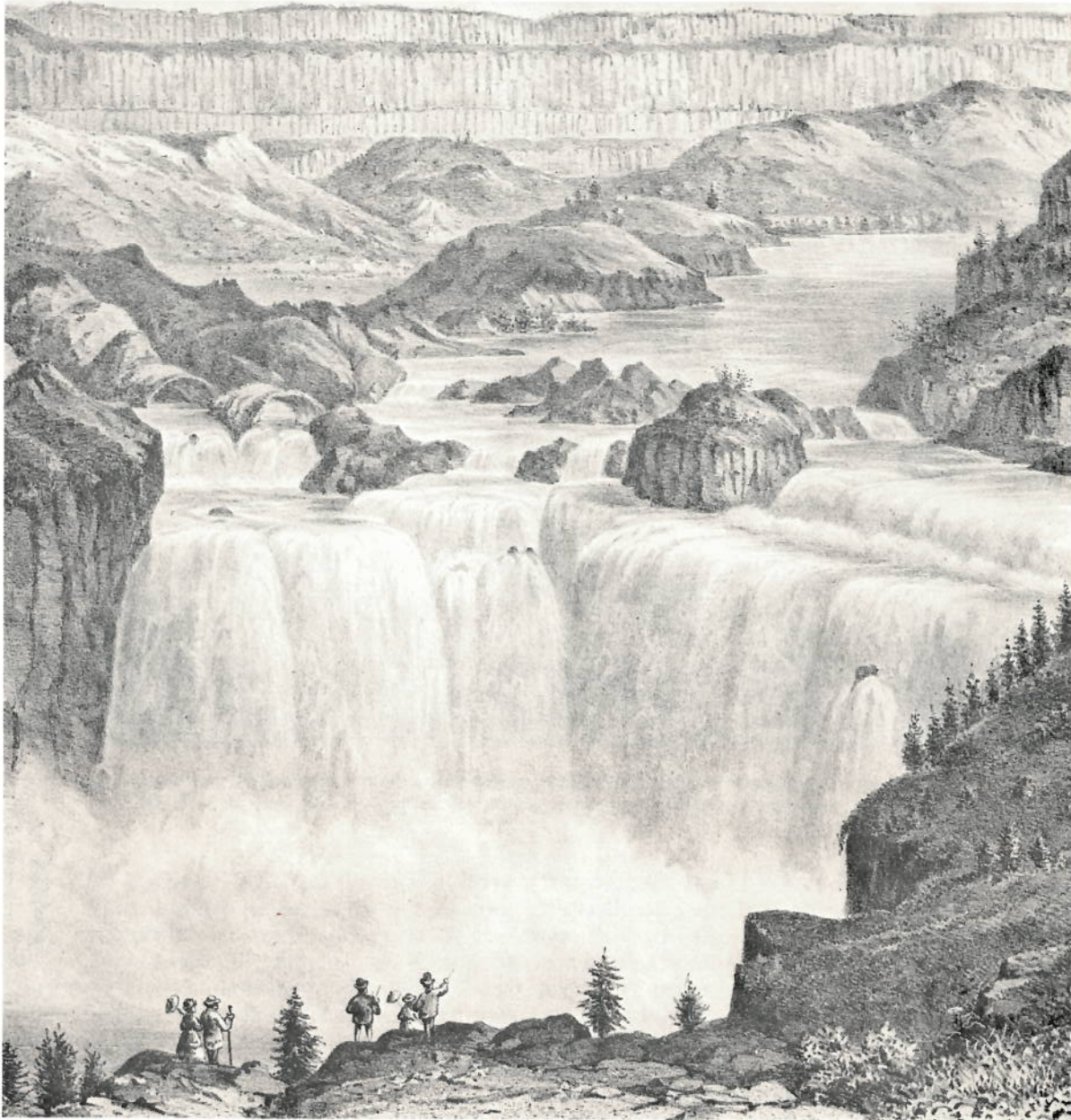


The SNAKE RIVER PLAIN

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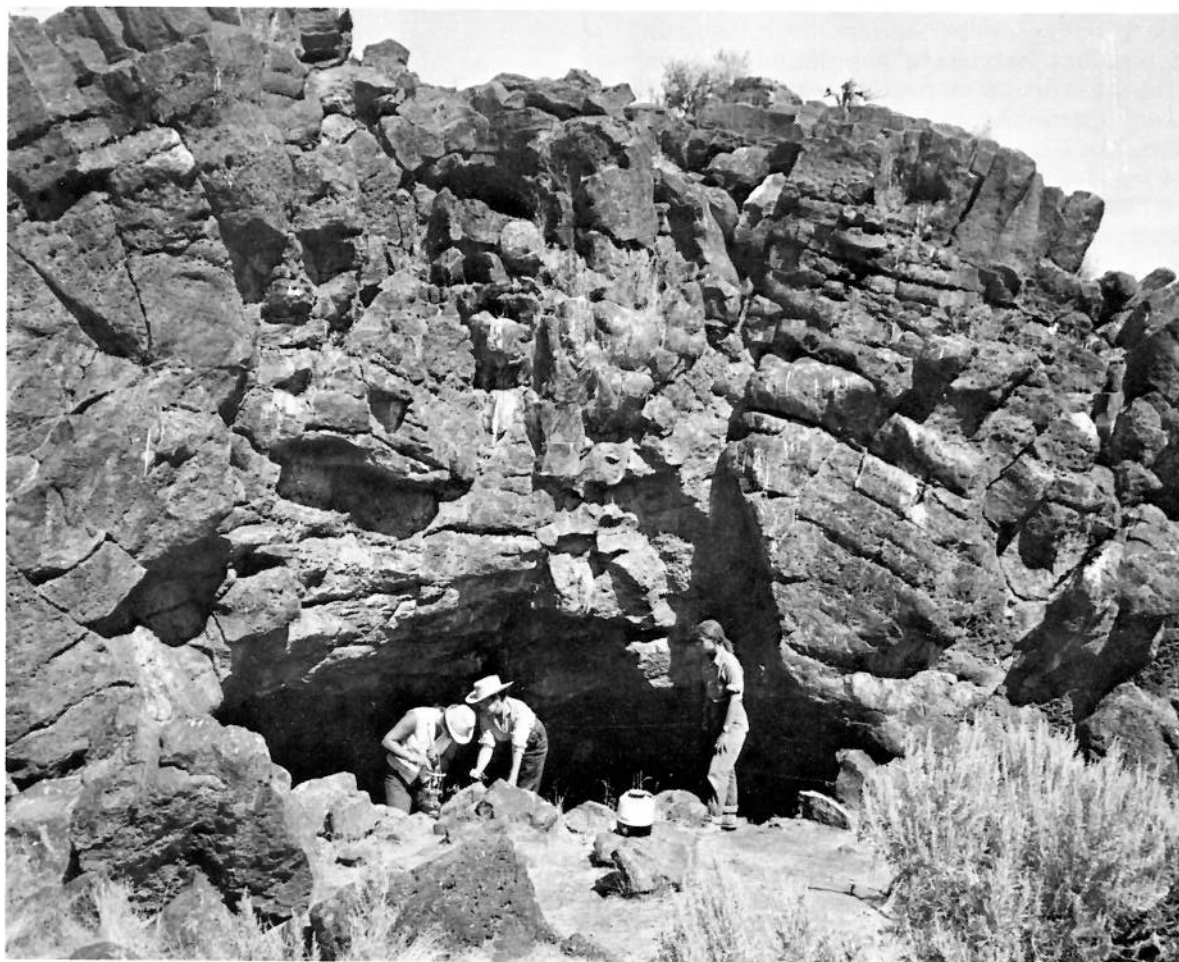


Lithograph showing Shoshone Falls by E. Green, sketched after 1880.

