a heavy fall of volcanic ash, members or descendants of the same culture took up residence at Cold Springs. At this time

specialized fishing tools began to be made, and a suitable house type was constructed. From that time, up to about 1800, and the appearance of Europeans, the material culture became more diversified and complicated. Highly specialized tools, houses, fishing apparatus, and burial procedures were adopted. European tools and ornaments did not immediately replace those of the Indians, but after 1805 no new aboriginal innovations appeared. Elaborate stone carving was probably a late development elsewhere in the Plateau, but it never became popular in the McNary region.

The local sequence in the McNary region, even though dates are not available, shows a gradual development from simple to complex. Although there seemed to be two horizons in which a number of new artifacts appeared, at Cold Springs and again at the beginning of the late prehistoric period, there is no reason to believe that cultural changes of a revolutionary nature took place. There is no evidence of a migration or of a new culture appearing on the scene. The persistence of old artifact types and the gradual acquisition of new ones tend to confirm a local development of culture.

Turning to the Plateau in general, it was found that only for the late prehistoric period, was there comparable material culture. Architecture could not be treated, for house remains had not been excavated in other regions. Material culture trait lists, comparing other regions of the Plateau with the McNary region, found much in common in every case. Not only were the artifacts of nearby sites similar, but also those of British Columbia, 350 miles away. Close approximation in simple generalized artifacts might be expected, whatever the cultural situation. A wide distribution of complex and specialized artifacts, however, requires some explanation. The following lists give specialized and unspecialized artifacts that are more or less typical of the Plateau during the late prehistoric period. Not every type is typical of every region, however.

Generalized Artifacts

Cobble hammers
 Cobble choppers
 Lap stones
 Stone bowls
 Side-notched points
 Leaf-shaped blades
 Shouldered points
 Corner-notched points
 Polished pestles
 Spall knives
 End scrapers
 Splinter awls
 Polished awls
 Bone beads
 Marine shells

Specialized Artifacts

Grooved net weights
 Notched net weights
 Discoid choppers
 Shaft smoothers
 Lozenge blades
 Polished celts
 Mallets
 Hoes
 Tubular pipes
 Fish spear tines
 Digging stick handles
 Horn wedges
 Bone dice
 Bone whistles

If information on architecture and burial customs were available, the table would probably be much larger. The distribution of chipped-stone fetishes may have been Plateau-wide, but they were probably not recognized by the earlier workers in the area. The least that can be said of the table is that it shows close internal consistency in the Plateau, as far as material culture is concerned.

It was possible to make inferences on aboriginal economy from two sides, the artifacts recovered and the bones of fish and animals that were used for food. Every region in the Plateau showed, where data were available, that hunting, fishing, and gathering were of nearly equal importance. No region showed any significant departure from the pattern.

The early historical period in the Plateau was one of disturbance. European fur traders were active over the entire area and some influence, especially in art forms, was being felt from the Northwest Coast. Plains influence, which probably began about 1750, has been much discussed. The traits which accompanied this influence were those associated with the horse and gun. They included tribal organization, status and chieftainship achieved by success in war, and Plains-type warfare.

Actually, by the time that Plains traits reached the Plateau in strength, European acculturation had also taken place. Ray, in his thorough analysis of Plateau cultural relations, found strong Plateau individuality in the northern and central portions of the area (Ray, 1939, p. 13). Plains-type political organization was found among the southern tribes, but weakly developed. Coastal influences, in the form of rank and caste attitudes, had been accepted only among the Indians of the southwest corner of the Plateau. The central Plateau Indians were completely opposed to warfare, and those of the far north had no knowledge of Plains-type warfare.

According to Ray, political organization of the Plateau was based on village autonomy (*ibid.*, p. 4). Chieftainship was determined by heredity, and social equality was the ideal. Pacifism was typical of the entire Plateau, until a few of the eastern tribes began to adopt some of the traits of typical Plains warfare.

