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Harney Area Cultural Resources Class I Inventory

Ruth McGilvra Bright
Portland State University

AN ABSTRACT OF THE THESIS OF Ruth McGilvra Bright for the Master of Arts in Anthropology presented August 7, 1980.

Title: Harney Area Cultural Resources Class I Inventory.

APPROVED BY MEMBERS OF THE THESIS COMMITTEE:

Thomas Newman, Chairman

Daniel Scheans

Gordon Dodds

This document presents the Cultural Resources Overview for the Harney Area in southeastern Oregon. The Harney Area combines three of the four planning units in the Burns Bureau of Land Management District. Most of the land in the Harney Area is located in Harney County, although a few parcels are just outside the county line in Lake and Malheur Counties. Almost all of Harney County is included. There are approximately 3,320,000 acres of Bureau administered public land within the Harney Area, as well as other public and private lands.

The Cultural Resources Overview is designed to provide a review and synthesis of the existing data on both historic and prehistoric data. It will provide a framework for assessing the significance of sites. It will guide site interpretation and future research. It will serve as a source of background data for planning purposes. It will be used as a base inventory for the Harney Area. Finally, it will serve as a basic management tool in the district cultural resource program.

The Cultural Resource Overview consists of five sections. The first section serves as background. It provides a brief description of the study area's environment.

The following three sections describe, in narrative format, the prehistory, ethnography, and history of the Harney Area. This description begins some 13,000 years ago and covers up to about 1958.

The document concludes with a section on research and management, in the study area. Management practices, research goals, the present status of cultural resources in the area, and some management recommendations are discussed.

HARNEY AREA CULTURAL RESOURCES CLASS I INVENTORY
A CULTURAL RESOURCES OVERVIEW

by

RUTH McGILVRA BRIGHT

A thesis submitted in partial fulfillment of the
requirements for the degree of

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TO THE OFFICE OF GRADUATE STUDIES AND RESEARCH:

The members of the Committee approve the thesis of Ruth McGilvra Bright presented August 7, 1980.

[redacted]

Thomas Newman, Chairman

[redacted]

Daniel Scheans

[redacted]

Gordon Dodds

APPROVED:

[redacted]

Daniel Scheans, Head, Department of Anthropology

[redacted]

S.E. Rauch, Dean of Graduate Studies and Research

PREFACE AND ACKNOWLEDGEMENTS

This volume presents the Cultural Resource Overview (Class I Inventory) for the Harney Area. The overview covers the whole study area, regardless of land ownership. However, major emphasis has been placed on cultural resources that are on Bureau administered lands. The report serves a dual purpose. It has been written for partial fulfillment of the Masters Degree in Anthropology at Portland State University. It will also be used by the Bureau of Land Management as an inventory and planning document.

The objective of this study is to review and synthesize all existing cultural resource information, both prehistoric and historic, available for the Harney Area. This compilation of data is intended to provide a framework to assist in assessing cultural resource site significance and to provide guidance as to the meaning and interpretation of the sites. This volume will serve as a source for planning documents, environmental statements, and program management plans. It constitutes the base from which the Burns B.L.M. District's cultural resource inventory record system is initiated.

The research reported in this volume consists of a search of existing records. Bibliographies, journals, published literature, maps, reports, manuscripts and archival sources were consulted. In addition, much preliminary inventory data gathered in the field by the author, prior to

initiation of the study, has been included.

The following professional historians and archaeologists were consulted: C. Melvin Aikens, Marilyn Couture, Wilbur Davis, Don Dumond, John Fagan, Donald Grayson, Keith Gehr, Paul Hartwig, F.R. Hauck, Royal Jackson, Jennifer Lee, Edward Long, Peter Mehringer, Thomas Newman, and Richard Pettigrew. The section on geology was written by the district geologist, David Graham.

Editing of various segments of the narratives was done by Dianna Alfstad, Gerry Getty, and Debra Monroe. The typing was done by the Burns District personnel: Dianna Alfstad, Anita Cornwall, Pat Kelley, Kay Phippen, and Roma Steele. Virginia Young of the Oregon B.L.M. State Office typed one of the final drafts. Dianna Alfstad typed the final copy of the thesis.

The author would like to thank Marie Brown of the Office of Graduate Studies and Mary Dozark of the Anthropology Department for assistance in sorting my way through the paperwork necessary for graduation.

Special thanks are due to the numerous local residents of the area who have contributed graciously of their time and knowledge during the collection of the historic inventory data. They are: Bill Bradeen, Pauline Braymen, Stella Calderwood, Mrs. Carson, John and Georgia Crow,

Lelanie Davis, Lucy Heinz, Tom Jenkins, Ellis Mason, Blanche McWilliams, Homer Otley, Bill Renwick, Jr., George Renwick, Art Sawyer, John Scharff, Henry Voegler III, Wally Welcome, and Jesse Williams.

The author would particularly like to thank Marcus Haines to whom this study is dedicated. He was my constant consultant and taught me the spirit and perseverance of an historian.

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ENVIRONMENTAL BACKGROUND

THE AREA

The Harney Area is located in southeastern Oregon in the Burns Bureau of Land Management District (Figure 1). The study area includes three of the four planning units in the district. They are the Riley Resource Area, the Drewsey Resource Area and the Andrews Resource Area (in 1978 the Riley and Drewsey Resource Areas were combined) (Figure 2). For simplicity's sake, the complete study area will be referred to as the Harney Area in this volume. Most of the land is located within Harney County, although a few pieces are on the boundary in Lake and Malheur Counties. There are approximately 3,320,000 acres of public land within the Harney Area.

GEOLOGY

The Harney Area is located in southeastern Oregon. The majority of the land lies within two major geomorphic provinces. These two geomorphic divisions are the High Lava Plains and the Basin and Range. The extreme eastern margin of the Harney Area also reaches into the Owyhee Uplands geomorphic province. Each province is somewhat gradational with characteristic structures and geomorphology carrying over into adjoining provinces (Figure 3).

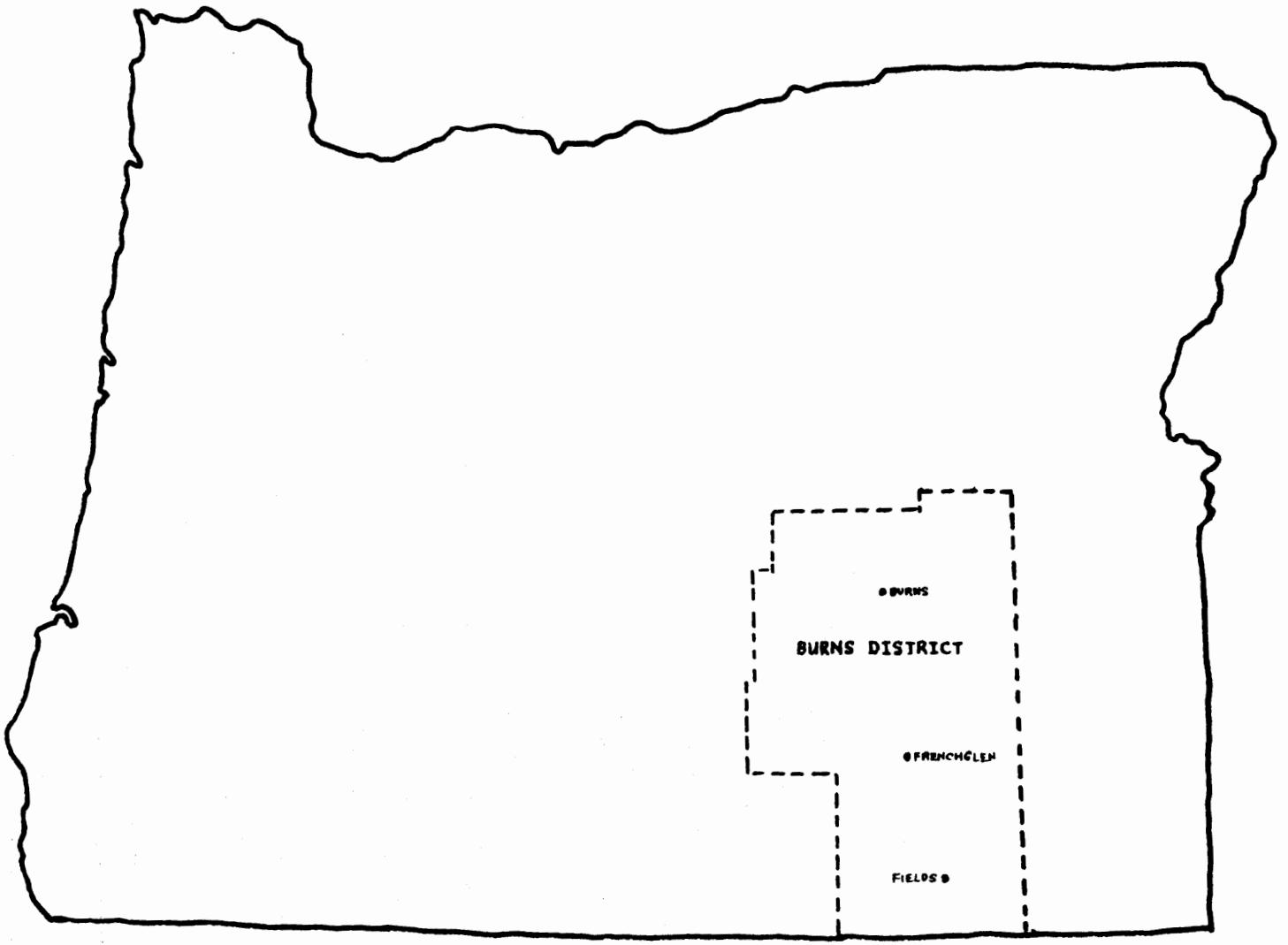


Figure 1. The Burns B.L.M. District

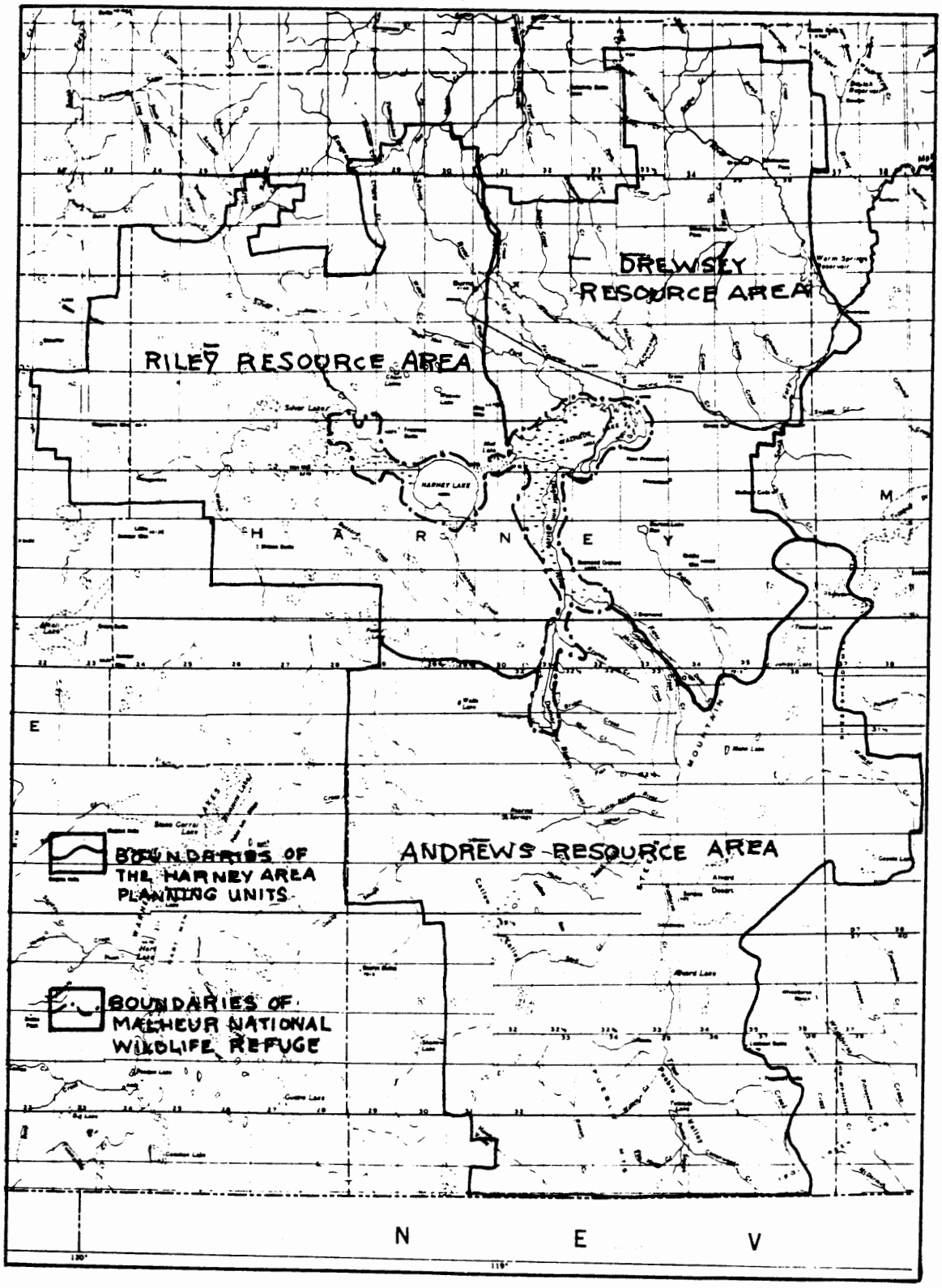


Figure 2. Planning units of the Harney area.

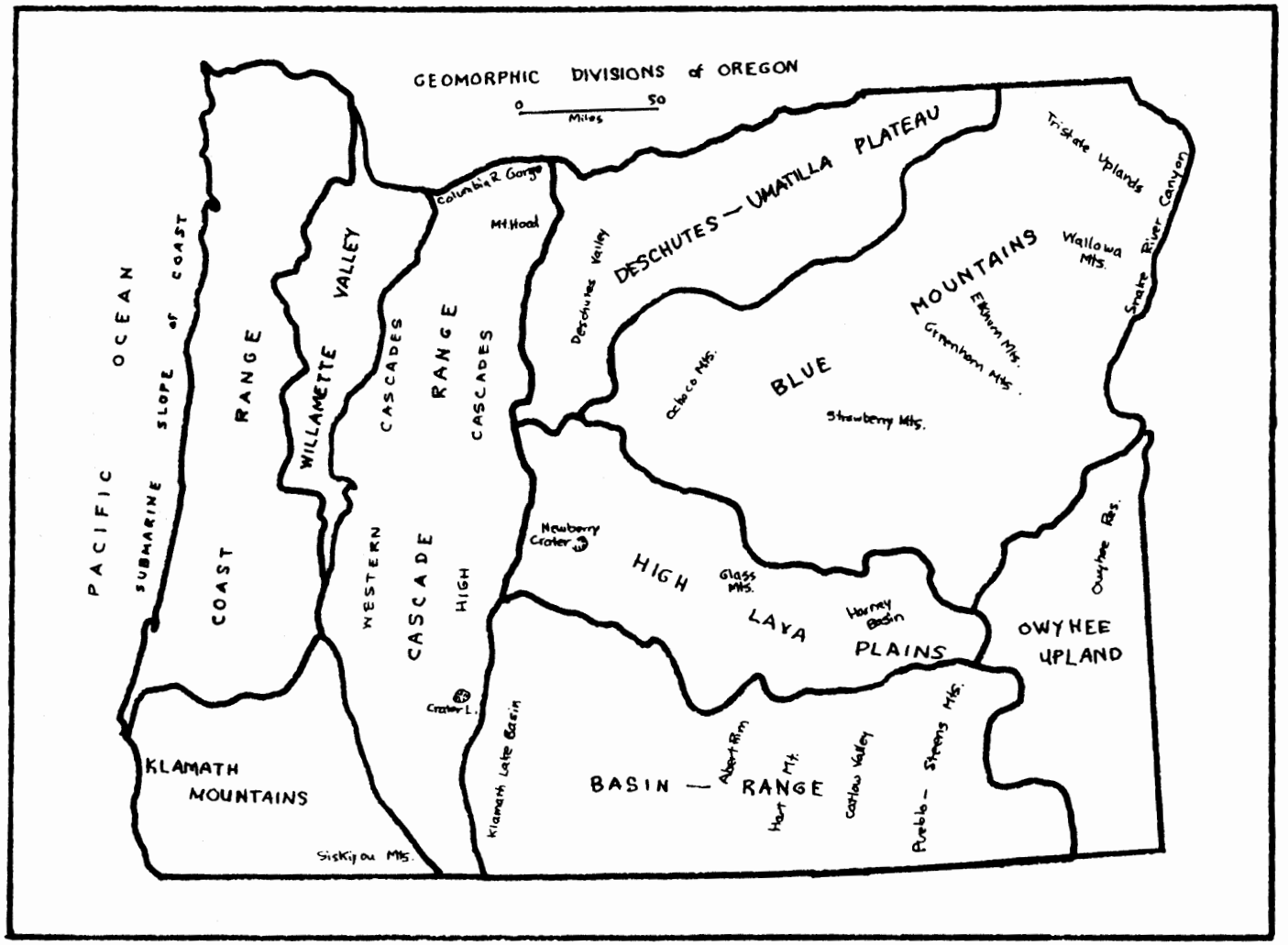


Figure 3. Physiographic divisions of Oregon (After Dicken, 1955) from Baldwin, 1964.