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THE SNAKE RIVER PLAIN

By Earl H. Swanson, Jr.



Professor Swanson, director of the Idaho State University Museum, has provided the illustrations for this article, including the view of Wilson Butte cave, above.

THE PREHISTORY of the Snake River Plain and its hinterlands can be considered in two ways: (1) regional culture patterns, and (2) transitions in culture coincident with changes in environment. These considerations rest on an evolutionary explanation of events in an ecosystem of much greater size than the Snake River Plain and its hinterlands.

The Bitterroot culture occupied the eastern Snake River Plain and its flanking valleys, probably extending over the continental divide into northwestern Wyoming and eastern Montana. The South Hills culture occupied

the western Snake River Plain and its flanking valleys including Owyhee tablelands and the Boise Basin. The boundary line between them was probably the 5,000-foot contour, shifting either way according to environmental changes. Both appear in the archeological record for the first time about 8,000 years ago. Before then there is no clear record of regional cultures on the Snake River Plain.

The regional cultures appear to have developed from the life way of earlier food collectors who first occupied the Snake River Plain perhaps 15,000 years ago. That first recorded

occupation at Wilson Butte Cave contains the base of a Lerma point¹ which links settlement of the Snake River Plain to other regions north and south in western North America. These first settlers were big game hunters but may have fished and probably gathered wild plant food as well. The tradition of big game hunting continued all across the Snake River Plain and its adjacent valleys until about 8,000 years ago and lasted into the 19th century on the eastern Snake River Plain.

THE SNAKE RIVER PLAIN is a vast sloping surface with its eastern end at Yellowstone National Park at an altitude of 8,000 feet and its western end near Hagerman, Idaho, at about 3,500 feet above sea level. Westward toward the Oregon border the lava fields of the main Snake River Plain are replaced by Tertiary deposits, including lake beds across which the Boise, Payette, and Weiser rivers flow to join the Snake River. The Snake River is flanked by the high sloping surfaces of the Owyhee Plateau. These surfaces are cut by deep canyons to form a spectacular series of tablelands extending like fingers from the Owyhee Mountains on the west and the Jarvis Mountains on the south. At its upper end the Snake River Plain is forested, giving way to parkland and wet meadows at about 7,000 feet. This setting is gradually replaced by sagebrush-grassland, which is interrupted by large sand dunes near St. Anthony, Idaho. Westward below 6,000 feet there are occasional juniper woods. Big Butte near Arco had a forested summit in the 19th century, while Laidlaw Park near Craters of the Moon National Monument contained cottonwood groves as late as 1885.² Below 5,000 feet the Plain is marked by discontinuous stands of sagebrush-grassland. The Snake River Plain is flanked on its east or south throughout its entire length by the Henry's Fork and the main Snake River. Its rolling surface was home to deer, moose, antelope, mountain sheep, caribou, and elk, with bison found as far west as Twin Falls in the 19th century; all but the mountain sheep can be found there today.³ Historic accounts make it clear that bison were rare much below 5,000 feet altitude and that all the principal big game herds were most

numerous above that same height either on the Snake River Plain or in the numerous large valleys which open onto the plain from the north and south.

Sagebrush-grassland communities extended into the five lost river valleys on the northern edge of the Snake River Plain and into the many valleys of the South Hills lying between the Snake River Plain and the Great Basin to the south. Drainage of the lost rivers onto the Snake River Plain formed a network of lakes, while the buttes in the center of the plain contained springs and lush grass, so that even in the 19th century part of the east central Snake River Plain contained local habitats similar to the lakes and wet meadows of the higher eastern portion. It must not be supposed that good grassland was common except on the upper Snake River Plain and in the higher parts of the tributary valleys 150 years ago. This was more of a handicap to men on horseback than to mammals which browsed as well as grazed or to the men who hunted them on foot.

Although the Snake River Plain has often been linked with the Columbia Plateau on physiographic grounds, it is geologically distinct from the lavas of eastern Oregon and Washington. In historic times the streams adjacent or tributary to the Snake River were perennial and the water supply was and is generous by any interior western American standards.⁴

During the 15,000 years that man has occupied the Snake River Plain there have been important environmental changes. The earliest occupation corresponds to the time of the mid-Pinedale glaciation in the northern Rocky Mountains.⁵ The close of this period of geological time about 12,500 years ago is represented by a series of physical changes in the landscape of the Snake River Plain and its flanking valleys. Neither the landforms nor the sediments were new in type, but there was a change in topographic position in the development of alluvial fans⁶ and in the regime of at least some of the drainage systems in the region. The end of mid-Pinedale glaciation is associated with a substantial discharge of meltwater so that steep canyons were left with a bedrock floor while mid- and downstream areas accumulated substantial gravel deposits. Alluvial fans formed on such

rock floors, or on gravel deposits, contain the artifacts of the last 12,500 years.

A series of alluvial fans which filled rockshelters in eastern Idaho has been cut, exposing alternating rock fall and silt beds representing alternating moist, cool, and dry conditions. In warmer localities at lower altitudes the rock fall units were often weathered to form now-buried A horizons.⁷ Although local sections vary in some detail, there is in each site a sequence of silt and rock fall sometimes weathered which is repeated three times from the base to the modern surface of the deposits. The three environmental fluctuations or epicycles have been dated by radiocarbon as follows: (1) 10,450-5,200 B.C. (2) 5,200-1,450 B.C., and (3) 1,450 B.C.-A.D. 1,850.⁸ Each cycle begins dry, turns moist-cool, then warm, turning dry again at the beginning of each new epicycle. Each period was successively drier than the preceding one except that the beginning of the second cycle appears to have been the warmest of the three dry periods initiating a new cycle. Each of these can be subdivided on the basis of rockshelter sediments, and it should be pointed out here that the extreme aridity of the Altithermal is represented in period two by a radiocarbon-dated interval of 5,200-3,850 B.C. These fluctuations can be detected primarily above 5,000 feet altitude so that the deposits at Wilson Butte Cave at 4,300 feet and the Wasden Site (Owl Cave) at 5,000 feet on the Snake River Plain show primarily the critical change at or near 5,200 B.C.⁹ In those two sites the modern environment was established at that time rather than at the later time of about 1,450-950 B.C. on the higher Snake River Plain and its flanking mountain valleys. Moreover, there is one rockshelter where the climatic intervals are more difficult to interpret because there were structural sediments accumulating during the entire span of human occupation.¹⁰ On the rim of the Great Basin, silt is the dominant dry climate sediment and moist episodes are represented in open sites by soil formation.¹¹ Even at altitudes up to 8,000 feet there is evidence of channel cutting at a relative time corresponding to the dry portion of the Altithermal between 5,200 and 3,850 B.C.¹² However, there is no evidence of wind deflation of land surfaces above 6,000 feet during that episode. During the same time there was extensive

wind erosion below 5,000 feet, indicated by eolian beds in many archeological sites.

Before 5,200 B.C. silt on the Snake River Plain is a time-stratigraphic equivalent of mountain glaciation, rock fall, and stream flow¹³ in mountain valleys and in some circumstances on the Snake River Plain. The greater volume of eolian silt before rather than after about 5,000 B.C. at the Wasden Site¹⁴ permits the inference that it was a periglacial winter deposit. From this we may deduce that the Snake River Plain was a moist, cool summerland. The large numbers of bison at the Wasden Site compare with large numbers of mountain sheep at Jaguar Cave (7,400 feet), and bison in small numbers at the Bison rockshelter (6,100 feet). These differences suggest complementary distribution of large mammals and, therefore, similar distribution for prehistoric man. In limited fashion it has been possible to show that big game hunters and the numbers of large mammals which they killed fluctuate with changes in the character of the natural setting. In particular, men and mammals were more common above 5,000 feet during dry

⁷The Wilson Butte Cave specimen was compared with Lerma points from the Yukon and Mexico at the R. S. Peabody Foundation in October, 1970.