Ray's analysis of political and social organization in the Plateau demonstrates, beyond any doubt, the individuality of Plateau culture. He concludes:

The plateau is seen to possess distinctive character in its own right. Many aspects of culture which are integral to its organization are not to be found in adjacent areas. This indicates both the individuality of the area and the relatively slight influence which the region has exerted upon neighboring areas. This is not to deny the existence or importance of cultural elements of foreign origin. The Plateau has borrowed much from the Coast and it has taken much from the Plains but the importance of coastal influence has probably been over-

rated, and diffusion from the Plains is in large part recent and superficial. [Ray, 1939, p. 145.]

The refutation of Spinden's speculation on the peripheral nature of Nez Percé and the other Plateau cultures was a matter of the application of new data to the problem. Kroeber's concepts regarding the Plateau stemmed partially from the lack of data and partially from an undue emphasis on cultural attainments.

If the impressions of early European visitors to the area can be accepted, the people in the Plateau had physical and cultural traits which distinguished them as a group; traits which set them apart from the Northwest Coast, the Northern Great Basin, and the Western Plains. Lewis and Clark, and Parker noticed these traits, and commented on them long before anyone developed the concept of culture areas. The most outstanding of these traits, according to Parker were: (1) nonsedentary life among the Plateau people as opposed to the coast; (2) high standard of living as opposed to the poverty of the Basin Shoshoni; and (3) general cleanliness and health as opposed to both Basin and Coast (Parker, 1845, pp. 130-140). The economic pursuits of fishing and gathering were sufficient for Parker to differentiate between the Plateau and the Plains Indians. These and other Europeans also remarked on the uniformity of dress, tools, economic pursuits, and religion.

With the information now available it should be clear that the Plateau in early historic times was a distinct culture area. It had uniformity of both climatic and cultural traits and it contrasted with adjacent areas.

The homogeneous state of Plateau culture in the early historic period must also have existed in the late prehistoric period. As widespread and identical as were the patterns of political and social organization, it is impossible to conceive of a situation any different only a few years earlier. It is true that in a hundred years the Plains Area changed into a relatively homogeneous culture area, but that area was unified by the horse, the gun, and Plains-type warfare. In the Plateau, pacifism was the ideal, and no such unifying force could have existed. Without the influence of Plains traits, the Plateau in the late prehistoric period was certainly more clearly a culture area than it was in the early historic period.

If, by definition, a culture area should have homogeneity of culture and climate, as well as a distinct culture history, the Plateau certainly qualifies. The excavations made by River Basin Surveys demonstrated how the Indians of one region progressed from a relatively simple hunting and gathering economy to one far more complex. During this period, the inventory of material culture grew by addition and diversification, and a superior adjustment to the environment

was made. Throughout the span of time that was recorded by the McNary sites, there was demonstrated a conservativeness on the part of the local inhabitants. New artifacts were constantly added, but the older tools that seemingly should have been replaced were not readily abandoned. This reticence to drop the apparently obsolescent tools does not indicate a people who were dependent upon outsiders for their culture. They were not entirely receivers of ideas. Indeed, it can be shown that the most characteristic artifacts of the Plateau were probably indigenous, and that the adjacent areas may well have drawn on the former for a significant amount of their material culture. Plateau material culture in the late prehistoric period, in spite of small local variations, was homogeneous over the entire area and the influences from the Northwest Coast and the Plains had not yet made significant penetrations of the area.