The High Lava Plains Province stretches for nearly 160 miles in length and some 50 miles in width across central and south-central Oregon. The province is characterized by a relatively undeformed expanse of middle to upper Cenozoic volcanics. It is bounded on the west by the Cascade Range and extends roughly to the eastern margin of Harney Basin. The northern boundary of the provinces is generally considered the Blue Mountain Uplift. To the south it merges with the Basin and Range geomorphic provinces.

Along the northern margin of the province older Cenozoic volvanics and tuffaceous sedimentary rocks can be found. These rocks represent portions of the Columbia River Group, the John Day and Clarno Formations (Walker, Peterson, and Green, 1967). These rocks are only scattered in extent and are not considered characteristic of the rocks found along the High Lava Plains. The oldest rocks of the High Lava Plains are those found along the eastern margin of the province. These rocks are non-porphyritic olivine basalts of late Miocene or early Pliocene Age. These flows are overlain by large sheets of ash flow tuff.

The major structural feature of the High Lava Plains is the west-northwest trending Brothers Fault Zone - a zone of closely spaced en echelon normal faults exhibiting small amounts of displacement. Eruptive centers for both basaltic and rhyolitic volcanic rocks are concentrated in this zone of faults and in nearly subsiding fault and fracture zones (Walker, 1974). Most of these flows are Pliocene and Pleistocene in age with some being as young as early Holocene.

Both the normal faults and the volcanic vents associated with these faults in the Borthers Fault Zone are only the surface manifestations of a deeply buried zone of weakness. At the present time the exact nature of this deeply buried system is not known (Walker, 1969).

One of the major topographic features of the High Lava Plains geomorphic province is Harney Basin. This basin encompasses some 5,300 square miles in Harney and Grant counties. This basin is both a structural and erosional feature. Faulting is responsible for the steep scarp formed along the eastern and southeastern margin of the valley. The northwest margin has been faulted extensively and some concealed faulting is responsible for the abrupt margin of the valley near Burns and Hines (Leonard, 1970).

The eruption of large volumes of rhyolitic ash and ash flow tuff during late Cenozoic time is thought by Piper, Robinson, Park, 1939; and Baldwin, 1964, to be responsible for the depletion of the magma chamber below the present day Harney Basin. When sufficient depletion of the chamber resulted a subsequent collapse occurred. This collapse is in part responsible for the large structural depression that exists today.

All the major rock units surrounding the basin dip gently toward the center. From well logs of wells in Harney Basin, it can be seen that the older rocks forming the rims around the basin actually dip into the basin and are overlain by the younger lacustrine and fluviatile sediments.

Erosion is responsible for the pronounced topographic break between Wright's Point and the valley floor, Dog Mountain, and the adjoining upland areas. Wright's Point is an excellent example of inverted topography. Here, a stream channel was filled by a basalt flow. As the result of this protective cap of lava a linear ridge was left behind as the softer underlying material was eroded away from each side of the former river valley (Leonard, 1970).

The Basin and Range Province in Oregon stretches eastward from the Cascade Range to the eastern margin of the Trout Creek Mountains. It is bounded on the north by the High Lava Plains and to the east by the Owyhee Uplands province. This province extends south into Nevada, California, Arizona, and New Mexico (Walker, 1969).

The Basin and Range province in Oregon is characterized by thick sequences of Cenozoic volcanics. These rocks have been highly faulted by two major fault sets. The largest of these two sets trends approximately N20-40^{o}E and the other N20-35^{o}W (Walker, 1969). These faults are normal faults exhibiting displacements of large magnitude. They have produced numerous north-trending fault block mountains and adjacent basins of internal drainage.

From west to east across the province in Oregon there are seven major grabens and numerous smaller grabens intermingled between these larger

structures. The major grabens are the Klamath graben, Goose Lake Valley, Summer Lake-Abert Lake graben, Warner Valley, Guano Valley, Catlow Valley, and Alvord Valley.

The two major grabens of interest in the Harney Area are Catlow Valley and Alvord Valley. These two major grabens are associated with two major fault block mountains. These are Hart Mountain and Steens Mountain.

The Steens Mountain block is by far the largest fault block structure in the Oregon portion of the Basin and Range. This horst has been uplifted on both the east and west margins. The uplift on the eastern portion is much more extensive than that on the west, and, as a result, the mountain dips gently to the west approximately 2 to 3 degrees.

The uplift on the east side of the Steens is some 5,000 feet. The large scarp along the east face has been highly eroded by water, ice, and wind resulting in rugged and spectacular topography. Good exposures of the stratigraphy can be found along the east face of the Steens due to the large amount of uplift.

The oldest rocks exposed in the Basin and Range province of Oregon are Permian or Triassic metavolcanics and metasediments. These rocks have also been intruded by Mesozoic intrusives. These intrusives are of granodiorite, quartz diorite, and are in part gneissic. These rocks are believed to underlie the entire province but are only exposed in the Pueblo and

Trout Creek Mountain Ranges of southeastern Oregon.

The oldest rocks exposed on the east face of the Steens are those of the Alvord Creek Formation. These rocks are tuffaceous sediments and are found outcropping along the base of Steens Mountain. The best exposure of this formation is located along Alvord Creek. Overlying the Alvord Creek Formation is the Pike Creek Formation. This formation is some 1,500 feet thick. Within the formation are tuff members, rhyolite, and biotite dacite. Above this formation is the Steens Mountain Andesite Series. It is composed of poorly stratified flows of andesite with some dacite and rhyolite. The most extensive rock type in the sequence is that of the Steens Basalt. These rocks are characteristically flood basalts composed of dense parallel flows.

The Steens Basalt is the most abundant rock type exposed in the Steens Mountain area. This rock is found extensively in the Pueblo Mountains south of the Steens. On the west side of the Steens it is the only rock type exposed. The amount of displacement along the western margin of the Steens was not great enough to expose the underlying stratigraphy as was the case along the eastern scarp.

The Owyhee Upland Province encompasses most of Malheur County and the northeastern corner of Harney County. This province also extends into portions of Idaho and Nevada.

The province is bounded on the north by the Blue Mountain region and merges with the High Lava Plains and the Basin and Range provinces to the west and southwest. Structural and geomorphic features can be seen extending into the Owyhee Uplands from the High Lava Plains and the Basin and Range. When these features appear in the Owyhee Uplands they are not as extensive as in the adjoining provinces, however. For example, the characteristic northeast trend of the large normal faults in the Basin and Range are not as large or as distinctively separated in the Owyhee province.

The Owyhee Upland area is essentially a plateau region. It has developed to its present configuration over numerous widespread extrusive basaltic, andesitic, and rhyolitic sheets with associated pyroclastics of middle to late Cenozoic age (Corcoran, 1969).

The province has more mature and dissected topographic features than the adjoining provinces to the west and south. The striking difference between the Owyhee Uplands and the other two provinces is its lack of internally drained basins. The area is drained by the Owyhee and Malheur Rivers which in turn flow into the Snake River.

TOPOGRAPHY

The Harney Area is, for the most part, a northern extension of the Great Basin system of closed basins with no external drainage. There are two exceptions to this general statement. In the far southeastern corner

of the study area, in the Sheepshead Mountains, one small parcel of land escapes the closed basin system and drains eastward contributing to the Snake River. The second exception is a substantial segment of land in the northwest corner of the study area lying east of the Stinking Water Mountains. The Stinking Water Mountains separate the Great Basin from the Sanke River drainage. Streams on the eastern foothills of the mountains empty into the Malheur River, a tributary of the Snake River.

Three major basins or valleys exist in the Harney Area; Harney, Catlow, and Alvord/Pueblo (Figure 4). All there contained ancient lakes of Pleistocene age, but today only Harney Basin has a permanent lake (Figure 5). Harney Lake according to a very conservative source had a maximum water depth of 70 feet during the Pleistocene Epoch. Alluvial gravels near Devine Canyon indicate the ancient lakeshore terraces. They occur between 4,200 and 4,400 feet. The lake drained shouteast through a feature known as Malhuer Gap.

Two estimates of the Pleistocene lake depth exist for Catlow Valley. The conservative source (Snyder, Hardman, and Zdenek, 1964) states the lake had a maximum depth of 75 feet. Cressman, on the other hand, has distinguished a series of four well-defined terraces, the highest of which is about 250 feet above the present valley floor. The estimate for maximum water depth of Pleistocene Lake Alvord is 200 feet. Terraces can be distinguished on the east side of the valley.

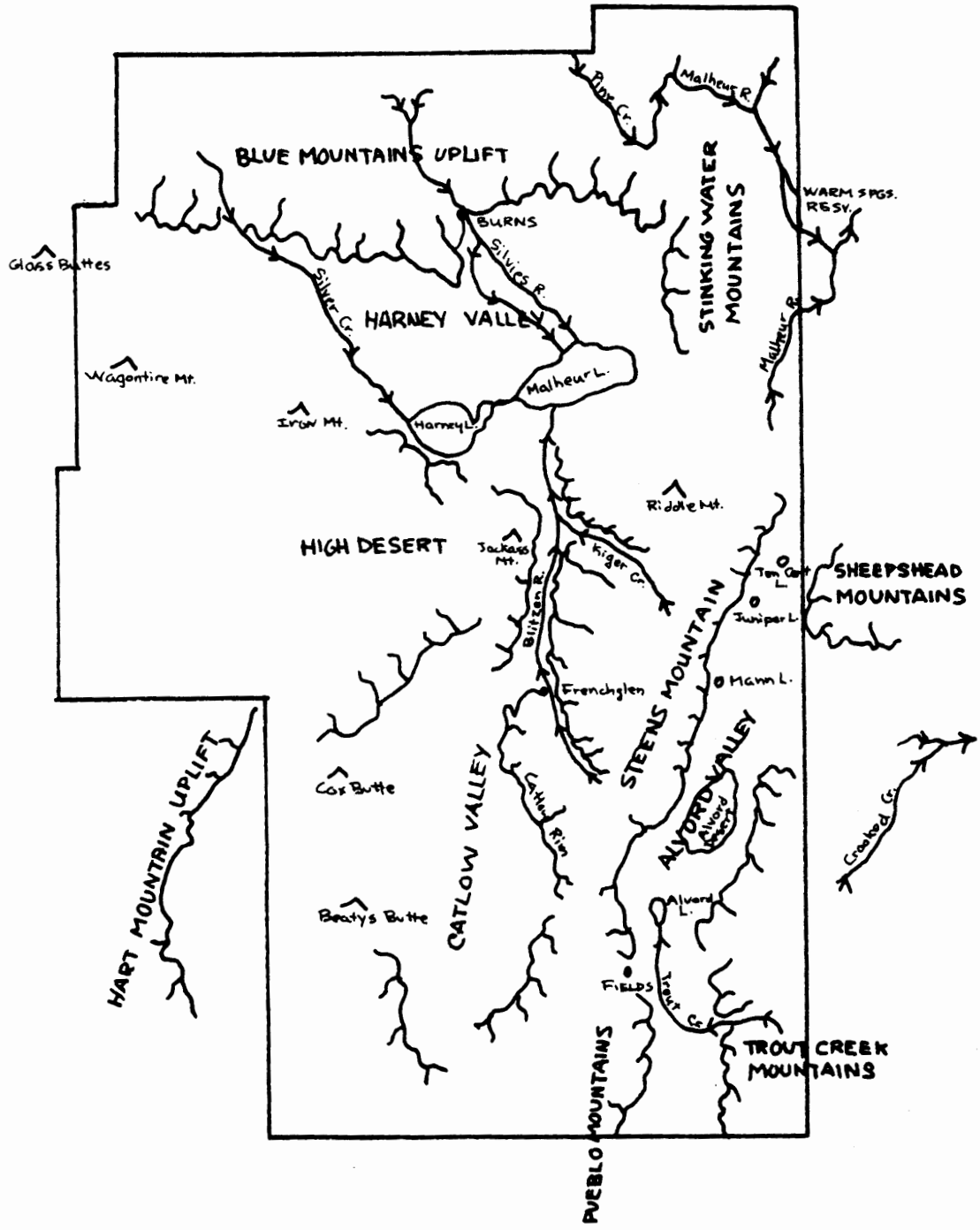


Figure 4. Harney County: Major physiographic features (after Raisz)

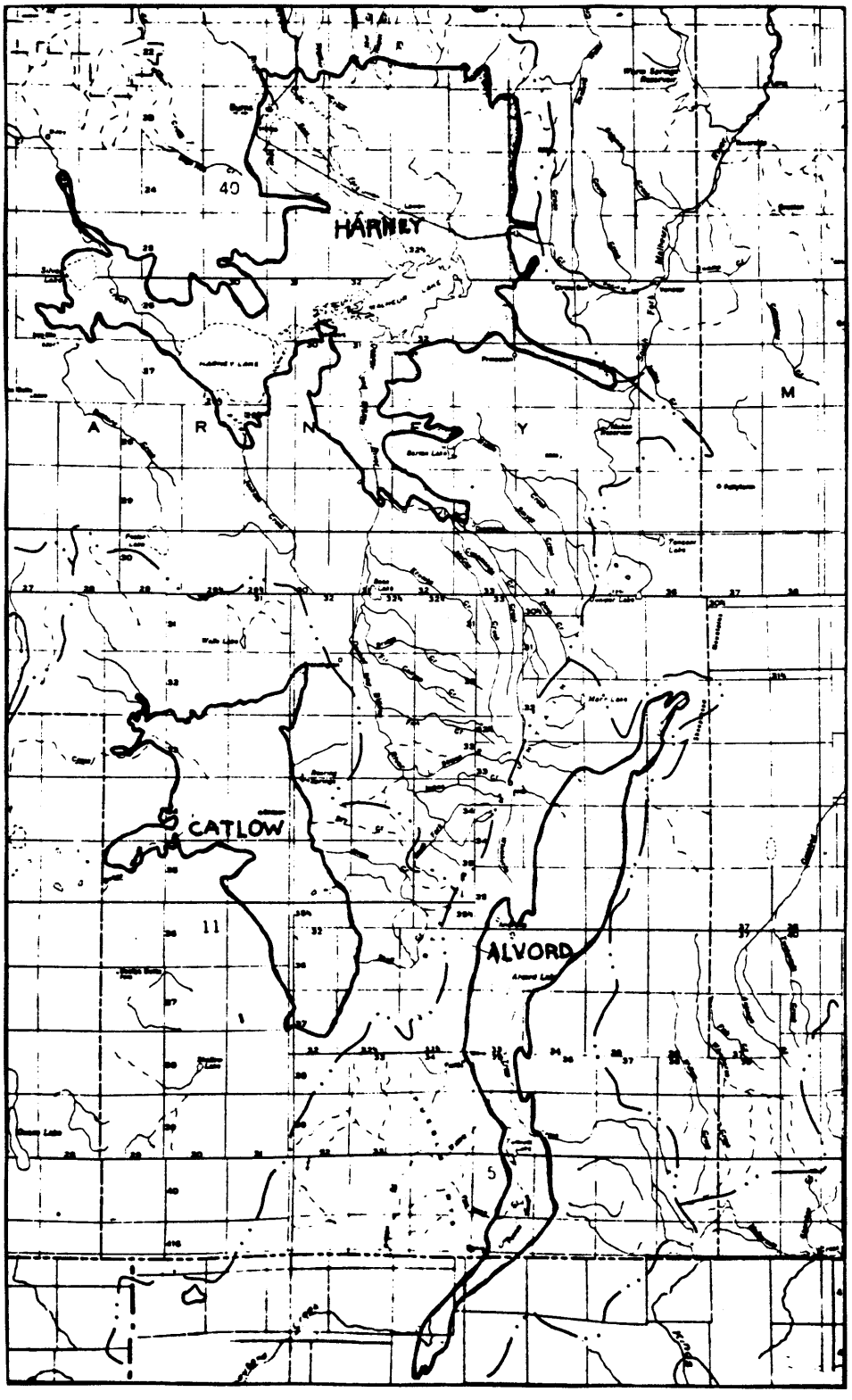


Figure 5. Pleistocene lakes in the Harney area from Snyder, Hardman, and Zdenek, U.S.G.S., 1964.