⁸I. C. Russell, *Geology and Water Resources of the Snake River Plains of Idaho*, U.S. Geological Survey Bulletin 199 (Washington, D.C.: Department of the Interior, 1902).

⁹*Peter Skene Ogden's Snake Country Journals* (London: The Hudson's Bay Record Society, 1971); William B. Davis, *The Recent Mammals of Idaho* (Caldwell: Caxton Printers, 1939). Bison are now confined to the upper part of the Snake River plain in Yellowstone National Park where the original population was mixed with Plains bison in this century.

¹⁰Harold E. Malde, "The Snake River Plain," in H. E. Wright, Jr., and David G. Frey, eds., *The Quaternary of the United States* (Princeton, N. J.: Princeton University Press, 1965), 255-263.

¹¹Gerald M. Richmond, "Glaciation of the Rocky Mountains," in *ibid.*, 217-230; Wakefield Dort, Jr., "Multiple Glaciation of Southern Lemhi Mountains, Idaho Preliminary Reconnaissance Report," *Tebiwa* (1962), 5/2:2-17; Wakefield Dort, Jr., "Glaciation in Idaho—A Summary of Present Knowledge," *Tebiwa* (1965), 8/1:29-37.

¹²Earl H. Swanson and Paul Sneed, *Birch Creek Papers Number Three: The Archeology of the Shoup Rockshelters in East Central Idaho*, Occasional Papers of the Idaho State University Museum Number 17 (Pocatello: the University, 1966).

¹³*Ibid.*

¹⁴Earl H. Swanson, *Birch Creek: Human Ecology in the Cool Desert of the Northern Rocky Mountains 9,000 B.C.-A.D. 1,850* (Pocatello: Idaho State University, 1972).

¹⁵Ruth Gruhn, *The Archeology of Wilson Butte Cave, South Central Idaho*, Occasional Papers of the Idaho State University Museum Number 6 (Pocatello: the University, 1961); B. Robert Butler, "More Information on the Frozen Ground Features and Further Interpretation of the Small Mammal Sequence at the Wasden Site," *Tebiwa* (1969), 12/1:58-63; John E. Guilday, "Small Mammal Remains from the Wasden Site (Owl Cave), Bonneville County, Idaho," *Tebiwa* (1969), 12/1:47-57.

¹⁶Mario P. Delisio, "Preliminary Report on the Weston Canyon Rockshelter Southeastern Idaho: A Big Game Hunting Site in the Northern Great Basin," in C. Melvin Aikens, ed., *Great Basin Anthropological Conference 1970 Selected Papers*, University of

intervals and less common during wet episodes after 5,200 B.C.¹⁵

The human capacity for adaptation to diverse habitats in or adjacent to the Snake River Plain means that human history can be seen here in terms of natural selection, an explanation not commonly used by archaeologists. It follows that early as well as later cultures can best be explained in evolutionary terms.¹⁶ The spread of the earliest food collectors onto the Snake River Plain about 15,000 years ago may have been a brief episode in the settlement of the New World by rapidly expanding human populations. The effect on the artifacts which remain should be to diversify their forms until population equilibrium was reached in the conditions which prevailed before the ecological disturbance which marked the beginning of the second cycle between 7,000 and 8,000 years ago. After that time the effect of adaptation must have taken the form of normalizing selection. The lesser environmental fluctuations of the last 7,000 years represented a relatively stable environment in which large mammals and men might gradually increase in

numbers as part of the succession which followed the Altithermal episode between 5,200 and 3,850 B.C. We should then expect for the first time the establishment of regional cultures about 7,000 years ago.

TWO SITES CONTAIN the best evidence for a cultural chronology on the Snake River Plain and for the earliest date and occupations in this region: (1) Wilson Butte Cave located in the center of the plain at 4,300 feet above sea level, and (2) Wasden Site (Owl Cave) on the eastern Snake River Plain at about 5,000 feet above sea level.¹⁷ At Wilson Butte Cave the earliest occupation contains the basal half of a Lerma point and several other artifacts which have been dated at 14,500 years ago.¹⁸ An earlier bed in the same site containing scratched and possibly cut bone has been dated at 13,000 B.C. These artifacts occur in association with extinct mammals. At Owl Cave the earliest radio-carbon dates are for butchered elephant bone at 10,850 and 10,250 years B.C., but no artifacts so far have been found in association with this dated material.¹⁹

Clovis, Folsom, and other lanceolate points are coextensive with the Snake River Plain.²⁰ If these points represent big game hunting, then their distribution suggests a climate different from that of the present day. Point forms vary from station to station and this has led to the suggestion that multiple early cultures occupied the Snake River Plain. Corresponding differences have not so far been noted in other artifacts from the same time period, so variations in lanceolate point styles may represent manufacturing techniques applied for different purposes by people belonging to the same culture. Changes in some forms are known to be evolutionary, so occurrence of these specimens in isolated occupations can be misleading.²¹

Evidence from a series of sites at altitudes from 7,400 to 4,300 feet on or in valleys adjacent to the Snake River Plain indicate that the time when various lanceolate points were made or being made and used was marked by moist, cold, climatic conditions. Mammals found in association with human occupation during this period include sloth, camel, bison,

Oregon Anthropological Papers Number 1 (Eugene: the University, 1971).

¹¹Earl H. Swanson and Jon Dayley, "Hunting at Malad Hill in Southeastern Idaho," *Tebiwa* (1968), 11/2:59-69.

¹²Earl H. Swanson, R. Robert Butler, and Robson Bonnicksen, *Birch Creek Papers Number Two: Natural and Cultural Stratigraphy in the Birch Creek Valley of Eastern Idaho*, Occasional Papers of the Idaho State University Museum Number 14 (Pocatello: the University, 1964).

¹³Earl H. Swanson and Anthony J. Ranere, "Railroad Ranch Prehistory," *Idaho Yesterdays* (Winter, 1970-71), 13/4:19-27.

¹⁴B. Robert Butler, "The Origin of the Upper Snake Country Buffalo," *Tebiwa* (1971), 14/2:1-20.

¹⁵Swanson, *Birch Creek*.

¹⁶Theodosius Dobzhansky, "Mankind Evolving," in *Natural Selection and Survival of the Fit* (New York: Bantam Books, 1970), 134-169. This type of explanation is taken from the work on Australian aborigines by Joseph Birdsell.

¹⁷Gruhn, *Archeology*; Ruth Gruhn, "Two Early Radiocarbon Dates from the Lower Levels of Wilson Butte Cave, South Central Idaho," *Tebiwa* (1965), 8/2:57; B. Robert Butler, "An Introduction to Archeological Investigations in the Pioneer Basin Locality of Eastern Idaho," *Tebiwa* (1968), 11/1:1-30; Butler, "More Information"; Butler, "Origin"; Guilday, "Small Mammal."

¹⁸Don E. Crabtree, "A Technological Description of Artifacts in Assemblage I, Wilson Butte Cave, Idaho," *Current Anthropology* (1969), 10/4:366-367.

¹⁹B. Robert Butler, personal communication with the author, February 22, 1972.

²⁰B. Robert Butler, "An Early Man Site and Big Camas Prairie, South Central Idaho," *Tebiwa* (1963), 6/1:22-23; R. J. Fitzwater and B. Robert Butler, "A Further Note on the Clovis Site and Big Camas Prairie, South Central Idaho," *Tebiwa* (1965), 8/1:38-40; Earl H. Swanson, "Approach to Culture History in the Pacific Northwest," *Southwestern Journal of Anthropology* (1961), 12/2:140-145.