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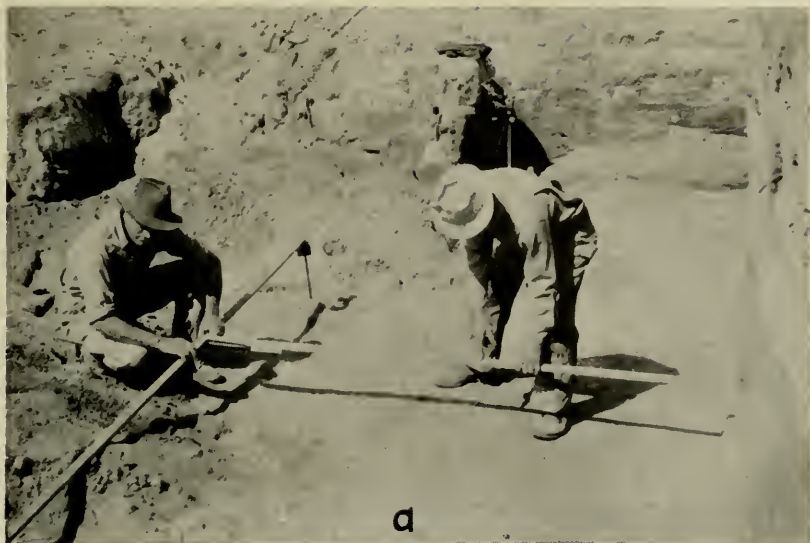
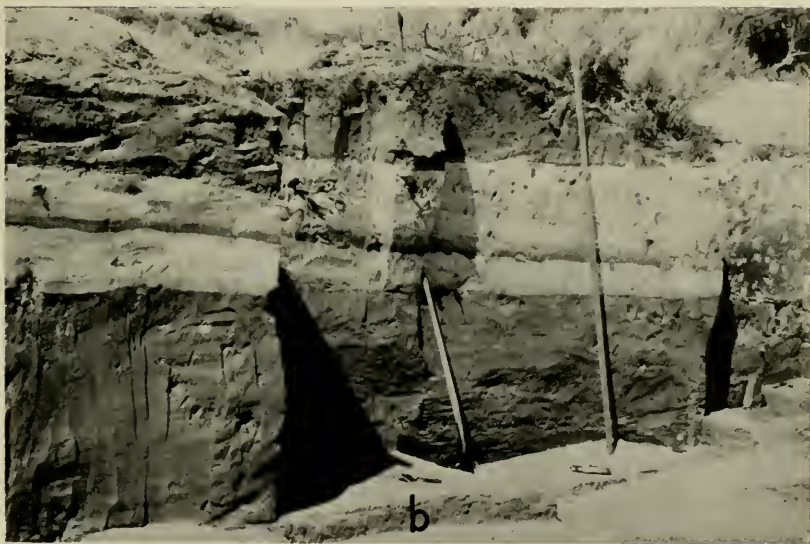
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**a****b**

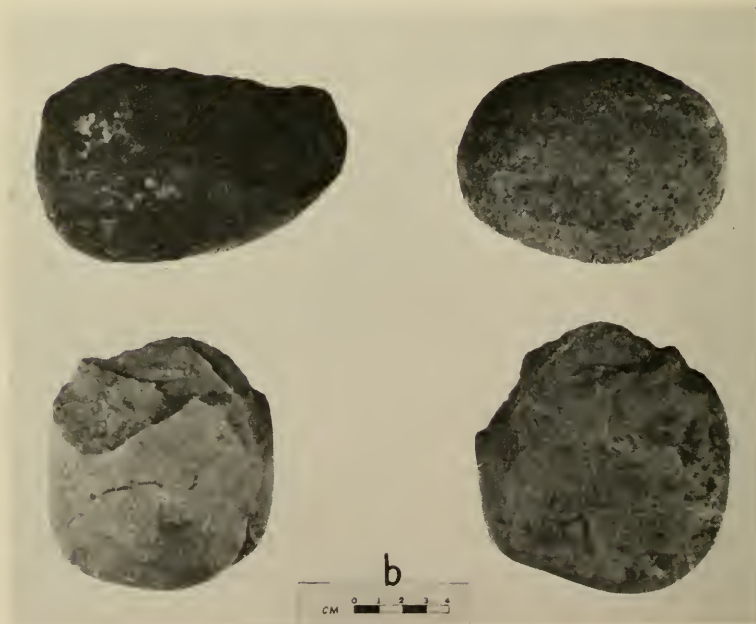
a, Workmen measuring artifact location. *b*, Volcanic ash at Hat Creek (35-UM-5).



a, Ash stratum at site 35-UM-3. *b*, Ash stratum at Hat Creek (35-UM-5).



a, Projectile points, Hat Creek (35-UM-5). *b*, Flake scrapers, Hat Creek (35-UM-5).



a, Carved bone, Hat Creek (35-UM-5). *b*, Hammers and choppers, Hat Creek (35-UM-5).