Harney Valley is a nearly level basin of lake and river deposited alluvium. It is approximately 25 miles east-west by 15-20 miles north-south. At the southern end of the valley lies Malheur and Harney Lakes. Malheur Lake is a permanent marsh that averages about 45,000 surface acres of water. Periodically it overflows into Harney Lake. This is a playa lake-bed with an elevation of 4,080 feet and is the sump for the basin.

Harney Valley is bounded on the north and northwest by the Blue Mountains uplift. With elevations as great as 9,000 feet, the mountains present a substantial impasse to travel between the John Day Valley and Harney Basin.

The Silvies River Valley is the principal access route between the two valleys and was used by Peter Skene Ogden and Antoine Sylvaille in the early fur trapping days. The highest pass on the highway is Starr Ridge at approximately 5,200 feet.

On the east, Harney Valley is bordered by a series of high ridges and buttes called the Stinking Water Mountains. The mountains extend for approximately 25 miles north and south and separate the Great Basin from the Snake River drainage. Topography at the upper levels includes flats, rolling hills, and rounded buttes with elevations along the crest ranging from 4,500 to 5,000 feet. Along the highway pass the elevation is 4,848 feet.

The Steens Mountain uplift bounds Harney Valley on the southeast. From the valley floor, the mountain rises gradually to a summit of 9,733 feet. On the southwest, the valley is bounded by an area of rough, rocky uplands, locally called the high desert. Most of this rough terrain ranges in elevation from 4,500 to 5,100 feet. A few buttes or peaks reach 5,800 to 6,100 feet.

Three major drainage systems enter Harney Valley. From the northwest, Silver Creek flows into Harney Lake. It originates in the foothills of the Blue Mountains and is fed by numerous small streams. Silver Creek spills most of its waters in the meadow and marsh lands just before entering Harney Lake. As a result little water reaches the lake.

The Silvies River also has its source in the Blue Mountains to the north. It is fed by a multitude of streams. On entering Harney Valley, the river meanders through a broad floodplain for thirteen miles. Much of the river is now channelized and enters Malheur Lake in two main forks. Other streams enter the valley from the north that, after meandering in the flood plain, enter Malheur Lake on the northeast side via Malheur Slough.

From the south the Blitzen River spills into Malheur Lake. Rising from the snows and springs of Steens Mountain, the river flows for 75 miles down the mountain to the lake. It travels through a deep canyon until it reaches the marshy Blitzen Valley. In the valley much of the river has been

channelized for irrigation. The west side of Steens Mountain is one large watershed. A network of substantial tributary creeks contribute to the volume of the Blitzen River.

Catlow Valley is a large, nearly level valley approximately 36 miles north to south and 10 to 12 miles wide east to west. The valley is formed by two uplifts; the Steens Mountain uplift to the east and the Hart Mountain uplift to the west. On the north the valley is bounded by an upland area, locally called the high desert. Catlow Valley is a closed basin ranging in elevation from about 4,500 feet at the south end to 4,600 feet at the north end. It is a hanging valley that drops at the north end about 400 feet to the Blitzen Valley.

The Valley has no permanent lakes, although several permanent streams enter the valley from the east. The major ones are Home Creek, Three-Mile Creek, and Skull Creek. Only one permanent stream, Rock Creek, flows into the valley from the west.

Alvord/Pueblo Valley is a long narrow basin running north and south. It is formed by the Steens Mountain/Pueblo Mountains uplift on the west; the Sheepshead Mountains on the northeast; the Trout Creek Mountains on the southeast; and high table lands to the east. The valley is about 75 miles in length to the Nevada border. It continues into Nevada for another eight or ten miles. The width of the valley ranges from one to eight miles. It is a closed basin with two sumps. Alvord Desert, at the northern end, has

a low elevation of 4,000 feet. Tum Tum Lake, at the southern end, has a low elevation of approximately 4,100 feet.

The surrounding mountains reach high elevations. The Steens summit is about 9,733 feet; the Pueblo summit is about 8,725 feet; the summit of the Trout Creek Mountains is 7,835 feet; and the summit of the Sheepshead is 5,730 feet. The east scarp of Steens Mountain is a spectacular sight, as the change in elevation is over 5,600 feet in a horizontal distance of approximately three miles.

There are eight lakes in the valley, but only two of these are permanent. Mann Lake and Juniper Lake, at the north end of the valley, rarely dry up. Tum Tum Lake, Alvord Lake, Tudor Lake, Heath Lake, Fifteen Cent Lake, and Five Cent Lake rarely carry water year round. Ten Cent Lake is semi-permanent; in drought years it dries up.

A multitude of streams carry snow melt and spring waters from the Steens and Pueblos to the valley. During spring run-off these creeks move considerable amounts of rock and gravel due to the rapidity of their descend.

Many of the streams from the Trout Creek Mountains flow into the valley, although a larger number of them drain north into the table lands. The table land area is a shallow, isolated basin, whose center, Coyote Lake, is its sump. The lake is usually dry.

Wildcat Creek and Heath Creek are the principal streams of the Sheepshead Mountains. Numerous tributaries contribute to them. Wildcat Creek escapes the internal drainage of the Great Basin system since it flows east to the Owyhee River, a tributary of the Snake River system.

CLIMATE

The climate of the Harney Area is semi-arid with short, warm summers and long, rather severe winters. Annual precipitation totals are small and humidities low. Low humidity and high winds cause high evaporation rates; up to 60 inches in some areas. About one-third of the precipitation falls in the form of snow. At Burns weather station, snow has been recorded for every month except July. However, little snowfall occurs before November or after April, except at higher elevations where storms are not uncommon in early June. The average annual total precipitation for the region is between seven and thirty inches depending on elevation.

Daily maximum and minimum temperatures range widely. Very low nightly temperatures during much of the year favor frost-resistant vegetation. Temperature extremes for the area have ranged from a July high of 108 degrees to a January low of minus 36 degrees. On the average, the frost-free growing season lasts from 100 plus days in the lower elevations down to 30 days or less in the higher elevations. Nightly freezing temperatures have been recorded in every month of the year. The major environmental limiting factors in the study area are the short growing season and the small precipitation totals.

Drought must be accepted as part of the environment, occurring in the area on a periodic basis. Continued over a period of a few years drought alone will cause a decrease in vegetative cover. Combined with over-grazing of the range the effect will be accelerated. Not only will drought reduce vegetative cover, but it can affect species composition changes. Drought occurring in the area in the 1930's was in the presence of severe over-grazing and the effects of this may still be present. Vegetative changes resulting from the drought have not been researched within the study area.

Dryland farming in the area has been, at best, a risky endeavor due to the climate. The study area has been used primarily for raising livestock, not crops. With the development of irrigation, certain crops have become a reliable pursuit. Similarly, in protohistoric times the area was not suitable for agriculture. The Paiutes actually lived off the land, harvesting anything edible that the environment produced. Periodic food shortages caused local emigration and/or starvation among the Paiutes.

There is some research concluding climatic changes in the region pre-historically. While the research is not specific to the study area, inferences can be drawn. The Neothermal climatic sequence proposed by Antevs (1948) has been generally accepted for the Northern Great Basin. The interpretation is based on complex correlations between temperature; rainfall; storm paths; palynological finds; strand lines on fossil lakes; recent sediments; fossil

watercourse histories; and theories about runoff rates and erosional patterns. Antevs hypothesized a gradual climatic curve divided into three phases. The first phase, the Anathermal, was subhumid and semi-arid. It slowly yielded to warmer conditions, eventually reaching mean annual temperatures in excess of contemporary temperatures. This arid period is called the Altithermal. It subsequently gave way to the Medithermal with temperatures approximating the present. The sequence is dated as follows: Anathermal (9000-7000 B.P.), Altithermal (7000-4500 B.P.), and Medithermal (4500 B.P. - present).

A recent publication (Grayson, 1977) notes that only six studies on paleo-climatological data for the Northern Great Basin have been published. Of these, only two are adequate and unquestioned. In 1947 Hansen analyzed pollen profiles from the Chewaucan Marsh and the Warner Valley. His profiles seem to confirm the validity of Antevs' model for the area. Conflicting conclusions reached by O'Connell and Hayward (1972) and O'Connell and Ericson (1975) for Surprise Valley suggest that Antevs' model may not be universally applicable for the region. Their reports suggest that the Altithermal may have, in fact, been cool and/or moist instead of arid. Unpublished research by Grayson (1975) from the Lower Klamath Basin supports this interpretation in part. The publication by Grayson (1977) analyzes mammalian fauna from a site in southeastern Oregon and supports two alternative climatological reconstructions. One seems to support Antevs'

3-phase model, while the other suggests only a single climatic shift to decreased effective precipitation at about 7000 B.P.

What must be surmised from this review is that conclusive data is still lacking substantiating prehistoric climatic change. While Antevs' model is still generally acceptable for the Northern Great Basin, local variation is to be expected. In some areas, variation may be great enough to contradict Antevs' sequence.

VEGETATION

The Harney Area has considerable environmental diversity, due to the range in elevation from 4,000 to over 9,000 feet. Life zones range from Upper Sonoran desert through Arctic-Alpine tundra. Hansen has described five vegetational zones for the area:

1) The Desert Shrub Zone occupies the lowest basins to an elevation of about 4,200 feet. The shrubs and grasses common to this zone are: big sagebrush (Artemisia tridentata), black greasewood (Sarcobatus vermiculatus), shadscale, (Atriplex confertifolia), bottlebrush (Sitanion hystrix), Indian ricegrass (Oryzopsis hymenoides), alkali saltgrass (Distichlis stricm), creeping wildrye (Elymus triticoides), and Sandberg's bluegrass (Poa Sandbergii). Some marshes are present and contain large stands of both emergent and submergent vegetation. Grass and sedge meadows are also present.

2) The Big Sage Zone extends from about 4,200 to 5,500 feet in elevation. It consists primarily of big sagebrush (Artemisia tridentata) although green rabbitbrush (Chrysothamnus nauseous), and black greasewood (Sarcobatus vermiculatus) are present. Where favorable conditions exist native grasses, including wildrye (Elymus glaucus) and Sandberg's bluegrass (Poa Sandbergii) are abundant.

3) The Juniper Zone stretches from 5,500 to 6,500 feet in elevation. Western juniper (Juniperus occidentalis) with low sagebrush (Artemisia arbuscula) is characteristic of the zone. Willows (Salix sp.) and a variety of grasses and sedges occur in the wetter areas. Small groves of grand fir (Abies concolor) occur at the upper end of this zone.

4) The Quaking Aspen Zone extends from about 6,500 to 8,000 feet in elevation. It is characterized by the presence of quaking apsen (Populus tremuloides) on the northern slopes of the lower portions of the zone, and in protected areas of the upper portions of the zone. Low sagebrush (Artemisia arbuscula) is the dominant vegetation where aspen is absent.

5) The Sub-Alpine Bunchgrass Zone extends from about 8,000 feet to the highest elevations of the area. Shrubs, especially low sagebrush (Artemisia arbuscula) are common as are grasses and sedges where conditions are favorable. Large areas of bare ground with sparse

vegetation between occurances of short sage are common throughout this zone.

The Steens Mountain Prehistory Project has as one of its objectives to reconstruct the prehistoric environment of the area. Preliminary pollen analysis indicates that Steens Mountain has lacked coniferous forest (as it does today) throughout the Holocene.

Jerry Franklin and C. T. Dyrness have discussed the effects of fire and grazing on steppe vegetation in the Northwest (Figure 6). Both were apparently of limited importance in steepe vegetation prior to the arrival of white man and his livestock. Large herds of ungulates were never an integral part of the Northwest Steppes. Aboriginal man rarely used fire in the steppes as he did in the forested regions, except in areas where fire was used as an adjunct in hunting.

White man caused significant changes in steepe vegetation. Two of the major shrub species, big sage (Artemisia tridentata) and bitterbrush (Purshia tridentata) are sensitive to fire and can be temporarily eliminated by burning. Man-caused range fires were common in many steppe areas after white man's arrival. Overgrazing of the range was a serious problem in the Harney Area, particularly during the 1920's. Most of the major large perennial grasses (Agropyron spicatum and Festuca idahoensis) evolved in an environment in which ungulates were sparsely represented. They are not adapted to heavy

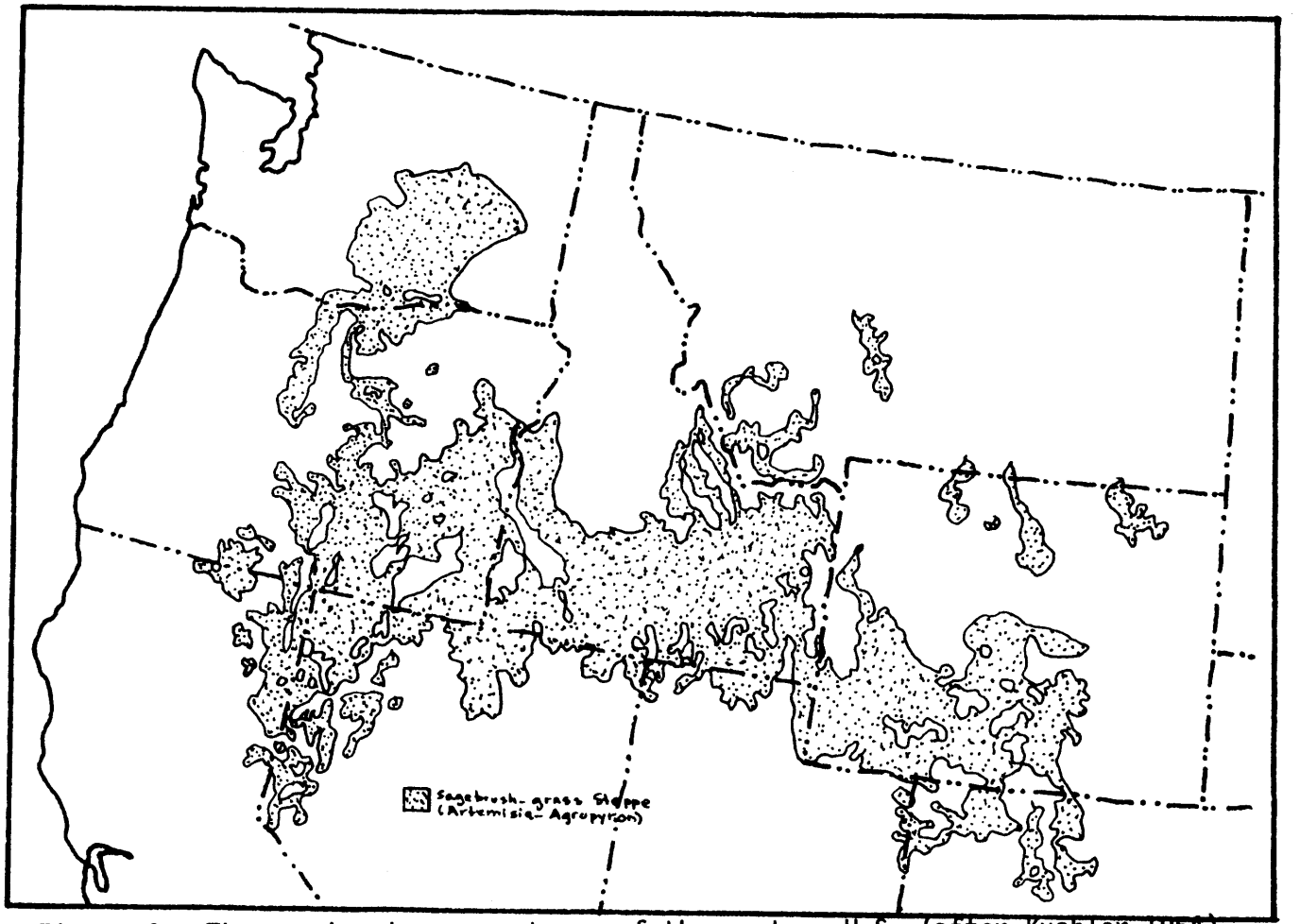


Figure 6. The sagebrush-grass steppe of the western U.S. (after Kuchler 1964)

grazing by these animals. When severely overgrazed they rarely recover completely, although they are relatively insensitive to fire.