²¹Swanson, *Birch Creek*. At the Veratic Rockshelter thirty-seven lanceolate points could be classified as Birch Creek A, B, and C separated stratigraphically showing progressive changes in form and flaking.

elephant, and mountain sheep.²² Although good evidence is lacking from archeological sites on the western Snake River Plain, it seems reasonable to infer that parkland and continuous sagebrush-grassland extended down to perhaps 2,000-3,000 feet above sea level.

Percussion and at least two basic pressure-flaking techniques were employed in the manufacture of lanceolate points found on the Snake River Plain. Clovis points were made by a series of developmental steps from large biface blanks which were gradually reduced until a preform or set of preforms was reached,²³ after which a finished point was produced. Percussion flaking was probably used in most of the work though pressure flaking was employed in retouching edges, and some Clovis points recovered on the Snake River Plain may have been finished bifacially by pressure flaking. Folsom points illustrating the technique of manufacturing the Lindenmeier Folsom²⁴ have been found on the Snake River Plain but none has yet occurred in place in an excavated site in this area.

Two important pressure flaking techniques were used: (1) parallel flaking with flake scars overlapped so that the finished specimen is marked by a series of closely spaced parallel ridges with flake scars running over the center of the point on both faces; and (2) collateral flaking with broad flakes feathering at the midline often so smoothly that the point appears to have been ground or polished and has no ridge.²⁵ At the Haskett Site at least one specimen was parallel-flaked before it was finished by collateral flaking, and both techniques occur on lanceolate points in the same layer at Jackknife Cave and in the Veratic Rockshelter in the Birch Creek valley.²⁶ The variations in style and technique in early lanceolate points suggest at least two explanations for the appearance of these forms on the Snake River Plain. First, they may represent multiple cultures occurring together and/or at various times between 12,000 and about 8,000 years ago. Secondly, they may illustrate the range of contemporary variation within a single culture pattern evolving over 4,000 or more years on the Snake River Plain at the same time as these changes were taking place in other parts of western North America. Lanceolate points persist after 8,000 years ago in eastern and southern Idaho at altitudes above 6,000 feet as late as 3,500 years ago. Some of these points

evolve toward stemmed forms and are at the end flaked in the same fashion as contemporary notched and more familiar stemmed indented base points.

Only one phase has been defined for Early Man's occupation of the Snake River Plain. This is the Birch Creek phase, which can be divided in two parts. The earlier portion is more than 8,000-8,500 years old while the second part of the Birch Creek phase falls between 8,500 and about 7,150 years ago. Definition is based upon excavations in the Birch Creek valley. The phase is characterized by the presence of Birch Creek A, B, and C lanceolate points, each of which is distinguished by broad collateral pressure flaking. A single Birch Creek A specimen from the Veratic Rockshelter is fluted and another in the Bison Rockshelter has a radiocarbon age determination of 8,390 years B.C. Plainview and a single Alberta point occur in the earlier part of the Birch Creek phase while side-notched points appear in the later part of the phase. In addition, small, steep end scrapers, perforators, blades, and biface blanks have been found. Bison is the principal mammal represented in the phase at the Bison and Veratic Rockshelters but mountain sheep are common at Jaguar Cave and the phase may have its beginnings at a time contemporary with extinct mammals from that site and from the Wasden Site (Owl Cave). The phase and its apparent time-equivalence on the Snake River Plain are marked by the great size of the points. Many from surface finds have a length of 7-8 inches.

Smaller lanceolate points occur and specimens resembling Agate Basin, Hell Gap, Milnesand, Eden, Plainview, and Scottsbluff types are known.²⁷ Almost all of the known specimens from surface finds occur on surfaces which limit the age of the artifacts to the last 12,000 years, so that the Birch Creek phase as now defined may or may not apply to the whole of the Snake River Plain. It is clear that the second part of the Birch Creek phase is transitional to the period when regional cultures were established on the Snake River Plain and that lanceolate points continued to be used long after the regional cultures were well established. The change from Early Man to later regional cultures coincides with an important environmental change. Where early men occupied a periglacial environment, people of the regional culture pattern occupied essentially

modern settings. This change may have been accompanied by an important technological change associated with the introduction of small notched and stemmed points. This innovation may have been the introduction of the bow and arrow.

TWO REGIONAL CULTURES EMERGE in the archaeological record about 6,000 B.C. The eastern pattern has been termed the Bitterroot culture.²⁸ Its existence is based on excavations in rockshelters and alluvial stream deposits in different habitats. No village sites or burials have been excavated, so the pattern as now known reflects the big game hunting activities of a prehistoric people. The territory occupied by the Bitterroot pattern extends from the Salmon River Canyon on the north to the rim of the Great Basin in southeastern Idaho. To the west it may be limited by the 5,000-foot contour interval on the Snake River Plain and reached westward to the South Fork of the Salmon River and perhaps as far as the Payette River valley in the high mountains north of the Snake River Plain. To the east comparable artifact types and patterns occur in Wyoming and possibly eastern Montana and Alberta.

A western pattern which may be termed South Hills culture²⁹ is known from excavations in rockshelters, a spring site, and a large



Big Horn Shelter

alluvial camp. No villages but some burials have been excavated so that here, too, data are available primarily for hunting and gathering activities. The territory of the South Hills reaches west from the 5,000-foot contour on the Snake River Plain and perhaps from the Malad River valley in the mountains south of the Plain. The pattern occurs in the Owyhee uplands in southwestern Idaho, so like the Bitterroot it may be a culture belonging to high mountain valleys.

No archeological culture has been defined for the Boise valley at the western end of the Snake River Plain, but excavations in the Weiser valley 50 miles to the north suggest a third pattern.³⁰ This culture may be Plateau in origin or express an overlap between South Hills culture and a Plateau pattern to the north. It should be observed that the Bitterroot and South Hills archeological cultures correspond in territory and economy to the ethnographic Northern and Western Shoshoni respectively.³¹

Similar types of sites are known for both prehistoric cultures, including bison jumps,³² but there are some apparent differences as well. Tipi rings are common in the Salmon

²²Butler, "Origin"; Gruhn, *Archaeology*; Hind Sadek Kooros, "The Sediments and Fauna of Jaguar Cave, Part I: The Sediments," *Tebiwa* (1972), 15/1:1-20; Swanson, *Birch Creek*.

²³Guy Roger Muto, "A Technological Analysis of the Early Stages in the Manufacture of Lithic Artifacts," unpublished master's thesis, Idaho State University, 1971.

²⁴Don E. Crabtree, "A Stoneworker's Approach to Analyzing and Replicating the Lindenmeier Folsom," *Tebiwa* (1966), 9/1:3-39.

²⁵Don E. Crabtree, *An Introduction to Flintworking, and Glossary of Flintworking Terms*, Occasional Papers of the Idaho State University Museum Number 28 (Pocatello: the University, 1972).

²⁶B. Robert Butler, "A Report on Investigations of an Early Man Site near Lake Channel, Idaho," *Tebiwa* (1965), 8/2:1-20; Earl H. Swanson and Paul Sneed, "Jackknife Cave," *Tebiwa* (1971), 14/1: 33-69; Swanson, *Birch Creek*.

²⁷Earl H. Swanson, "Folsom Man in Idaho," *Idaho Yesterdays* (Spring, 1961), 5/1:26-30.

²⁸Earl H. Swanson, "Early Cultures in Northwestern America," *American Antiquity* (1962), 28/2:151-158.

²⁹James P. Green, "Archaeology of the Rock Creek Site 10-CA-33, South Central Idaho," unpublished master's thesis, Idaho State University, 1972.