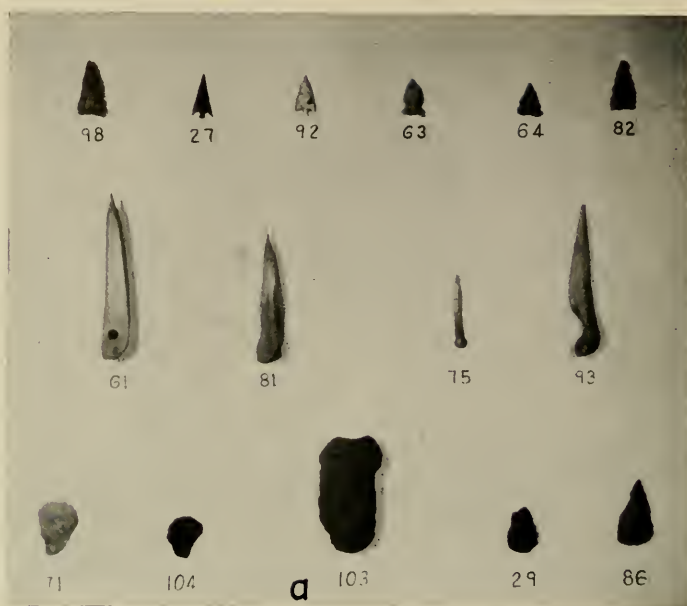
a, Shell stratum in profile, Cold Springs (35-UM-7). b, View of terrace, Cold Springs (35-UM-7).



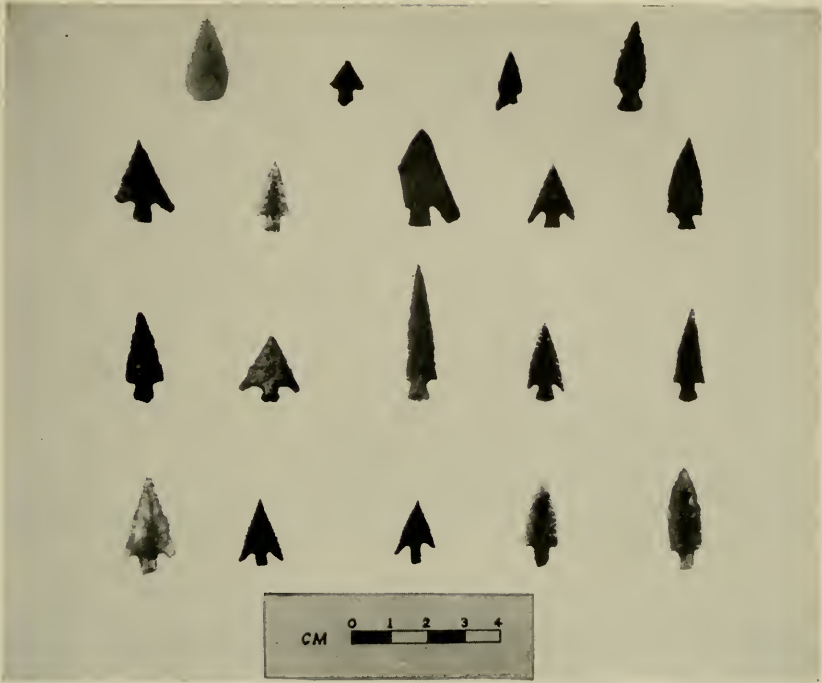
a, Stone knives, Cold Springs (35-UM-7). *b*, Projectile points, Cold Springs (35-UM-7).