FAUNA

Massive numbers of both aquatic and terrestrial birds are found in the Harney Area. The Malheur National Wildlife Refuge includes about 181,000 acres of shallow marshes, lakes, meadows, and some sagebrush uplands. It supports a heavy spring migration of waterfowl and shorebirds. Many species of ducks, geese, and shorebirds occur in this area.

About 150 species of songbird, 10 species of owls, 4 scavenging bird species, and 16 species of raptors may be found in the area. Some of the raptors are almost or completely extinct. Greater sandhill cranes, once thought endangered, nest in the area. Commonly occuring game birds include California quail, mourning dove, sage grouse, and chukars.

Six species of amphibians and twelve species of reptiles are found in the area, including a variety of lizards, toads, and snakes.

Waters in the area provide habitat for summer steelhead; spring chinook salmon; seven species of trout; mountain whitefish; five species of the sunfish family, including smallmouth and largemouth bass; yellow perch; channel catfish; and black bullheads. Nongame fish include three species of sculpin,

eight species of the carp and minnow family, two species of sucker, and two species of lamprey eel.

There are four mammals in the area that are dependant on water. They are beaver, muskrats, mink, and raccoons. Large mammals include mule deer, elk, antelope, and mountain sheep. The California bighorn sheep were introduced in 1960, as they had become extinct in the area around the turn of the century. Two types of mountain sheep were native to Oregon; the California Bighorn and the Rocky Mountain Bighorn. Apparently parasites from domestic sheep were the greatest decimating factor. The mountain sheep are also intolerant of heavy hunting and competition with domestic livestock.

Buffalo (Bison bison) were at one time present in the Harney Area. Skulls of the large animals have been recovered from Malheur Lake, and bones of the beast have appeared in archaeological excavations. According to Seton, the former range of the Bison extended in about 1500 A.D. through northern Nevada and souther Oregon to northeastern California and through a large portion of Utah (Figure 7). By 1832 A.D. the bison was extinct in Oregon.

Prehistorically (prior to 10,000 years ago) the area was inhabited by several large animals that are now extinct. Included were camelids (Camelops), native horse (Equus), ground sloth (Mylodon), bison (Bison antiquus), and elephant (Mammuthus).

A variety of small and medium sized mammals are present in the area including coyote, bobcat, pygmy rabbit, cottontail rabbit, a couple of kinds of jackrabbit, marmot, pika, red fox, lynx, badger, and porcupine.

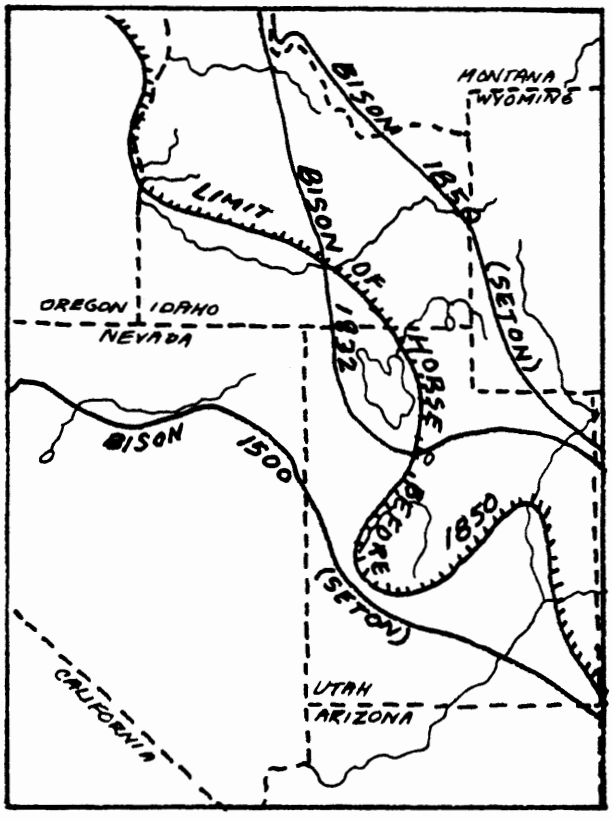


Figure 7. Recession of the buffalo range - J. Steward after Seton.

Wildlife populations, particularly big game animals, fluctuated in numbers in the past, just as they do presently, only more so. Explorers passing through the Harney Area in the mid 1800's noticed a scarcity of game. The excavation of Catlow Cave yielded bones of bison, mule deer and mountain sheep in large numbers, but lacked any antelope bones. This is surprising in light of the relative abundance of antelope in Catlow Valley today.

Livestock, mostly cattle, make considerable use of the area. An estimated 2,000 feral horses as well as about 20 feral burros are present in the Harney Area.

PREHISTORY OF THE HARNEY AREA

INTRODUCTION: LANDMARKS IN ARCHAEOLOGY

Archaeology is a young science, especially in the Americas. Initially, American interest was limited to the collection and description of antiquities, with little or no focus on the culture or people that produced the objects. The antiquities were ascribed to a vanished race thought to have preceded the American Indians. The American Indians were considered not civilized enough to attain high achievement of any sort. This notion was held by most investigators throughout the nineteenth century. A notable exception was Thomas Jefferson, who excavated an Indian mound in 1784, correctly crediting the ancestors of the American Indian with the ruin.1/

About 1880 government scientists of the Smithsonian Institution initiated the modern systematic study of American prehistory, acknowledgeing its American Indian origin. Even then, American archaeology remained a museum science, with artifacts being collected and classified without relationship to their respective cultures. Even in the first decade of the twentieth century, stratigraphic excavation, so crucial to the understanding of temporal sequence, was still a new method.2/ Investigators were frequently untrained as few universities offered degrees in anthropology.3/ The first advanced degree in anthropology was awarded to A.F. Chamberlain at Clark University in 1892.

Well into the twentieth century the antiquity of New World occupation was thought to be no greater than two or three thousand years. Artifacts were collected without regard to chronological variation, although regional differences were recognized. In 1916 Alfred L. Kroeber and Leslie Spier noted differences in ceramics in the Southwest and suggested they represented age distinctions. Southwestern archaeologists began to recognize stratigraphic levels and to become aware of the time depth of individual ruins, but still there was no suspicion of great antiquity. They estimated that the Pueblo culture was four thousand years old, and all agreed that it was the oldest of North American cultures.

There are two types of chronometry used in archaeology: relative and absolute dating. Relative dating amounts to the establishment of a sequence of events or artifacts lacking definite ages or dates in terms of measured years, i.e., the stratigraphic principal of successive layers being younger. Absolute dating involves assigning actual age or dates to an event or artifact in measured years.

Archaeology received its first absolute dating method from an unlikely source. Andrew F. Douglass was studing tree-rings to learn about past weather conditions. He had developed a tree-ring calendar from living trees and historic buildings. In 1929 a series of roof beams collected from a single pueblo overlapped with Douglass' calendar. From this, it was learned that Pueblo culture was only half as old as was previously thought.

The first handbook of excavation procedures was prepared in 1930 through the efforts of Fay-Cooper Cole, who saw the need for greater precision and detail in field work. In the early 1950's, radiocarbon (C-14) dating was developed, and, with refinements, became the most precise dating method since dendrochronology. Furthermore, because it requires only the presence of carbon or organic materials, it is not regionally limited as is dendrochronology. Radiocarbon dating has established the great antiquity of New World occupation.

Progress in the accumulation and classification of data escalated in the 1930's as depression "make-work" programs funnelled manpower into archaeology. After the beginning of World War II, data gathering accelerated, as a result of emergency salvage programs, from the numerous large reservoir projects around the nation. By 1946, sufficient data had been gathered for James B. Griffin to attempt a synthesis of the archaeology of the Eastern United States. Other syntheses of the whole continent and of various segments of North America followed.

Archaeological investigation in the Great Basin began 50 years ago with major excavations at Lovelock Cave in Nevada. The earliest description of the prehistoric culture of the Great Basin characterized the area in terms of surrounding culture areas (California, the Plains, and the Southwest).

Clark Wissler thought the area to be on the margin of several culture centers from which the desert life style was drawn.4/ In the early 1950's, Jesse D. Jennings formulated the first synthesis of Great Basin prehistory that established it as a separate culture area and Desert Culture as a major complex with a ten thousand year age (Figure 8).

Desert Culture emphasized adaptation to an arid and marginal environment with little manipulation of the environment. The prehistoric society moved regularly to exploit a wide range of resources. There was no specialization in the sense of a major reliance on one resource. The availability of plants and animals varied with both season and ecological zone. The resultant settlement pattern was nomadic.

Although utilization of natural resources was skillful, technological development was rudimentary. The nomadic life style precluded much material baggage. Only essential items were manufactured with care. Supplementary items were produced to be disposable.

A modified list of artifacts diagnostic of Desert Culture includes rabbitskin robes, woven bark or tule sandles, the atlatl (throwing board) and dart, a wide variety of projectile points, netting and matting, tumplines as a carrying device, wooden clubs, digging sticks, the firedrill and hearth, tubular pipes or sucking tubes, basketry, vegetable quids, flat milling stones with cobble mano, oliva and olivella shells from California,

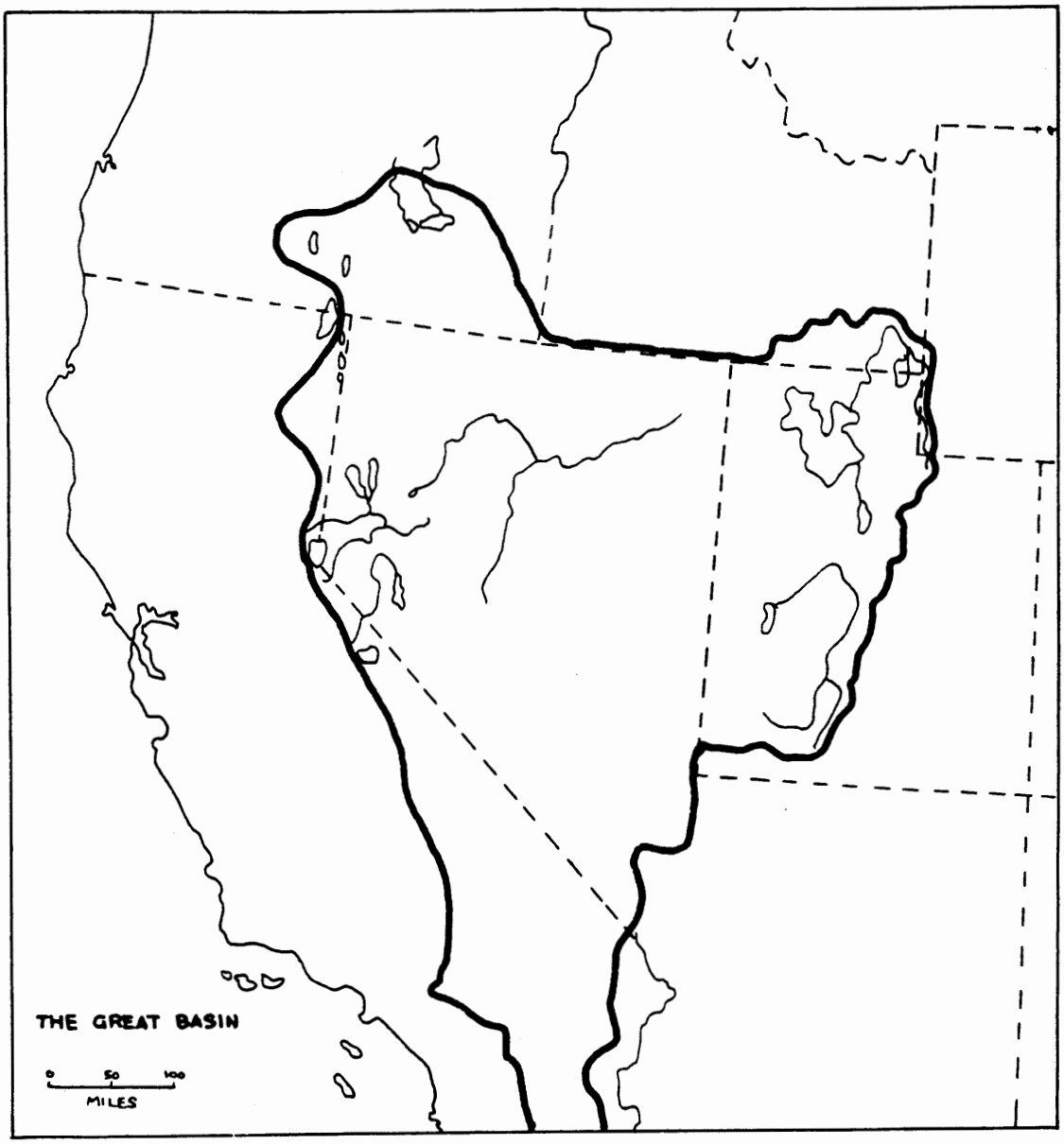


Figure 8. The Great Basin of the western United States (Hester, 1973).

bone awls, and a number of specialized stone tools (such as scrapers, choppers, and knives).5/

Viewed as a successful adjustment to an environment with limited potential, Desert Culture was characterized by Jennings as having uniformly blanketed the whole of the western desert and persisted for ten thousand years with little modification. While this model still serves to characterize Great Basin prehistory relative to other areas of North America, cultural development in response to changing environmental conditions and regional diversity is becoming increasingly apparent in the data.

THEORIES OF CULTURAL DEVELOPMENT

Jennings' model of prehistoric Desert Culture makes two assumptions. First, that Desert Culture blanketed the whole of the Great Basin uniformly; and second, he assumes that for 10,000 years Desert Culture persisted with little modification.6/ These two assumptions have aroused an enduring debate.

What is the nature of the prehistoric culture? Progressional models have included a variety of labels: big game hunters, lacustrine (lake-side) culture, basic seed gatherers, etc. What they are addressing is a mixture of slight but significant changes found in the prehistoric culture of the western desert. Some of the changes occur through time while others represent

regional specializations that may or may not have been static.

Jennings' model overlooks significant features of the environment that allow for regional specialization. Most of the Great Basin lies within the basin and range physiographic provice. It is highly faulted, creating a series of mountains and valleys. The desert is not continuous, but interfingered with mountain, river, and lake environments. Vegetational zones range from Sonora to Arctic-Alpine.7/ In some areas of the Great Basin these non-desert environments are productive enough to allow some resource specialization. The lacustrine adaptation has received the most attention from researchers favoring the idea of regional specialization. The Great Basin is pocketed by many lake or basin systems. Of all possible specializations this is certainly the most likely. Much evidence exists to support the idea of a lake oriented culture.