³⁰Claude N. Warren, Kent S. Wilkinson, and Max G. Pavesic, "The Midvale Complex," *Tebiwa* (1971), 14/2:39-71.

³¹Julian H. Steward, *Basin Plateau Aboriginal Socio-political Groups*, Bureau of American Ethnology Bulletin 120 (Washington, D.C.: Smithsonian Institution, 1938).

³²Larry D. Agenbroad, "The Five Fingers Buffalo Jump," *Explorers Journal* (1968), 46/4:279-286; B. Robert Butler, "A Bison Jump in the Upper Salmon River Valley of Eastern Idaho," *Tebiwa* (1971), 14/1:4-32.

River mountains³³ and portions of the eastern Snake River Plain but are not common in the South Hills or the Owyhee Plateau. The tipi rings are circular rock rings 10-14 feet in diameter with 12-14 rings found in several localities. Along the middle fork of the Salmon such rock rings are stratified in one locality and number from 30 to 200 rings. They were common in historic time but at least some of them appear to be prehistoric in eastern and east central Idaho.³⁴ Perhaps 50 villages have been recorded in the Salmon River region of the Bitterroot Culture, but there may be no more than 8-10 reported for the region of the South Hills culture despite more intensive early reconnaissance work in southwestern Idaho.³⁵ Several kinds of houses may be present in the Salmon River drainage. Some are shallow saucers about 18-20 feet in diameter, often numbering six or more in a single location. There are also rock circles 20-30 feet in diameter surrounding 30-50-centimeters-deep depressions. Those along the Snake in western Idaho appear to be 11-12 feet in diameter and to be shallow saucers no more than 10-30 centimeters deep. However, in southwestern Idaho there is one village site with apparent house depressions 20-25 feet in diameter, and these may be Plateau houses south of the historic Plateau Great Basin boundary.

Wall paintings are common in Bitterroot but rare in South Hills country. The reverse is true for petroglyphs. Most paintings are red but there are a few white pictographs as well. Many of these are representative but some are geometrical and there are others which appear to be mythological, such as those showing figures carrying their heads in their hands. The petroglyphs and pictographs both tend to occur at probable hunting and fishing stations. It is possible that these differences reflect more intensive recent reconnaissance work in the Salmon River region than in southwestern Idaho, but these recent surveys have tended to confirm rather than to change the initial picture defined by surveys in 1958-1959.³⁶

Artifact patterns differ in the two prehistoric culture areas in both survey and excavation data. The most common point types are side-notched and corner-notched in the Bitterroot area but are stemmed and concave base lanceolate forms in the South Hills area. The Bitterroot points have blades with oblique

flake scars on one edge but perpendicular intersecting scars from the other edge on both faces. The side notches may be parallel-sided, or the lower edge of the notch may slope toward the base. The base may be flat, concave, convex, or inset but neither the variations in base nor those in notch affect the distribution of this type in time. Some variations have a different spatial distribution. The most common corner-notched points have a diagonal notch toward the center from each corner, are sometimes serrated, and have a sharply pointed barb. The base may be concave or flat but there are also broad corner-notched points. In the South Hills the lanceolate points are the so-called Humboldt form with oblique parallel flaking. Many of these have been mistakenly called McKean points in Idaho. The stemmed points are probably related to the Pinto points of the Great Basin. In large numbers Humboldt and Pinto seem to form a series.³⁷

In the Salmon River mountains there is a settlement pattern disclosed by reconnaissance work.³⁸ In the foothills lying between the mountain slopes and the valley floors of east central Idaho, there is a density gradient away from the upper Salmon River valley to the south and east. Prehistoric villages are confined to the upper Salmon River valley with very intense settlement in terms of numbers of sites and large sites as well as numbers of artifacts and artifact types. The intense settlement of the upper Salmon declines in the adjacent valleys such as the Pahsimeroi and the Big Lost. The pattern reflects more diversified and apparently perennial use of the upper Salmon River valley compared with more limited and apparently seasonal use of large open valleys such as the Lemhi, Little Lost, and Birch Creek. Current survey work on the northern edge of the Snake River Plain³⁹ indicates that the lakes formed in the sinks of the five lost river valleys may have been used intensively for millennia by big game hunters. Archeological survey in 1961 suggested a reduction in the use of the Birch Creek sinks at a time then estimated to be between 5,000 and 1,000 B.C.⁴⁰ This time now can be reduced to an interval between 5,200 and 3,850 B.C. and may have been related to an arid climate. The lake in the sinks would have been reduced from a maximum depth of about 80 feet to a condition of intermittent marshes or dry sands,

which it is today as a result of upstream irrigation.

A similar settlement pattern can be deduced for part of the South Hills culture area in the Owyhee tablelands. Data gathered in 1959 indicated continuous settlement at springs above 5,000 feet altitude but discontinuous occupation at sites below that altitude.⁴¹ Limited excavations in 1958 suggested that low altitude occupation of southwestern Idaho was relatively late in prehistoric time.⁴² Artifact types from the Owyhee bison jump suggest similar late prehistoric use for part of the region, a time which may be estimated as falling within the last 3,000 years. In time it may be possible to map the distribution of artifact types and sites so that a settlement pattern emerges more clearly in the record.

In the excavated sites of eastern Idaho the occupation of Birch Creek is most nearly con-

tinuous at altitudes above 5,000-6,000 feet above mean sea level. Following the Birch Creek, or Early Man, phase, there are four phases presently defined, named in temporal order as Bitterroot, 5,200-1,450 B.C.; Beaverhead, 1,450-950 B.C.; Blue Dome, 950 B.C.-A.D. 1,250; and Lemhi, A.D. 1,250-1,850. A density measurement of settlement in the Birch Creek valley indicates that the Bitterroot and Blue Dome phases can be paired with less intense, while the Beaverhead and Lemhi phases form another pair with more intense settlement above 6,000 feet. The more intense occupations can be associated with wind-blown silt from outside the Birch Creek valley, while the less intense settlements are associated with episodes of rock fall and stream deposits, so shifts in population distribution took place in this valley and perhaps in the entire region during the last 7,000-8,000 years.

Changes in the density of human occupation correspond to changes in the numbers of living big game animals represented in the rock-shelter deposits of the Birch Creek valley. Overall there is an apparent slight increase in the human population coincident with a long-term increase in the numbers of bison. This may express stabilizing natural selection in the sagebrush-grassland habitat of the region. There is in Birch Creek valley, and perhaps in the region as a whole, a complementary distribution of animals and some artifact types. Between 6,000 and 7,000 feet above sea level bison are more common than mountain sheep in the deposits of the last 3,000 years. In particular, the sediments of the last 600 years contain large numbers of bison which can be associated with side-notched points. Above 7,000 feet mountain sheep are the most common mammal in archeological deposits and these occur with small corner-notched points.⁴³ In both cases both types of mammals and artifacts are present, so the distribution is not exclusive. This suggests a common culture pattern and stratification in the biotic community.

Throughout the four phases defined at Birch Creek, and recognizable in adjacent valleys, there is a continuity of elements and pattern in the artifacts, animal remains, and activities which can be inferred from the evidence. The artifacts included biface blanks representing a step in the manufacturing of flake stone tools by reducing a block or core of raw material until a finished form emerges from the

³³Earl H. Swanson, "Archeological Survey of the Middle Fork of the Salmon River, Idaho" (unpublished report to the National Park Service, 1959); Earl H. Swanson, Donald R. Tuohy, and Alan Lyle Bryan, *Archeological Explorations in Central and South Idaho—1958, 1: Types and Distributions of Site Features and Stone Tools*, Occasional Papers of the Idaho State University Museum Number 2 (Pocatello: the University, 1959).