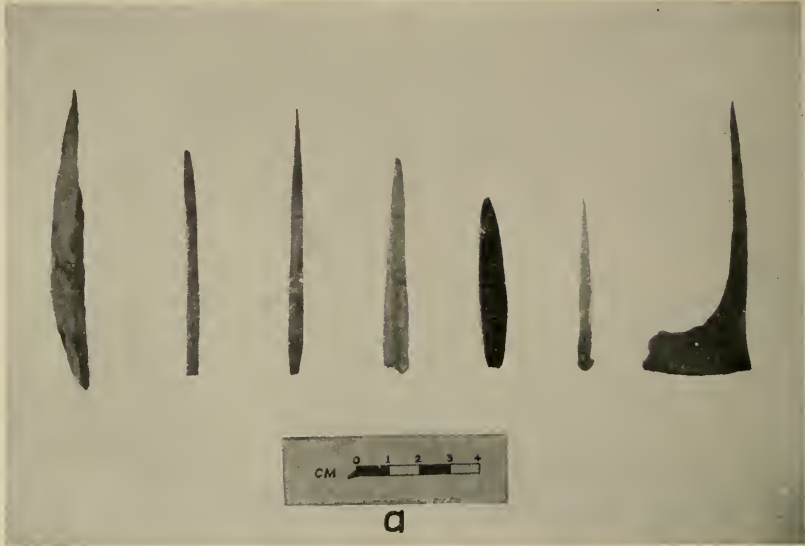
a, House pit 4, Cold Springs (35-UM-7) before excavation. *b*, Earth oven, Cold Springs (35-UM-7).



a, Artifacts from Techumtas Island (35-UM-17). *b*, House pit 14, Techumtas Island (35-UM-17).



Projectile points, Wallula (45-WW-6).



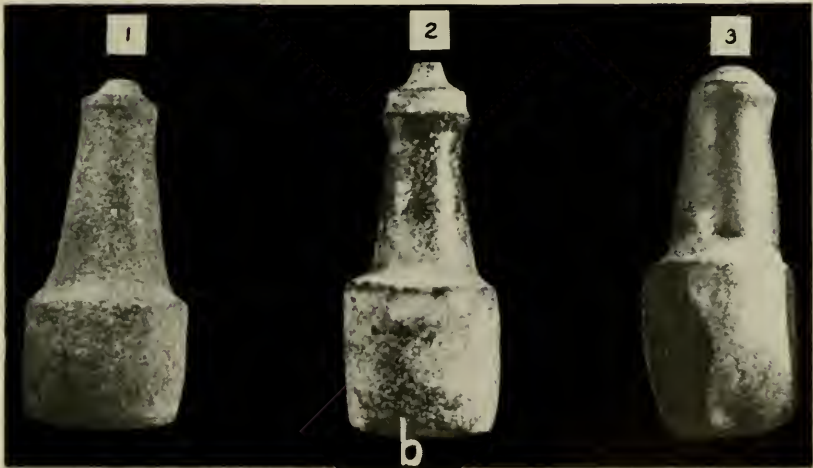
a, Bone tools from Wallula (45-WW-6). b, Antler wedges from Wallula (45-WW-6).



a, Discoid choppers, Wallula (45-WW-6). b, Cobble choppers and hammers, Wallula (45-WW-6).



a, Stone hoes from Wallula (45-WW-6). *b*, Net weights from Wallula (45-WW-6).



a, Chipped stone from Berrian's Island (45-BN-3). *b*, Stone mauls from Berrian's Island (45-BN-3).



a, Bone and horn implements, Berrian's Island (45-BN-3). *b*, Carved and polished stone, Berrian's Island (45-BN-3).



a, Plank cist burial, Berrian's Island, (45-BN-3). *b*, Flexed burial, Berrian's Island (45-BN-3).



Ornaments from Berrian's Island (45-BN-3).



Projectile point sequences: *a*, Hobo Cave; *b*, McNary region.