In 1963 Charles Rozaire stated that while prehistoric groups did take advantage of the lakeside situation during broad periods of climatic fluctuations, it is not clear whether this was a localized response or represented a broad cultural tradition. Evidence of lacustrine adaptation goes back 11,000 years and may have been equally as significant an economic base as big game hunting or gathering.8/

In 1966 W.A. Davis further developed Great Basin prehistory. He agreed with Rozaire that the lacustrine adaptation was very early. While the pattern was widely distributed, he suggested that it developed in an oasis-like

fashion. Each cultural enclave had been oriented about is own source(s) of water and ringed by a hostile and waterless waste. In this situation, there was no need to travel. Thus, each drainage system could, in fact, have its own prehistory.9/

However, caution should be taken in accepting Davis' suggestion. While each drainage or basin is likely to have developed somewhat independently, the data as yet does not support a separate prehistory for any basin within the Great Basin. To the contrary, the archaeological record is basically uniform with only minor variations. Furthermore, a group dependent on a single local basin or drainage system would be less well adapted to life in the Great Basin. A localized drought would spell total collapse for such a culture.

The important point implied by Davis is that the precise life style of a prehistoric group is probably best understood in terms of localized systems, so that details are not glossed over in an attempt to generalize a pattern appropriate for the whole of the Great Basin.

The best evidence for an exclulsively lake-oriented culture comes from Lovelock Cave and the adjacent Humboldt Lakebed in west-central Nevada excavated by Robert Heizer and Louis Napton. The rich cave deposits reflect a lake-marsh economy unusual for the Great Basin. Duck decoys, fish hooks, and nets are some of the artifacts found here. Analysis of human feces shows

that approximately 90 percent of the food consumed by the prehistoric occupants were native to the lake-marsh environment. Included were seeds of bulrush, cattail, water weeds, and wetland grasses; bones of native chub, sucker, and dace; hairs of ground squirrels and feathers of ducks, geese, and mudhen. As a result of their work, Heizer and Napton felt that Lovelock documented a regionally specialized culture focusing on the lake environment.10/

While some areas of the Great Basin do allow a greater reliance on a single resource, to prove actual economic specialization it would be necessary to demonstrate no seasonal use of other resources. Such proof is lacking.11/

In 1948 Ernst Antevs published a model of post-glacial climatic change for the Great Basin.12/ The scheme is based on complex correlations between temperature, rainfall, storm paths, polynological finds (fossil pollens), strand lines on fossil lakes, recent sediments, fossil watercourse histories, and theories of runoff rates and erosional patterns. Antevs hypothesized a gradual climatic curve divided into three phases. The Anathermal phase (9,000 - 7,000 years ago) was a cool, glacial climate. It slowly yielded to warmer conditions, eventually reaching mean annual temperatures that exceed those of today. This arid period (7,000 to 4,500 years ago) was called the Altithermal. It subsequently gave way to the Medithermal (4,500 years ago to the present) with temperatures approximately like the present. As a result of

Antevs' annual theory, archaeologists began to suspect that cultural patterns varied in response to these environmental changes.

The search for cultural change was focused on the period of extreme aridity, the Altithermal. It was hypothesized that the Altithermal would have caused a dramatic cultural change, such as total abandonment of the region. Supporting evidence was sought. As yet, no sizeable area in the Great Basin has demonstrated total abandonment by its prehistoric human occupants. Some sites lack evidence of occupation for this period, but always there have been other sites in the area that were occupied. Furthermore, the archaeological record demonstrates no change in subsistence strategy. The technology remains relatively unchanged before and after the Altithermal.

At least one investigator feels that the data for significant climatic change in itself is lacking. Peter Mehringer states that, "the instability of the last 10,000 years is no more dramatic than the ecological variation encountered by Great Basin inhabitants within a single year."13/

The variability itself may have been the most significant factor in shaping the adaptation of Great Basin occupants. Thus the abandonment of some sites in favor of others would be the expected pattern in such a region where local resources are constantly subject to climatic change. The very pattern of subsistence described by Jennings includes the notion of a

semi-nomadic population adapted to these changes. The fact that a local population may have continuously occupied one site year round for a considerable number of years does not alter the original model. The significant point is that they were flexible and given failure of the local resources, they could and did move to a more productive area. There is no evidence that climatic change significantly altered the prehistoric life styles in the Great Basin.

Antev's sequence only broadly outlines the paleo-climate of the west. Interpretation of prehistoric cultural systems in this three-phase sequence is far too simplistic. Much more data is needed to establish a detailed climatic chronology of the region.14/ The question of regional abandonment is no longer seriously considered. The concern now is to demonstrate changes in local environments that might have affected the usual cultural patterns.15/ Even if the man/environment relationships do vary, it is doubtful that climatic change is the causal agent.16/

A review of the literature on the nature of human adaptation in the Great Basin indicates that two views are current. The view presented by Jennings, that the prehistoric culture was uniform throughout the Great Basin and persisted with little change, is widely accepted. In contrast is the view held by Robert Heizer and others that the prehistoric culture pattern varied chronologically and regionally, due to local resource availability and climate. Much current research is devoted to the latter model. Attempts to

integrate these two views have softened the arguement somewhat. Both views are widely accepted, and while some points of contention are unresolved, it seems to this author that neither view unilaterally excludes acceptance of the other.

Jennings' model generalizes the pattern of prehistoric life in the Great Basin and is not specific to any area in particular. Yet it serves to organize the data, particularly in contrast to other regions in North America. It overemphasizes the static quality of the adaptation, but it is this emphasis which brought Antev's climatic scheme into question. The Desert Culture concept has been most useful in challenging the validity of the Altithermal climatic period of extreme aridity. The archaeological evidence simply does not support extreme climatic change.

The more recent work of Heizer and others has brought to light some new data and has substantiated the great variety inherent in Desert Culture. More importantly, this work has shown that some areas in the Great Basin have allowed substantial amounts of specialization due to more productive environmental conditions.

THEORIES ON EARLY MAN

The earliest record of man's occupation of the New World is called the Early Man Period by archaeologists. It is associated with the Pleistocene Epoch, a geological period. In the Western United States the terminal date for the Pleistocene is around 10,000 years ago. By definition then, Early

Man sites are those which have an age of 10,000 years or more. The problem with the Early Man period of prehistory is that geological evidence indicates that man should have arrived in the New World by 35,000 years ago. Unfortunately, there is little archaeological evidence of man in the New World prior to 11,500 years ago. The search in archaeology is to find evidence of man in the New World at a much earlier period and to document that presence with firm dates.

All the available geological evidence indicates that man should have entered the New World from northeastern Asia before 35,000 years ago and entered the continental interior prior to 25,000 years ago. Simplified, the argument from glacial geology states that a land bridge across the Bering Strait would have connected Asia with Alaska during periods of maximum glaciation, permitting an exchange of mammals, including man, between the two continents (Figure 9). At the same time that man could have entered Alaska, massive ice sheets covered Canada, blocking access to the interior of the continent. As deglaciation occurred, permitting access to the interior of the continent, the Bering Land Bridge disappeared under the sea. Thus man's entry into the New World was broken into two movements: first across the Bering Land Bridge to Alaska and then south into Canada, and North, Middle, and South America.

The ice-free corridor to the continental interior was open at various times. The two most recent periods were from 35,000 to 25,000 years ago and from 10,000 years ago to the present. Since we have evidence of man in the

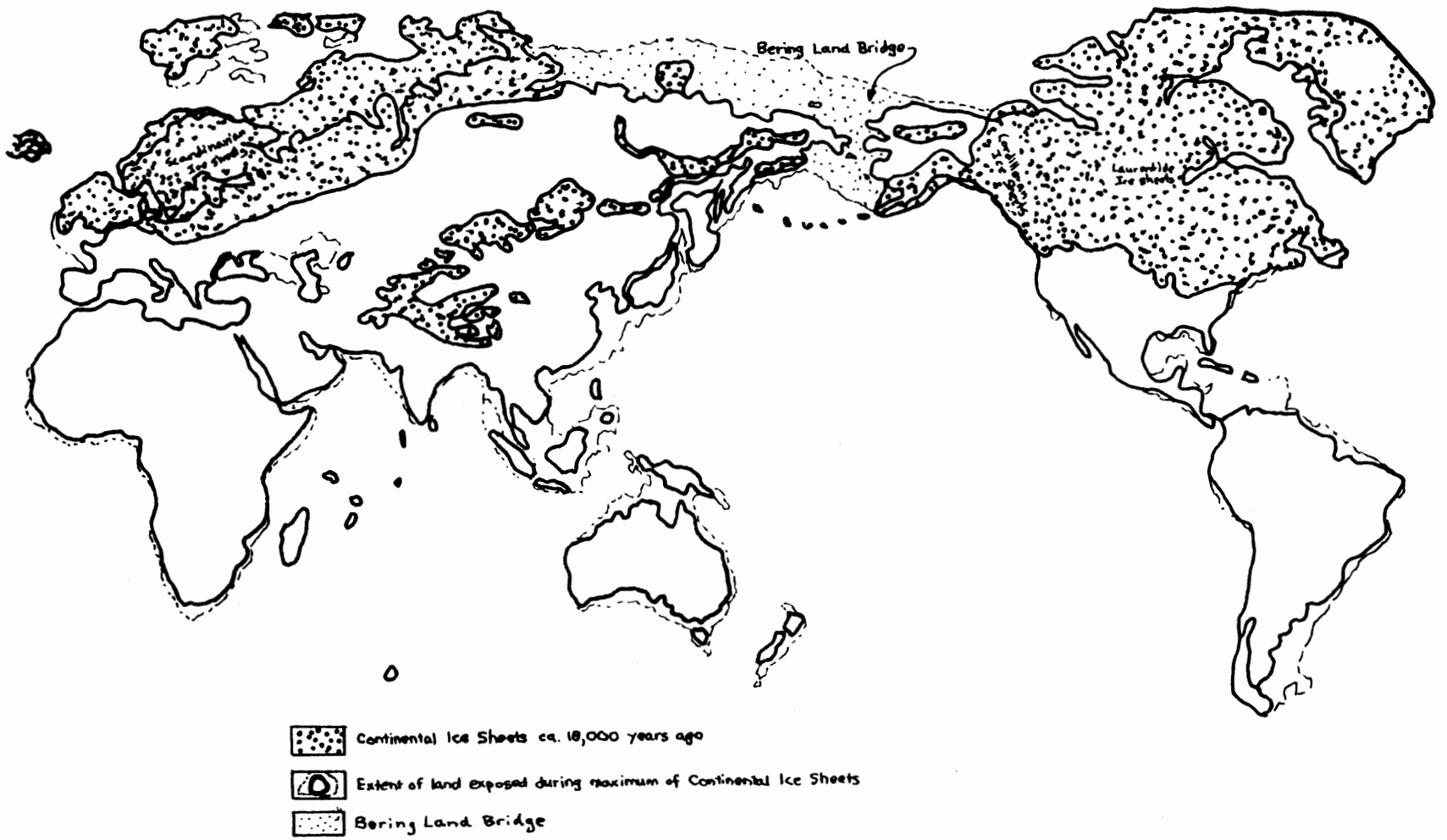


Figure 9. Bering Land Bridge about 18,000 years ago (Butler, 1978).

continental interior before 10,000 years ago, he must have passed through the corridor during the earlier interval from 35,000 to 25,000 years ago. Similarily, there are two periods during which the Bering Land Bridge was existant that interest us. One occurred between 25,000 and 10,000 years ago. Since man presumably passed through the ice-free corridor before 25,000 years ago, he must have crossed the Bering Land Bridge during the earlier period, which ended 35,000 years ago.17/

The archaeological evidence for Early Man in the New World is not plentiful. It is also confusing, contradictory, and controversial. The data is a little less confusing if structured into three periods. Evidence for the Early Period, greater than 25,000 years ago, is practically non-existent. There are no firmly dated sites from this period. Evidence for the Middle Period, between 25,000 and 12,000 years ago, is scarce. There are only four archaeological sites firmly dated to this period: the Valsequillo Site in the Valley of Mexico dated at 25,000 years ago, with a well-developed stone working technology; the Tlapacoyo Site further north in the Valley of Mexico, dated at 24,000 years ago; Wilson Butte Cave in the Snake River Plain, at 14,500 years ago; and Fort Rock Cave in southeastern Oregon, dated at 13,200 years ago.18/ Evidence for the Late Period, between 12,000 and 10,000 years ago, is relatively abundant. Some of these sites are: Danger Cave (Nevada), dated at 11,151 years ago; Fish Bone Cave (Nevada), dated at 11,000 years ago; Ventana Cave (Arizona), dated at 11,300 years ago; and Marmes Rockshelter on the lower Palouse River, Grante Point and Windust Caves on the Snake River, and Wildcat Canyon and Five-Mile Rapids sites on the Columbia River; all dated at 10,000 to 10,500 years ago.19/

Early Man sites are distinguished by three methods: by radiocarbon dating; by association with extinct Pleistocene megafauna (particularly the horse, the camel, the sloth, and the mammoth); or on the basis of artifact types. The only absolute method of determining a site's age is by radiocarbon dating. Unfortunately, very few sites yield carbon or organic materials in a controlled way and can be dated by this method. Similarly, few sites yield cultural materials in association with extinct Pleistocene megafauna. Furthermore, such an association is no longer a firm indicator of great age. In 1967 Paul S. Martin estimated that the extinction of Pleistocene megafauna occurred more recently than originally supposed, approximately 11,000 years ago.[20] This is well within the known time range for the occupation of the New World. It is possible that cultural materials associated with extinct fauna could be quite ancient, but without a confirming radiocarbon date, an age greater than 11,000 years ago should not be assumed.

There are five Early Man sites in southeastern Oregon that have yielded cultural materials associated with Pleistocene megafauna. In 1940 Luther Cressman, Howell Williams, and Alex Krierger discovered cultural materials with Pleistocene camel and horse at a cave near Summer Lake.[21] Artifacts were also found with the remains of Pleistocene camel on Lower Klamath Lake in 1943 by Cressman.[22] A third site, Paisley Five-Mile Point No. 3, yielded the remains of Pleistocene camel and horse in association with cultural materials, in 1942. The basal deposits in Catlow Cave No. 1 had cultural materials in possible association with Pleistocene horse.[23]

Unfortunately, all four of these sites were excavated before the development of radiocarbon dating, therefore, their exact age is not known. In 1977 Rick Miner and Lee Spencer excavated a site on Fossil Lake in Christmas Lake Valley, Oregon. The site had cultural materials associated with Pleistocene camel and is thought to be a possible kill site of the animal by man. The site has produced a radio-carbon date of 9,955 years ago.24/

The third way of distinguishing Early Man sites is on the basis of artifact types. Such sites cannot be firmly dated. Not all archaeologists agree on what constitutes an Early Man site. The most conservative are adament that a site must be firmly dated to this period to be valid. A few archaeologists feel that typologically ancient tool complexes in undatable circumstances are acceptable evidence. Most archaeologists accept as Early Man sites those which yield artifacts similar in type to artifacts from dated sites. The typological method of distinguishing Early Man sites has resulted in the description of two cultural traditions for Early Man in the Great Basin. These are the Pre-projectile Point Stage (also known as the Chopper/Scraper Complex) and the Fluted Point Tradition (also known as the Western Clovis Tradition).

Most archaeologists feel that the Pre-projectile Point Stage is an interesting but highly speculative theory. Proposed by Alex Krieger in 1964, the Pre-projectile Point Stage is based on surface finds of a typologically ancient tool complex similar to what would be expected of prehistoric immigrants from Asia. The Chopper/Scraper Complex is a took kit including

large, crude percussion-flaked chopping tools, flake tools, discoidal scrapers, and crude blades. As the name implies, this complex does not include any projectile points. Most Early Man sites in the New World include finely pressure-flaked projectile points for which there is no Asian prototype. The Chopper/Scraper Complex is typologically similar to theEarly and Middle Paleolithic of Eurasia.[25] It is, therefore, proposed as the tool kit used by man when he first arrived in the New World and from which the American projectile point industries were derived.