³⁴Anthony J. Ranere, Joan C. Ranere, and John Lortz, "The Monida Pass Tipi Ring Site," *Tebiwa* (1969), 12/1:39-46.

³⁵Swanson, "Approach"; Earl H. Swanson, Chester King, and James Chatters, "A Settlement Pattern in the Foothills of East Central Idaho," *Tebiwa* (1969), 12/1:31-38; Donald R. Tuohy, "An Appraisal of the Archeological Resources of the Guffey Reservoir in Southwestern Idaho" (unpublished report to the National Park Service, 1959); Robert W. Keeler and David G. Koko, "An Archeological Survey of the Proposed Guffey-Swan Falls Reservoirs, Southwestern Idaho," (unpublished report to the Idaho Water Resource Board, contract no. 08063256, 1972).

³⁶Richard R. Harrison, "The Inventory Survey in River Basin Archeology," unpublished master's thesis, Idaho State University, 1972; Earl H. Swanson, *The Archeological Resources of the Salmon River Canyon* (Moscow, Idaho: Water Resources Research Institute, University of Idaho, 1970); Earl H. Swanson, Roger Powers, and Alan Lyle Bryan, "The Material Culture of the 1959 Southwestern Idaho Survey," *Tebiwa* (1964), 7/2:1-27; Swanson, Tuohy, and Bryan, *Archeological Explorations*.

³⁷B. Robert Butler, "A Surface Collection from Coyote Flat, Southeastern Oregon," *Tebiwa* (1970), 13/1:34-57; James P. Green, "McKean in the Northern Great Basin" (unpublished paper presented at the 25th Northwest Anthropological Conference, March 23, 1972).

³⁸Swanson, King, and Chatters, "Settlement Pattern."

³⁹B. Robert Butler, "A Report on the 1967-69 Archeological Survey of the National Reactor Testing Station, Idaho," *Tebiwa* (1970), 13/1:58-75.

⁴⁰Earl H. Swanson and Alan Lyle Bryan, *Birch Creek Papers Number One: An Archeological Reconnaissance in the Birch Creek Valley of Eastern Idaho*, Occasional Papers of the Idaho State University Museum Number 13 (Pocatello: the University, 1964).

⁴¹Earl H. Swanson, "Archeological Explorations in Southwestern Idaho," *American Antiquity* (1965), 31/1:24-37.

⁴²Donald R. Tuohy and Earl H. Swanson, "Excavation at Rock-shelter 10-AA-15, Southwest Idaho," *Tebiwa* (1960), 3/1-2:20-24.

⁴³Carla Bucy, "Faunal Identification and Technological Analysis of Bone Tools from Meadow Canyon, Eastern Idaho" (unpublished master's thesis, Idaho State University, 1972); Anthony J. Ranere, *Stratigraphy and Stone Tools from Meadow Canyon, Eastern Idaho*, Occasional Papers of the Idaho State University Museum Number 27 (Pocatello: the University, 1971).

work. Squat lanceolate and triangular point preforms which represent the last step in the reduction of a core before the completion of the finished form are also present. Conical cores and the blades produced from such cores occur, as do knives and scrapers made from such blades. Steep end scrapers occur in numbers from the very earliest to the latest historic occupation. Fleshers of quartzite made from large flakes with one serrated and often worn edge are present. Side-notched, corner-notched, and stemmed points occur in changing proportions during this time but all are present from the beginning to the end. Wolf, coyote, and dog skulls occur together, with some of the wolf skulls found in small rock circles. Flat milling stones and hand stones are present along with earth ovens used for cooking meat and apparently for heat treating glassy rocks. The ovens, biface blanks, and steep end scrapers continue from the Early Man occupations into the historic period. The others including natural seed beads last from 6,000 B.C. into the 19th century A.D. The phases are differentiated from one another primarily by changing proportions of point types. Since this culture pattern extends into the historic period where natural seed beads are replaced by blue glass specimens and gun flints occur side by side with side-notched projectile points, steep end scrapers, and fleshers which are still made and used at Fort Hall, it seems a reasonable inference that the Bitterroot culture is the archeological expression of Northern Shoshoni prehistory. The evidence and the interpretation challenge the linguistic hypothesis that Shoshoni in this region were late migrants arriving after A.D. 1,300-1,500.⁴⁴

The relation of the Bitterroot culture to its natural setting can be seen in the character of excavated archeological sites outside the Birch Creek valley. Continual occupation occurred also at Jackknife Cave at 5,000 feet on the southern end of the Lemhi range. But only one phase is represented in the Salmon River canyon at the Shoup Rockshelters. Later occupations at the Shoup shelters were sparse, and although familiar elements occur in the deposits no thorough representation of phases after the Bitterroot can be given. At Railroad Ranch near 6,000 feet above sea level on the upper Snake River Plain, there is continual occupation during the time represented by the Bitterroot culture with a possible shift in the

position of archeological sites between 5,200 and 3,850 B.C.⁴⁵ At the Willow Creek Rockshelters near 5,000 feet in the mountains east of the Snake River Plain, there is light continual occupation whose lesser density reflects the position of the shelters in an area of wind-blown silt accumulation.⁴⁶ At the open Malad Hill Site⁴⁷ at 5,000 feet there are only two occupations and these correspond to contemporary use of the Weston Canyon Rockshelter a few miles to the east at the same altitude. The radiocarbon dates indicate that these occupations took place about 7,300-6,800 and 1,000 years ago. The Wasden Site (Owl Cave) at 5,000 feet altitude on the Snake River Plain is marked by continual occupation and its artifacts are contemporary with the Bitterroot pattern. The post-7,000 year artifacts are unpublished but appear to be similar to those now known and described for the Bitterroot pattern. The main collection of survey finds from the southeastern Snake River Plain is dominated by side-notched points so that the pattern of human occupation in the Bitterroot culture appears to be a function of high altitude along the western slope of the Rocky Mountains in eastern Idaho. Recent comparison with sites in Wyoming, Montana, and Alberta suggest that the culture pattern of the eastern Snake River Plain has much in common with that of the high plains.⁴⁸ These similarities include similar point types in sequence and proportion, steep end scrapers, biface blanks, squat lanceolate point preforms,

⁴⁴Earl H. Swanson, "Geographic Foundations of the Desert Culture," in *The Current Status of Anthropological Research in the Great Basin*: 1964 (Reno: Desert Research Institute, 1966), 137-146; Sydney M. Lamb, "Linguistic Prehistory in the Great Basin," *International Journal of Linguistics* (1958), 29:95-100; Wick R. Miller, "Anthropological Linguistics in the Great Basin," in *The Current Status of Anthropological Research in the Great Basin*: 1964, 75-112; James A. Goss, "Culture-Historical Inference from Utaztekan Linguistic Evidence," in Earl H. Swanson, ed., *Utaztekan Prehistory*, Occasional Papers of the Idaho State University Museum Number 22 (Pocatello: the University, 1968), 1-42.

⁴⁵Earl H. Swanson and Paul Sneed, "An Archeological Reconnaissance of Railroad Ranch in Eastern Idaho, 1966," *Tebivca* (1967), 10/1:53-59; Swanson and Ranere, "Railroad Ranch Prehistory."

⁴⁶William Roger Powers, *Archeological Excavations in Willow Creek Canyon, Southeastern Idaho, 1966*, Occasional Papers of the Idaho State University Museum Number 27 (Pocatello: the University, 1969).

⁴⁷Swanson and Dayley, "Hunting at Malad Hill."

⁴⁸Ranere, *Stratigraphy*; Susanne J. Miller, "Weston Canyon: Big Game Hunting in Southeastern Idaho" (unpublished master's thesis, Idaho State University, 1972); Swanson, *Birch Creek*.