Archaeological sites attributed to the Pre-projectile Point Stage are widespread in North America (Figure 10). Unfortunately, none of the Chopper/Scraper sites are datable. Most of the finds are surface sites. Although the Chopper/Scraper Complex typologically fits the expected picture of Early Man in the New World, acceptance of this complex rests basically on conviction.

The Fluted Point Tradition or the Western Clovis Tradition is also distinguished on the basis of artifact types. The type artifact is the Clovis Point. It is lanceolate in shape, thin, three to six inches long, about one-fourth as wide as long, and has one or more large flakes removed from the base down to the midsection (Figure 11). This large flake removed from the base gives the characteristic "fluting" to the point.

Originally it was thought that the Clovis point was not common to the

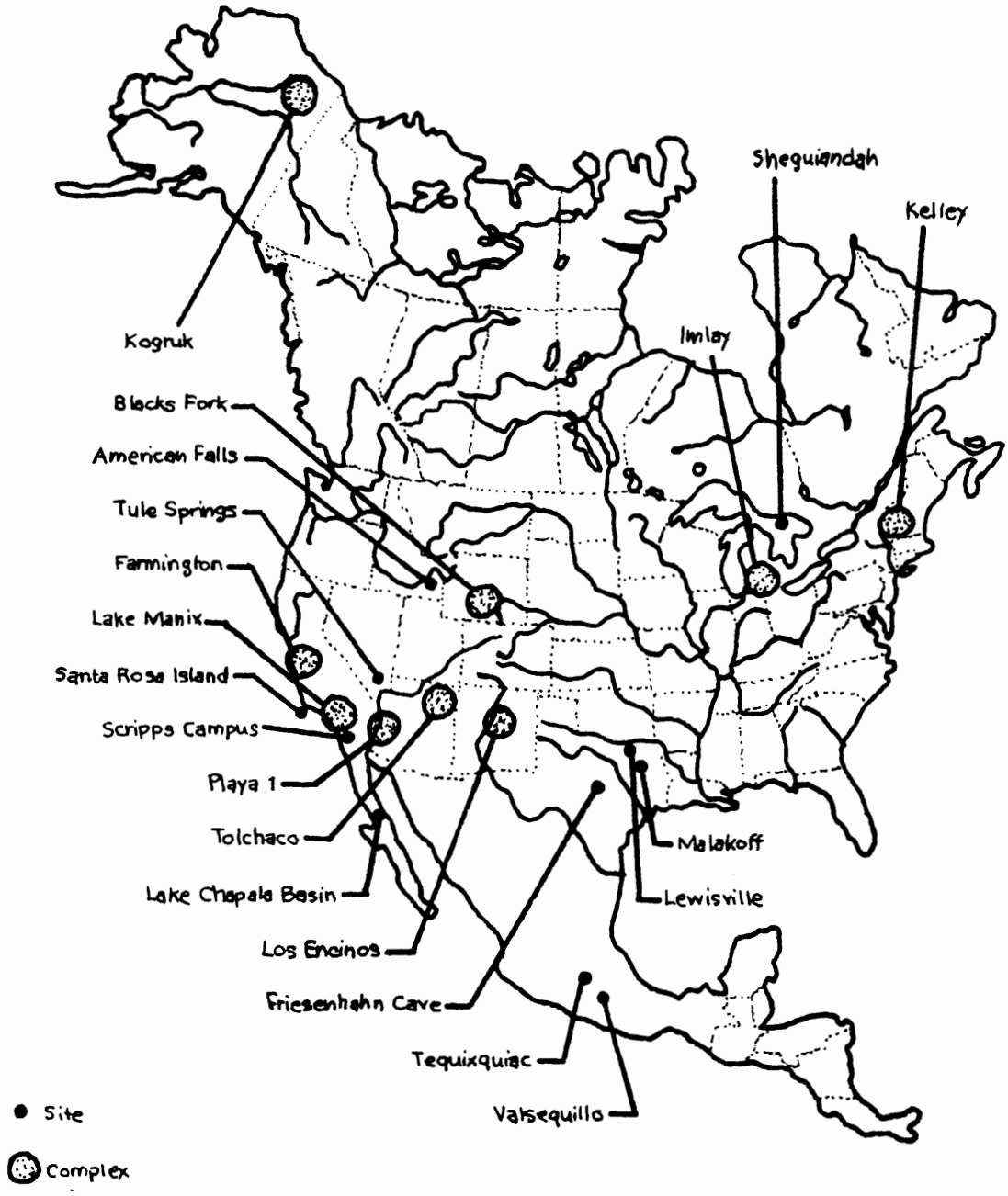


Figure 10. Chopper/Scraper sites and complexes in North America (Jennings, 1968).

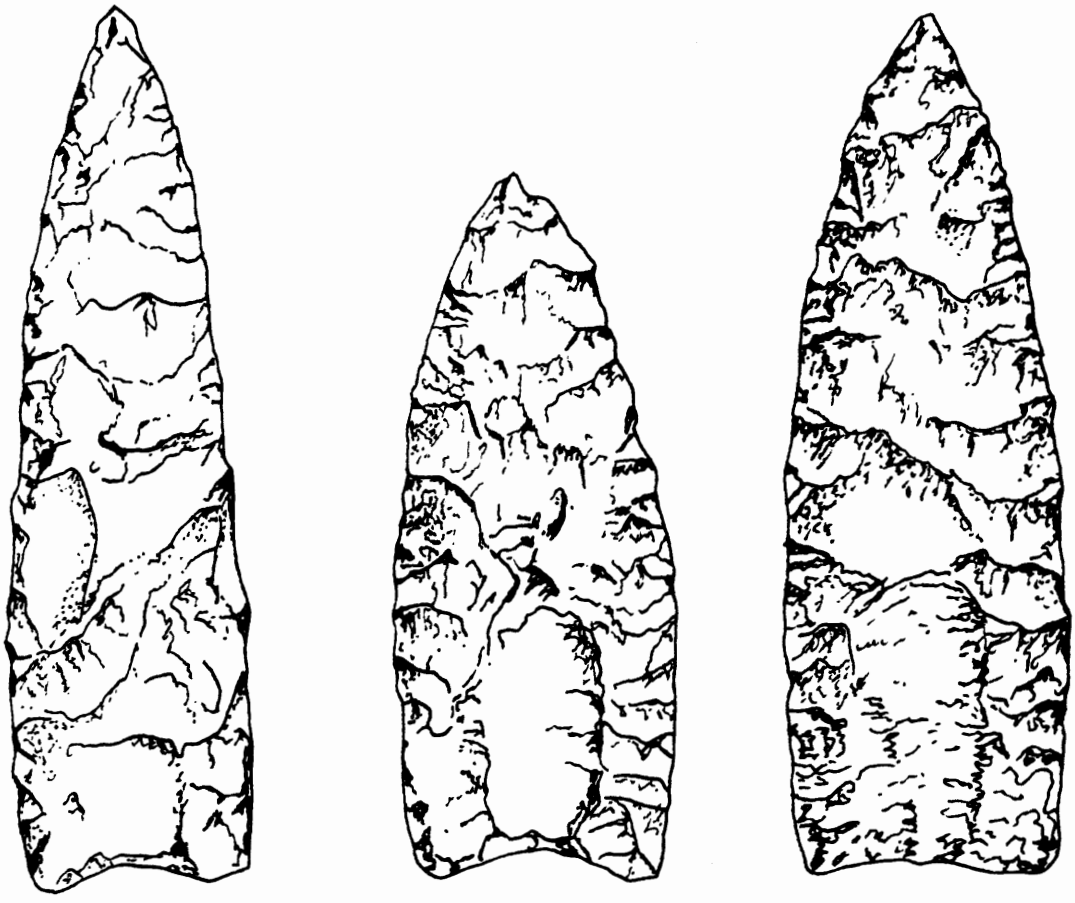


Figure 11. Typical clovis fluted points. Actual size. (Jennings, 1968).

Great Basin. On the High Plains and in the Southwest, Clovis points have been commonly found in association with bones of the extinct mammoth, bison, and other large species. Many of these sites are kill sites, some with large numbers of skeletons present. The people of the Clovis point are thought to have been specialized hunters of big game, particularly the extinct Pleistocene species.

In more recent years the Clovis point has been found throughout the west, particularly in the Great Basin (Figure 12). None of the finds in the Great Basin have been dated, but on the basis of typological similarity to the High Plains points, an age of 11,000 years ago is inferred. Many archaeologists assume not only a comparable age for the Western Clovis Points, but a similar economic adaptation also. Big game hunters in the western desert has been a heated debate for many years. As yet no Western Clovis Point has been found unequivocally associated with extinct fauna in a Great Bain site.[26] It has been suggested that the Western Clovis Points may date after the main wave of megafaunal extinction in the Great Basin.[27] This would indicate that if Early Man hunted the Pleistocence big game with the Western Clovis Point he did not do so for long, in the Great Basin. It would also contradict another hypothesis, that man had a hand in the extinction of the Pleistocene megafauna.

In the Great Basin Western Clovis Points are commonly found on intermediate or low strand lines of now-dry Pleistocene lakes.[28] In Southeastern

Oregon, Western Clovis Points have been found at Big Spring in Guano Valley,[29] at Coyote Flat,[30] at Malheur Lake,[31] at Glass Buttes,[32] and at Alvord Desert.[33] One archaeologist has suggested that the presence of Western Clovis Points on ephemeral Pleistocene lakes could be viewed as evidencing a transition between the two contrasting economic adaptations of big game hunting and the distinct Desert Culture hunter/gatherer pattern. As the Pleistocene environment changed and big game became scarce, the economy slowly shifted to an exploitation of lacustrine resources.[34]

The typological similarity of Western Clovis Points to those of the High Plains and the Southwest has created some very interesting and possible hypotheses on the age and economic adaptation of Early Man in the Great Basin. However, these points may be of very recent age and functioned in an entirely different manner than supposed.

In conclusion, the search for Early Man sites in the Great Basin is active. As yet there is no concrete proof that man occupied the area earlier than the terminal Pleistocene, approximately 10 to 15 thousand years ago. Nor is there agreement as to the way of life Early Man pursued. The two alternatives (big game hunter or generalized hunter/gatherer) are both possible according to the data and theory.

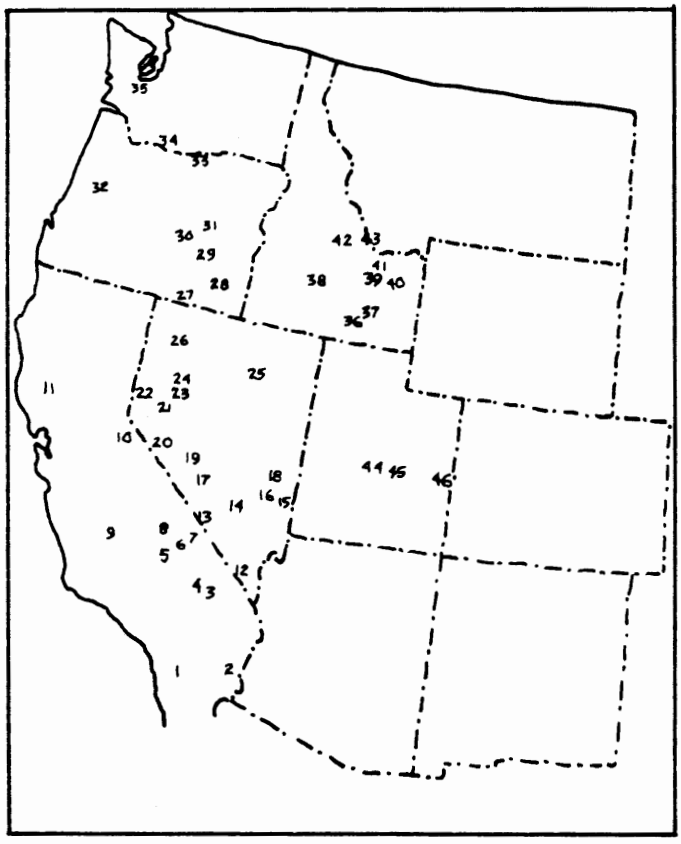


Figure 12. Fluted point surface finds in the Far West (Aikens, 1978b).

TABLE I

FLUTED POINT SURFACE FINDS
IN THE FAR WEST
(Aikens, 1978b)

LOCATION NO.	SITE	REFERENCE
	CALIFORNIA	
1	Cuyamaca Park Pass	Davis and Shutler 1969
2	Pinto Basin	Warren 1967
3	Lake Mohave	Campbell and Campbell 1937; Warren 1967
4	Tiefort Basin	Davis and Shutler 1969
5	China Lake	Davis and Shutler 1969
6	Panamint Basin	Davis and Shutler 1969; Warren 1967
7	Death Valley	Hunt 1960; Warren 1967
8	Owens Lake	Davis 1963; Warren 1967
9	Tulare Lake	Riddell and Olsen 1969
10	Ebbets Pass	Davis and Shutler 1969
11	Borax Lake	Harrington 1948; Meighan and Haynes 1970
	NEVADA	
12	Clark County	Perkins 1967, 1968
13	Beatty	Shutler and Shutler 1959
14	Grrom Dry Lake	Davis and Shutler 1969
15	Caliente	Davis and Shutler 1969
16	Dry Lakes Valley	Davis and Shutler 1969
17	Lowengruhn Beach Ridge, Mud Lake	Tuohy 1968
18	Long Valley Lake	Tadlock 1966
19	Lake Tonopah	Tuohy 1969; Warrne 1967
20	Huntoon Valley	Davis and Shutler 1969
21	Fallon Area	Davis and Shutler 1969; Warren and Ranere 1968
22	Rena Area	Davis and Shutler 1969
23	Carson Sink	Warren 1967; Tuohy 1968
24	Lovelock Area	Davis and Shutler 1969
25	Carlin	Davis and Shutler 1969
26	Black Rock Desert	Clewlow 1968; Richards 1968
	OREGON	
27	Guano Valley (Big Springs)	Cressman 1936; University of Oregon Natural History Museum files
28	Coyote Flat	Butler 1970
29	Malheur Lake	Strong 1969

LOCATION NO.	SITE	REFERENCE
30	Glass Buttes	University of Oregon Natural History Museum files; Mack 1975
31	Eastern Oregon Area	Osborne 1956
32	Eugene Area	Strong 1969; Allely 1975
33	Blalock	Strong 1969
34	The Dalles	Osborne 1956
35	Olympia Area	Osborne 1956
	IDAHO	
36	Lake Channel Locality	Butler 1965
37	Bannock Creek	Butler 1965
38	Big Camas Prairie	Butler 1963
39	Pioneer Basin	Butler 1970
40	Roberts Site	Butler 1965
41	Birch Creek Sinks	Butler 1965
42	Upper Salmon River Area	Butler 1972
43	Birch Creek Area	Swanson & Sneed 1966; Butler 1965
	UTAH	
44	Acord Lake	Tripp 1966
45	San Rafael Swell Silverhorn, Wash.	Anonymous 1968; Gunnerson 1956
46	Moab Area	Hunt and Tanner 1960

THE NUMIC EXPANSION THEORY

Numic is a branch of the Uto-Aztecan language family. Most of the languages spoken in the Great Basin belong to this branch. Linguists generally agree that there are six Numic languages. They are separated into three sub-branches of two languages each. The sub-branches are Western, Central, and Southern Numic. The languages are Mono and Northern Paiute, Panamint and Shoshoni, and Kawaiisu and Ute, respectively.[35]

Geographically, these six languages form a triangular fan rooted in the southern Sierra Nevadas in the area of Death Valley (Figure 13).

Linguistic theory has it that about one thousand years ago a rapid migration northeastward of Numic speakers occurred. They virtually filled the Great Basin. The reason for the typothesized population movement is not known. The Numic language was already split into the three sub-branches and all three expanded roughly at the same time. This independent but simultaneous migration of three linguistic groups would indicate "some kind of common influence present in the Great Basin, drawing these people farther into it."36/

Data supporting the expansion theory has been found. David Madsen feels that a heavy brownware pottery called Paiute-Shoshoni type verifies the Numic expansion theory. This pottery is found throughout the Great Basin and the oldest examples, dating from about A.D. 1000, are found in the Death Valley area.37/ Slightly younger examples of Paiute-Shoshoni brownware, dating from around A.D. 1250, have been found in southeastern Nevada and southwestern Utah. The remarkable fact is that this massive migration occured in approximately 250 years. Other artifacts that occur in association with the brownware are Desert Side-notched and Cottonwood triangular, side and corner-notched arrowpoints, flake scrapers, manos, metates, mortars, and pestles. Sites are commonly found on dunes, near streams and springs, and in rock shelters.38/

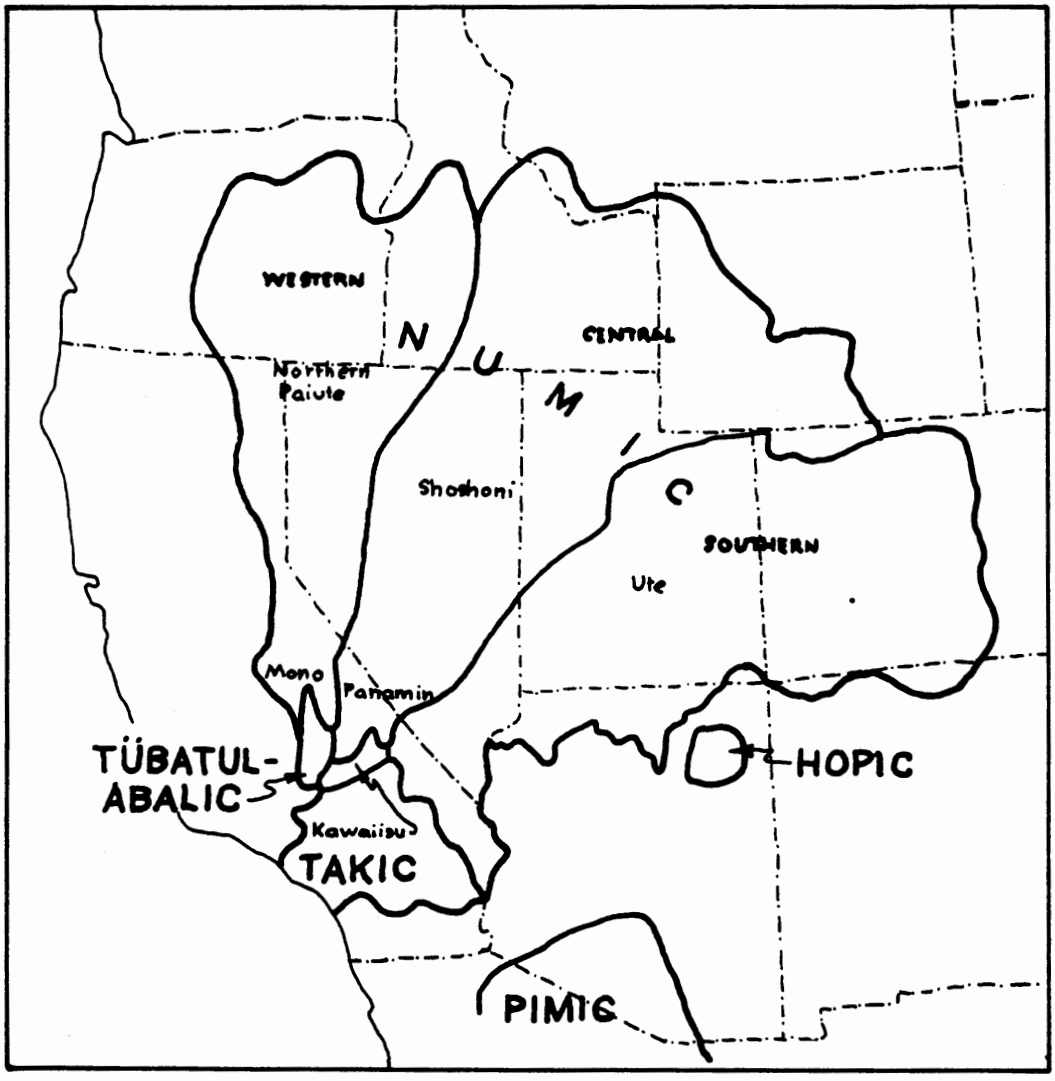


Figure 13. Numic languages of the Great Basin (C. Fowler, 1972).

Archaeologists have searched for an explanation of the Numic expansion in prehistory, but have found no answer as to why it occurred. The short time it required and the considerable geographic area it covered indicate a very compelling reason for the migration. By historic times the Numic speakers occupied most of the southern California deserts, the northern parts of the Southwest, all of the Great Basin, and much of the northwestern Plains.[39] This outstanding event remains one of the intriguing problems of Great Basin prehistory.

CONCLUSION TO ARCHAEOLOGICAL THEORIES

Archaeological research in the Great Basin has focused largely on two broad issues. The first is the nature of the prehistoric culture and the second is the antiquity of man's occupation of the Great Basin. A third issue comes from linguistic theory and addresses the recent occupation of the Great Basin by Numic speakers.

Jessie Jennings first described the nature of the prehistoric culture of the Great Basin calling it Desert Culture. Desert Culture was seen as uniform throughout the Great Basin and unchanging for 10,000 years. Climatological research hypothesized dramatic environmental changes for the Great Basin within the last 10,000 years, and this led to a challenge, by various archaeologists, of the Desert Culture concept. Logic suggested that dramatic environmental changes would cause changes in the cultural

adaptation. The issue was focused on a single climatological period, the Altithermal, but no significant cultural changes were discovered.

Subsequently, it was suggested by Peter Mehringer that the original climatological research was over-simplified and that the climatological instability of the last 10,000 years was no greater than that occurring in the Great Basin within a single year.

While no dramatic cultural change for the Great Basin has been documented, this research did result in demonstrating some significant regional variations in the desert adaptation. Both views are current and useful. The Desert Culture concept serves to generalize and organize the data on the desert adaptation. This concept has also been useful in challenging the early climatological research. On the other hand, opponents to the Desert Culture concept have shown that variation was inherent in the adaptation to the desert, and that some areas of the Great Basin allowed substantial economic specialization. The uniformity and stability of Desert Culture is a fact, demonstrating a successful adaptation to the Great Basin environment, but geographical and temporal differences in resource composition, abundance, and seasonal availability occurred. Therefore, regional prehistory is best understood in terms of local systems where the specifics of the adaptation are not glossed over.

There is little evidence of man in the New World prior to 11,500 years ago, although studies in glacial geology suggest that man should have arrived

by 35,000 years ago. The oldest firmly dated site in the New World is only 25,000 years old. Proof of man's presence in the New World at 35,000 years old would be a remarkable contribution to New World archaeology.

Research on Early Man in the Great Basin has resulted in the description of two possible cultural traditions. The Pre-projectile Point Stage identifies undatable surface sites that have a typologically ancient assemblage similar to the Early and Middle Paleolithic of Eurasia. Acceptance of the age or even existence of the Pre-projectile Point Stage is a matter of conviction.

The Fluted Point Tradition also lacks firm dating. The 11,000-year-age of Western Clovis Points is based on typological similarity to Clovis Points of the High Plains. A big game hunting subsistence pattern is also based on inference. The Fluted Point Tradition finds more acceptance among archaeologists than the Pre-projectile Point Stage, but none-the-less it remains to be confirmed.

As yet there is no proof that man occupied the Great Basin earlier than the terminal Pleistocene, nor is there agreement as to the economic adaptation of Early Man.

The issue of the Numic Expansion around A.D. 1000 into the Great Basin is based on linguistic analysis and theory. It has some support from

archaeology in the presence and distribution of a heavy brownware pottery called Paiute-Shoshoni brownware. Explanation for the cause of the rapid and massive migration is lacking.

In the last decade, Great Basin archaeology has been contested and refined. None-the-less, our understanding of prehistoric society in the region remains fundamentally unchanged. It is still seen as a successful, if simple, nomadic society, subsisting on the hunting of small game and the gathering of plants. Many of the major questions remain unanswered or unconfirmed. It is felt that increased activity and rigor in Great Basin archaeology will eventually produce not only confirmation of current theory, but some new discoveries, either in the field or in archaeological methods that will lead to solutions.

PREHISTORIC CHRONOLOGY OF THE NORTHERN GREAT BASIN

This chronology for the Northern Great Basin has been drawn from the work of five archaeologist (Figure 14). In 1970 Stephen Bedwell developed a chronology of the Fort Rock Valley area that has been followed, except for the exclusion of his occupational hiatus period.[40] Evidence for regional abandonment is inconclusive. Thomas Hester's chronology for the Great Basin, done in 1973, was relied on heavily.[41] In 1978 F. R. Hauck and D. G. Weder reviewed the chronological studies for the Great Basin.[42] Since point types are considerably earlier in the eastern Great Basin than they are in the western Great Basin, they derived a sequence that was applicable to the north-

Fluted Point Tradition 13,000/12,000 - 10,000 B.P.
Western Clovis Points

Western Pluvial Lakes Tradition 11,000 - 8,000 B.P.
Western Clovis, Great Basin Transverse
Haskett, Alberta - Scottsbluff, Lake Mohave,
Windust, and Lind Coulee Points

Desert Culture Tradition 8,000 B.P. - historic
Spear and Dart
Complex: Northern Side-Notch Points (8,000 - 5,000 B.P.)
Pinto and Humboldt Points (5,000 - 3,000 B.P.)
Elko Eared and Elko Corner - Notch Points
(3,000 - 1,500 B.P.)

Bow and Arrow
Complex: Rose Spring and
Eastgate Points (1,500 - 350 B.P.)

Numic Period: Desert Side-Notch and
Cottonwood Points (950 B.P. - historic)

Figure 14: Prehistoric chronology of the northern Great Basin (following Hester 1973, Bedwell 1970, O'Connell 1971, Hauck, and Weder, 1978).

western Great Basin. Three of these archaeologists relied heavily on the chronological work done by James O'Connell in Surprise Valley in 1971.[43] The following chronological ordering of northern Great Basin prehistory represents a synthesis of all five researchers.

Prehistoric chronology in the northern Great Basin (roughly southeastern Oregon) has three cultural traditions, or types, of culture. These do not represent developmental stages. The northern Great Basin passed through only two developmental stages, the Lithic and the Archaic, before white man arrived.

The earliest record of man's presence in the northern Great Basin comes from a period referred to as the Fluted Point Tradition or the Western Clovis Tradition. Roughly, this tradition lasted two to three thousand years, from 12,000 or 13,000 years ago to about 10,000 years ago. The best evidence we have indicates that the climate was relatively cool and moist. Large Pleistocene lakes existed in the Catlow, Alvord and Harney Valleys. Numerous small lakes were scattered throughout the area. Fossil lake terraces in Catlow Valley indicate that this lake was 175 feet or more deep.[44]

The Fluted Point Tradition is characterized by stemless, unnotched projectile points and a large, broad blade technology. Milling stones are not common but present in the unit.[45] The assemblage suggests a generalized hunter-gatherer adaptation and possibly some big game hunting. Evidence for

a Big Game Hunting Tradition in the Great Basin is still in question. It is inferred primarily on typological analogy to the Plains-based Paleo-Indian hunters. There stands, at the moment, nothing against the possibility that fluted points, found in the Great Basin, were used to kill anything but small to medium sized game.[46] The faunal data from Fort Rock,Connley, and Cougar Mountain Caves in Southeastern Oregon suggests a balance in the ratio of large to small game. This fact supports the view that the Fluted Point Tradition was not highly specialized but rather pursued a wide exploitation of the environment. In the Harney Area there are five locations where the Fluted Points have been found (Figure 15).

TABLE II

LOCATION NO.	SITE	REFERENCE
1	Glass Buttes Survey	Mack 1975
2	Alvord Desert Survey	Pettigrew 1975
3	Coyote Flat Collection	Butler 1970
4	Big Spring Site	Cressman 1936
5	Malheur Lake	Strong 1969

Following, and slightly overlapping, the Fluted Point Tradition is the Western Pluvial Lakes Tradition, lasting from 11,000 to 8,000 years ago. This model was outlined by C.W. Meighan in 1959 [47] and discussed in detail by C.E. Rozaire in 1963.[48] In 1970, Stephen Bedwell named the tradition.[49]

By 11,000 years ago the Pleistocene lakes of the Great Basin had ceased to exist as single bodies. A lessening of the effective moisture in the

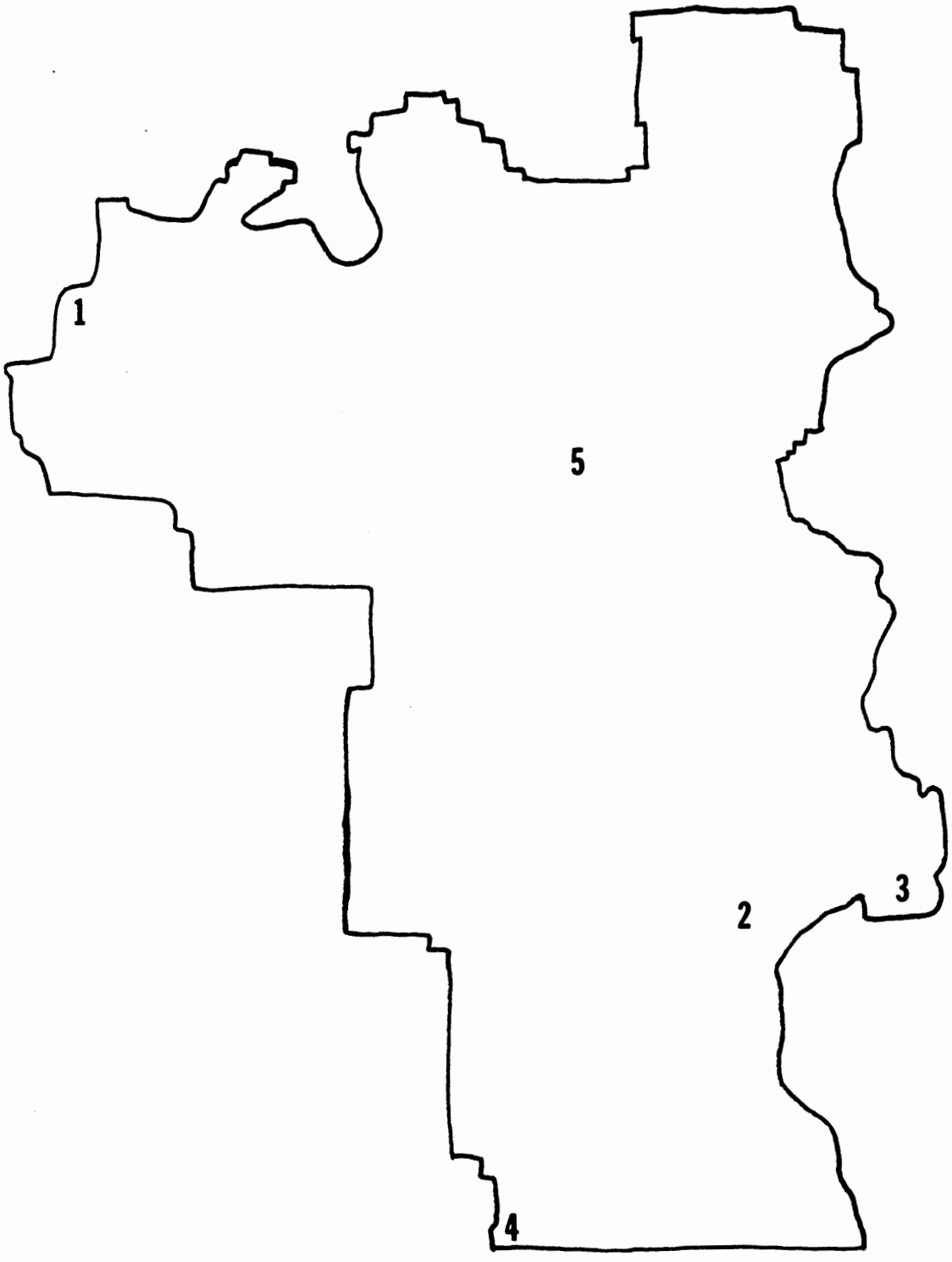


Figure 15. Fluted point locations in the Harney area.

environment had reduced them to shallow, open-water lakes, attractive to waterfowl, shorebirds, and a variety of large and small game animals, as well as to man. The pattern of economic adaptation proposed is a specialized focus on lakeside resources.