⁴⁹Peter Fidler, "Chester House Journals, 1800-1802," in *Saskatchewan Journals and Correspondence* (London: The Hudson's Bay Record Society, 1967), 253-324; Ake Hultkrantz, "The Source Literature on the 'Tukudika' Indians in Wyoming: Facts and Fancies," in Earl H. Swanson, ed., *Languages and Cultures of Western North America* (Pocatello: Idaho State University,

conical cores and blades, and similar animal remains including bison and mountain sheep. The prehistoric pattern corresponds to ethno-historic data concerning Northern Shoshoni geography.⁴⁹

The South Hills culture pattern differs from the Bitterroot partly by proportional differences in artifact types. Stemmed and lanceolate points are the most common forms in the Owyhee uplands.⁵⁰ They have great persistence in time at the Rock Creek site in the South Hills south of Twin Falls, Idaho.⁵¹ In particular, Humboldt and Pinto types appear to last nearly 7,000 years and form a constant proportion of the point types present. They are also common at Brown's Bench.⁵² Other sequences have been found at Columbet Cave and Wilson Butte Cave.⁵³ So far no archeological phase has been defined in the South Hills or the Owyhee tablelands but the Dietrich phase on the central Snake River Plain may illustrate the character of the South Hills culture after A.D. 1,300-1,400.⁵⁴ Except for Rock Creek the excavation sites so far show light intermittent occupation and the numbers of artifacts at any given time suggest smaller populations in the area of the South Hills culture than in the Bitterroot culture area.

In the area now proposed for the South Hills culture pattern, deep bowl-shaped mortars occur as do strings of deer hoof rattles. These contrast so far with slab milling stones and manos in the Bitterroot pattern and with

a mountain sheep horn core altered possibly for ceremonial use.⁵⁵

The few reported village sites in the Snake River canyon average three houses each though an occasional larger village site is known. This compared with an average of six houses and 12-14 tipi rings in Bitterroot terrain. After A.D. 1,300 human occupation appears more common at lower altitudes and on the open Snake River Plain. Since the artifacts types and sites are similar throughout the region of the South Hills pattern at this time, such a spread may reflect increasing numbers of people.

Although the Bitterroot and South Hills culture patterns can be distinguished from one another, they also have much in common. Common point types occur though differing in sequences by geographic area and the technique of reducing a core by making biface blanks and preforms is found in both patterns. Antelope and migratory fish were found in both areas and promontory pegs occur in the South Hills and Bitterroot sites.⁵⁶ On all parts of the Snake River Plain there are three temporally different pottery wares and in late prehistoric time the basketry of both patterns fits with that of the eastern Great Basin.⁵⁷

There is no direct link of prehistoric with historic culture in southwestern as there is in eastern Idaho. However, an experimental index of prehistoric culture areas in Idaho has been devised by Corliss.⁵⁸ In any given area in the last 7,000 years there is a bimodal curve through time for neck width measurements on notched and stemmed points. In each area the earlier normal curve is for a larger mean neck width than is the later normal curve. When time is held constant there is a consistent geographic difference in the distribution of mean neck width. Corliss has been able to show that there are two prehistoric culture areas in Idaho which can be defined by this technique: (1) Northern Great Basin, and (2) Southeastern Columbia Plateau. Since the Bitterroot culture appears to be connected directly with the Northern Shoshoni of eastern Idaho, it seems likely that the South Hills culture is the archeological expression of western Shoshoni culture. In west central Idaho the pattern appears ancestral to the historic Nez Perce. Overlaps occur in the border areas, a feature as common in the ethnographic as in the archeological record.

1970); Sven Liljeblad, "Indian Peoples of Idaho" (mimeographed report, Idaho State University Museum, Pocatello, 1957); Steward, *Basin Plateau*; Earl H. Swanson, " 'Since Time Immemorial . . . ' Problems in Shoshone Chronology," *Idaho Yesterdays* (Winter, 1957-58), 1/4:21-26.

⁵⁰Ruth Gruhn, "Test Excavations at Sites 10-OE-128 and 10-OE-129, Southwest Idaho," *Tebiwa* (1964), 7/2:28-36; Swanson, Powers, and Bryan, "Material Culture"; Donald R. Tuohy, *Archeological Survey in Southwestern Idaho and Northern Nevada*, Nevada State Museum Anthropological Papers Number 8 (Carson City: the Museum, 1963).

⁵¹Green, "Archeology."

⁵²Paul L. Barnes, *Archeology of the Dean Site: Twin Falls County, Idaho*, Laboratory of Anthropology Report of Investigations Number 25 (Pullman: Washington State University, 1964).

⁵³Thomas F. Lynch and Lawrence Olsen, "The Columbet Cave Rockshelter," *Tebiwa* (1964), 7/1:7-16; Gruhn, *Archeology*.

⁵⁴Ruth Gruhn, "The Meeham Site: A Rockshelter Burial in the Snake River Canyon of Southern Idaho," *Tebiwa* (1960), 3/1-2:3-19; Ruth Gruhn, "A Collection of Artifacts from Pence-Duerig Cave in South Central Idaho," *Tebiwa* (1961), 4/1:1-24.

⁵⁵Ranere, *Stratigraphy*.

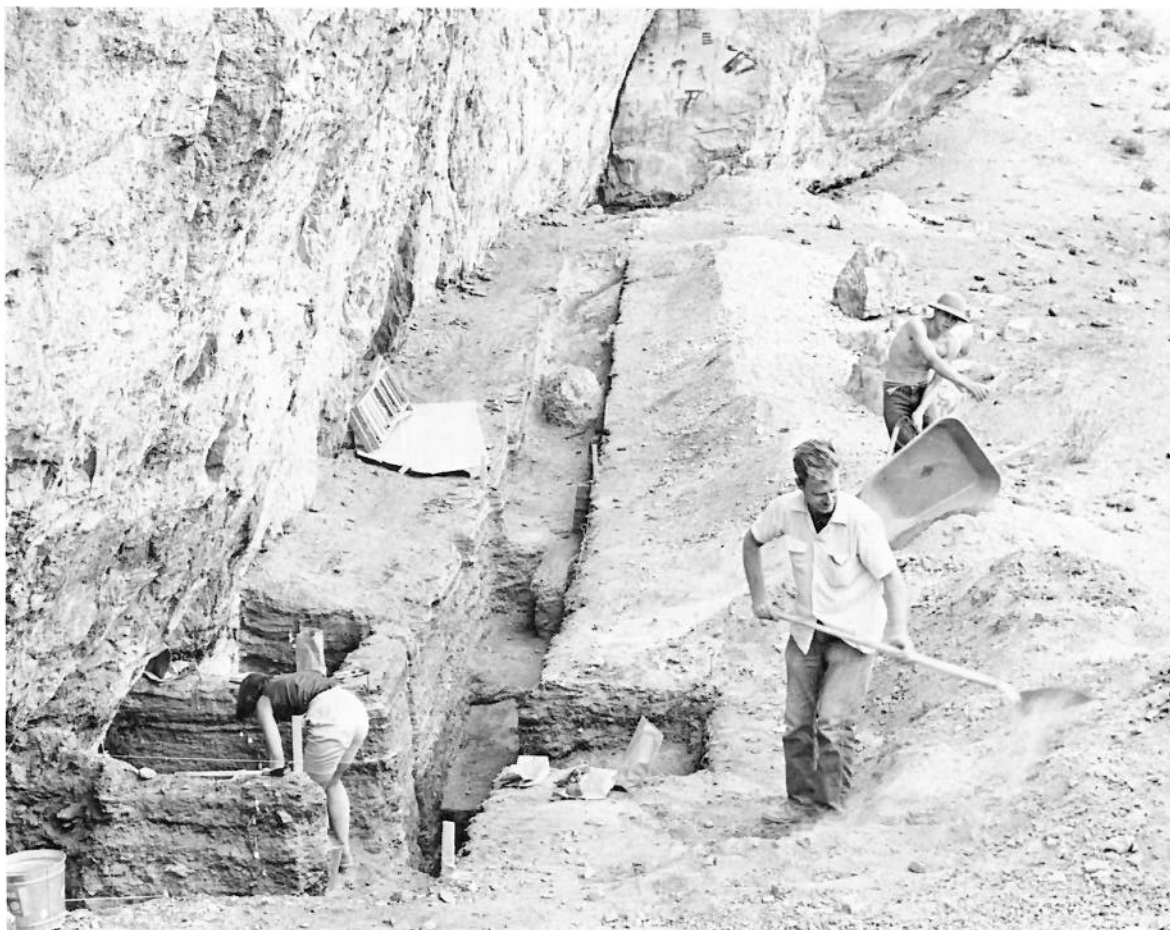
⁵⁶Max G. Pavesic, "A Note on the Distribution of Promontory Pegs," *Tebiwa* (1966), 9/1:40-44.

⁵⁷James M. Adovasio, "The Origin, Development and Distribution of Western Archaic Textiles," *Tebiwa* (1970), 13/2:1-40.

⁵⁸David Corliss, "Projectile Neck Width Distributions in Idaho" (unpublished master's thesis, Idaho State University, 1972).



Malad Hill, above; Birch Creek Rockshelter, below



Archaeological Exploration Of The Snake River Plain

By Earl H. Swanson, Jr.

EXPLORATIONS OF THE Snake River Plain and its hinterlands began in 1958 as the study of a problem in understanding Shoshoni prehistory. The problem arose from two conflicting theories about the origins of these people who lived on both sides of the Northern Rocky Mountains when the first European accounts of them began to be made in the early 1700's. At that time Shoshoni and their close Plains relatives, the Commanche, were distributed from the Saskatchewan River Valley in Alberta to the high plains east of Santa Fe. West of the Rocky Mountains, the Shoshoni were found from Nevada and Utah into western Montana.

One account of Shoshoni origins is based on linguistics and holds that the Shoshoni migrated into Idaho, Montana, and Wyoming from the southwestern Great Basin, perhaps 400-500 years ago. An alternate environmental explanation says that the Shoshoni culture pattern and the distribution of Shoshoni-Commanche language can best be accounted for by evolution in place during the past 8,000 years or so. Like all special theories, these must be tested by their consequences; and each must be refutable by experimental work whose answers are not provided by the assumptions underlying the explanation.

A basic difficulty with the linguistic hypothesis is that its proponents will not accept refutation by a test of its consequences. They argue that language is autonomous and that there is necessarily no correlation between the history and distribution of language and culture. This renders the linguistic account suspect in the first instance. For example, there is no archeological evidence for either cultural or biological change at the time proposed for human migration into the Northern Rocky Mountains from the southwestern Great Basin. A second consequence which can be deduced from the linguistic hypothesis is that the source of the mi-

gration should have been a population center in prehistoric, and perhaps historic, time. In fact, the area in question was the least populated area of the Great Basin. Linguists reply that the source of migration is determined by locating the area of greatest linguistic diversity, which in the Great Basin occurs in southern Utah and Nevada. However, this diversity appears to be based on dispersal of small populations in an area where there is the greatest discontinuity in plant and animal communities. One suspects that language diversity and culture in that area are concordant with environmental conditions.

The environmental proposition is based on a symmetrical relationship between language, culture, and nature where there is evidence of a climatic climax relationship between a historic food-collecting people and their natural setting. One consequence of such a model is that the culture pattern should be as old as the natural pattern, and that they should have evolved together over a long period of time. Climax populations are ordinarily large groups, so we may deduce large human populations as a consequence, while the absolute size of these populations will be a function of the quality, i.e., richness, of the natural environment. In and along the Northern Rocky Mountains, the Shoshoni formed large groups even before the horse and were several times as large as the southwestern Great Basin populations. Another consequence which can be deduced from the environmental model is that human communities should have been stratified by altitude, as were the regional plant and animal communities. This was, indeed, the archeological case in eastern Idaho. A further consequence is that population densities should have fluctuated with environmental changes, and this has also been shown to be true in Shoshoni country for at least 8,000 years.

At one time it was argued that Shoshoni populations increased with the arrival of the

THE PREHISTORY OF THE Snake River Plain begins with human occupation at Wilson Butte Cave about 15,000-14,500 years ago. Following the climax of Wisconsin (Pinedale) glaciation about 12,500 years ago there was a rapid expansion in human population recorded by numerous Clovis, Folsom, and varieties of lanceolate points all across the Snake River Plain. The varieties are stylistic and technological, showing some differences in time but so far not in space. Early Man was associated with extinct and modern mammals in a setting that was for part of the time moist and cool by comparison with the present day. This episode of exploration and expansion came to an end between 8,000 and 7,000 years ago.

The varieties of Early Man artifacts found over the entire Snake River Plain were succeeded by regional cultures which began to develop about 6,000 B.C. and were well defined by 5,000 B.C. The eastern or Bitterroot has much in common with the southwestern or South Hills culture of the last 8,000 years. They are variants of a common pattern with the eastern leading to the historic Northern and the southwestern perhaps giving rise to the Western Shoshoni. The former may have been extended east of the Continental Divide while the latter may have common characteristics with the Northern Great Basin. Both regional cultures coincide in distribution with the Northern Great Basin biotic area, but in the Bitterroot area big game herds and hunting lasted into the 19th century.

The transition from Early Man to regional cultures coincides with important environmental and technological changes. After 6,000 B.C. there was an episode of rising temperatures and apparent ecological disturbance. It was at this time that notched points were introduced into the area perhaps as a product of the bow and arrow. The last 7,000 years were marked by increasing environmental and cultural stability. This may have resulted in climax plant and human communities.

horse and that this made it possible for them to hunt bison on the Plains east of the Continental Divide. This is no longer a tenable corollary of the linguistic hypothesis. Bison were present in great numbers west, as well as east, of the Continental Divide long before the coming of the horse. It is also clear that the horse concentrated but did not increase the absolute size of Shoshoni populations in eastern Idaho. Why the Shoshoni should have passed east of the Rockies is not altogether clear because they were still hunting bison in the upper Salmon River valley as late as 1860. It may have been to reclaim territory lost to other Plains Indians after 1780.

The problem of time depth between Shoshone-Commanche and other Great Basin languages remains. The cultural differences between occupants of this vast region from the eastern flanks of the Rockies to the hot desert of the southwestern basin form a gradient rather than a series of sharp cultural breaks. It may well be that populations have been so sensitive to climatic change that they have from time to time been compressed and then

dispersed. There is clear evidence for such a mechanism within the Northern Rocky Mountains of eastern Idaho, but the effect of dispersal with moist periods at high altitudes and concentration during dry episodes may have been reversed at lower altitudes and latitudes in the southwestern Great Basin. The result of such adaptation was a continuity of language family with a shallow time depth between members of that language family. If so, there is no reason to believe that any migration ever took place. Some dispersal may have occurred as a result of population growth during the favorable environment of late Mediterranean times.

The remaining objection which linguists may have to the environmental argument that Shoshoni are 8,000 years old in eastern Idaho is a technical one. That is, all languages change so the Shoshoni of today is not the Shoshoni of 1850 let alone the Shoshoni of A.D. 1200 or of 1000 B.C. It may be necessary to call it proto-Shoshone, but that does not alter the character of the environmental explanation. On present evidence, it is the better account of Shoshoni prehistory.