> At the extreme, we can see a lakeside culture oriented toward a fishing economy, perhaps on a year-round basis, taking advantage of the available waterfowl during those seasons of their migration. Over long cycles of time, with increasing aridity and a decrease in the size and depth of the lakes, fish could die out and birds could assume more importance (with more wide-spread marshy conditions), with a shifting to non-fish sources of protein during the off season. Also, water-loving plants might take on increasing dominance for food as well as continuing as a basic raw material for making such things as cordage, matting, clothing, and basketry.[50]

Artifacts which strongly reflect a lakeside adaptation were found in Lovelock Cave, Nevada. Fish hooks, fish nets, net sinkers, duck decoys, tule and cattail basketry, and the bones of fish and waterfowl all suggest a lake-marsh oriented economy. Unfortunately, few Great Basin sites yield such a rich artifact inventory. The lakes in southeastern Oregon had few fish, which inhibited the development of a fishing technology. Few fish bones and no fish nets or fish hooks have been recovered from the Oregon Caves.[51] Early levels at Catlow Cave show a predominance of waterfowl in the faunal remains, but no skin-covered, reed duck decoys like those found at Lovelock Cave, Nevada, have been excavated in Oregon.[52] On the other hand, the Oregon Caves evidence considerable use of tule, a marsh grass.

Sandals, basketry, cordage, quids, and bedding of tule have been recovered.

The Western Pluvial Lakes Tradition is founded on a widespread lacustrine oriented cultural adaptation, as manifested by intense occupation of the caves bordering the lake/marsh areas, the fact that non-cave sites cluster around the lakes, and that the faunal record indicates considerable use of waterfowl and shorebirds. Stemless, unnotched projectile points continue to predominate, but well-controlled percussion flaking distinguishes most of the tools from this period. Great Basin Transverse Points (Crescents) are the most distinctive trait of the assemblage. Milling stones do occur, occasionally, with the other stone tools. Twined basketry and woven sandals make their appearance at a number of sites.[53]

Assemblages of the Western Pluvial Lakes Tradition in southeastern Oregon are known from Fort Rock Valley (including Cougar Cave); the Guano Valley area (Big Spring); the Clovis, Haskett, Alberta-Scottsbluff, and Great Basin Transverse points from Coyote Flat; the Clovis, Alverta, Lake Mohave, and Great Basin Transverse points from Glass Buttes; and the Haskett/Lake Mohave, Windust, Lind Coulee, Alberta, Scottsbluff, and Great Basin Transverse materials from the Alvord Desert. Although analysis is not complete, initial study suggests similar assemblages from the Malheur National Wildlife Refuge. Crescents are one of the distinctive traits of this tradition.[54] Their occurrence at Harney and Silver Lakes may indicate presence of the tradition at these localities[55] (Figure 16).

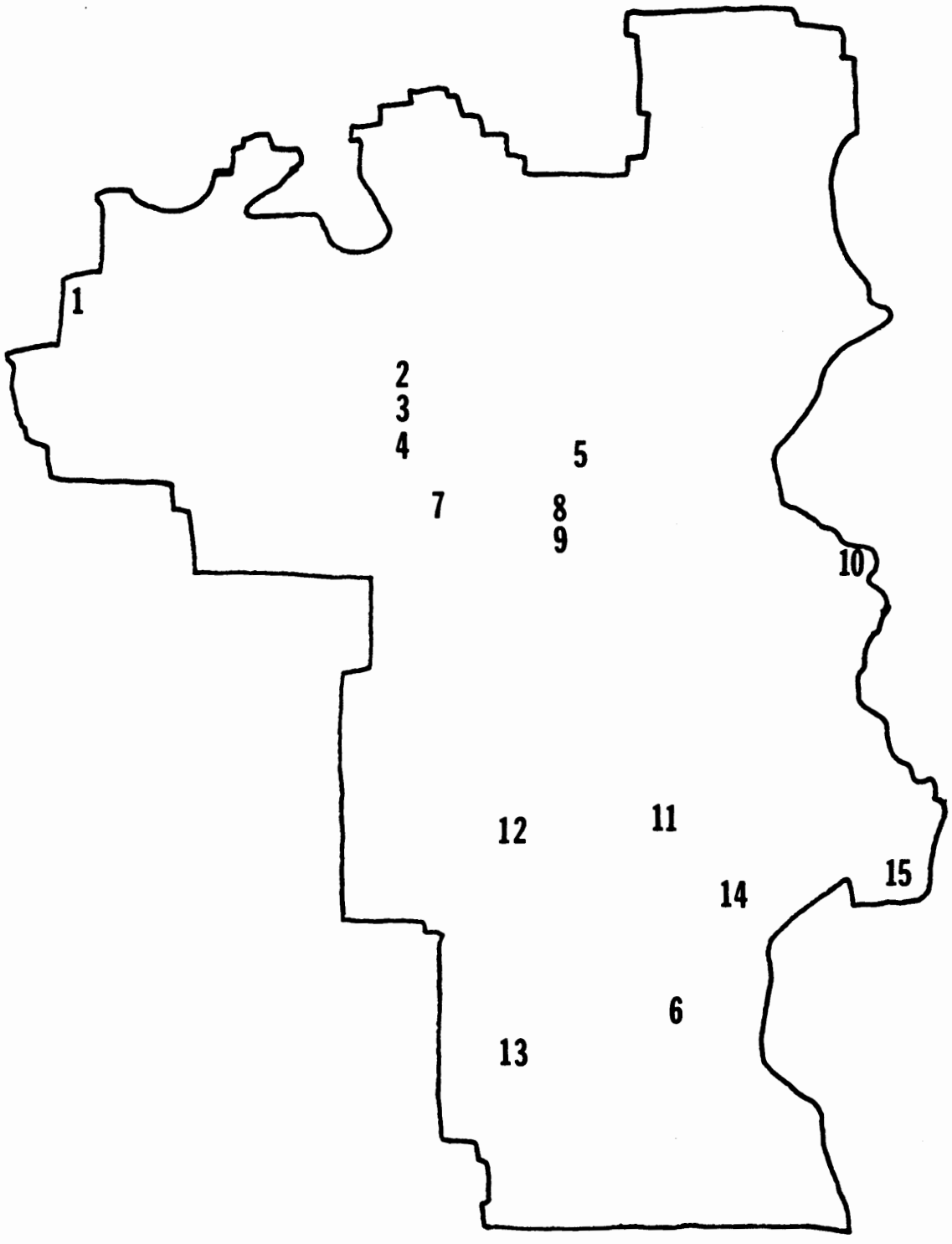


Figure 16. Western pluvial lakes tradition locations in the Harney area.

TABLE III

WESTERN PLUVIAL LAKES TRADITION
LOCATIONS IN THE HARNEY AREA

LOCATION NO.	SITE	REFERENCE
1	Glass Buttes Survey	Mack 1975
2	Site is 10 miles north of Harney Lake marsh	Fagan & Sage 1974
3	Site is 3 miles north of Harney Lake marsh	Fagan & Sage 1974
4	Site on northwest shore of Harney Lake	Fagan & Sage 1974
5	Site on south-central shore of Malheur Lake	Fagan & Sage 1974
6	Site on south shore of Alvord Lake	Fagan & Sage 1974
7	Site on south shore of Harney Lake	Gehr & Newman 1978
8	Malheur National Wildlife Refuge survey	Newman, Bogue, Carley, McGilvra, Moretly 1974
9	Blitzen Marsh site	Fagan 1974
10	County Line site	Fagan 1974
11	Steens Mountain Prehistoric Project survey	Aikens, Grayson, Mehringer 1978b
12	Roaring Springs Cave site	Cressman & Krieger 1940
13	Catlow Cave site	Cressman 1942
14	Alvord Desert surveys	Newman, Bogue, Cannon, McGilvra, Wiggin 1974; Pettigrew 1975

LOCATION NO.	SITE	REFERENCE
15	Coyote Flat collection	Butler 1970

The third cultural tradition of the northwestern Great Basin is the Desert Culture Tradition. This tradition marks the beginning of the Archaic developmental period in the west. The Archaic stage is described as a foraging way of life as opposed to a subsistence strategry oriented to hunting. Archaic cultures are non-ceramic and non-horticultural.

The environment of the northwestern Great Basin continued to grow more arid with time, eventually reaching conditions similar to the present. While previously it had been feasible to remain relatively sedentary around the lakes and marshes, increasingly the Indians were forced to migrate, periodically, into the hinter lands. Gradually a seasonal migratory pattern developed around exploitation of the total environment. The beginning of this change is reflected in the archaeological record about 8,000 years ago.

About 8,000 years ago a new projectile point form appears for the first time. These are the corner-notched and side-notched dart points (Figure 17). Unstemmed, unnotched varieties continue to be present. In the northwestern Great Basin Northern Side-notch or Bitterroot points appear first. They occur in stratified sites between 8,000 and 5,000 years ago. Pinto and Humboldt points succeed the Northern Side-notch points, between 5,000 and 3,000 years ago. Elko-eared and Elko Corner-notched points are the last of

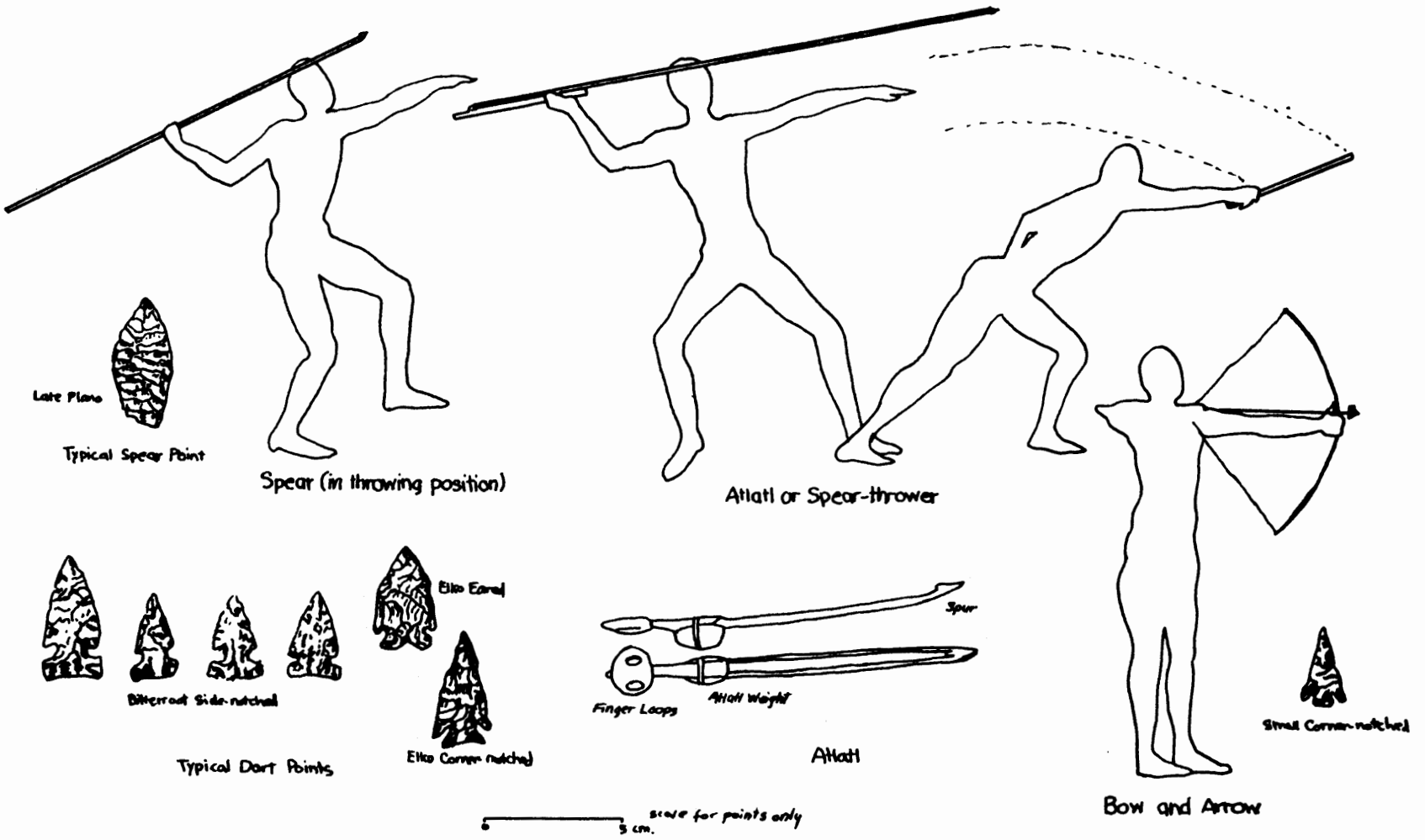


Figure 17. Successive forms of prehistoric weaponry and associated projectile point forms (Butler, 1978).

the dart points to be introduced. They appear between 3,000 and 1,500 years ago.

Overall, projectile point sizes are reduced and a new hafting technique is utilized. A new flaking technique accompanies the new points style. Flake scars that had been mainly at right angles to the midline change to predominantly oblique angles. Flake scar width decreases and length increases, indicating a shift from percussion to pressure flaking. Food grinding implements (manos, metates, and mortars) begin to appear in greater numbers. This indicates an increased skill in seed and root food preparation, suggesting a greater dependance on vegatable foods in the diet. Bedwell notes a decrease in the occupation intensity of the Fort Rock area caves.56/

About 7,000 years ago Mt. Mazama (Crater Lake) erupted, scattering volcanic ash as far as the Bitterroot Mountains in western Montana. This eruption must have had a profound effect on life in the area, covering the land with a blanket of ash and pumice. But after a few decades the area would probably have recovered enough to support human population.57/ Some areas may well have been spared the devastation because of wind patterns. While depopulation of large areas is likely, regional abandonment is not certain.

The Desert Culture Tradition is found throughout the Great Basin. The early stages of the tradition are represented by Northern Side-notched, Pinto, Humboldt, McKean, Elko Eared, and Elko Corner-notched points. In the northwestern Great Basin it did not represent a single economic pattern, but rather is best described as variations on a theme. In some areas, regional specialization resulted from distinctive local ecological conditions.

Warner Valley in southeastern Oregon provided a suitable environment for a more lacustrine oriented economy. By 3,500 years ago, a regional varient of Desert Culture was established in this area.58/

Calculations for the introduction of the bow and arrow into the Great Basin vary somewhat. C. Melvin Aikens thinks it had occurred about 3,000 years ago.59/ Thomas Hester feels it was introduced about A.D. 500 or 1,500 years ago.60/ Hester's date is more appropriate for the northwestern Great Basin. With the introduction of the bow and arrow, the longer dart point forms subsided or disappeared altogether. They were replaced by small, triangular arrowpoints: Rose Spring and Eastgate points. Hester feels there is no substantial evidence that use of the bow and arrow brought about any change in economic pursuits. Rose Spring and Eastgate points are found throughout the northwestern Great Basin. They continue to predominate until about 850 years ago.

Around A.D. 1000 much of the Great Basin saw the introduction of brownware ceramics and Desert Side-notched and Cottonwood projectile points.

It is believed these materials mark the advent of Numic speakers (Paiute and Shoshonean) in the Great Basin. These artifacts appear in the northeastern Great Basin about 850 years ago and continued to be used into the historic period. The projectile point types are found throughout the Harney Area. The only ceramics found in the Harney Area are from Catlow Cave. Eight sherds were found in the upper part of the occupation level. Since none were found in situ, their location cannot be established precisely.61/

PREHISTORIC SITES OF THE HARNEY AREA AND THE NORTHWESTERN GREAT BASIN

Archaeological research in the vicinity of the Harney Area began in the 1930's with Luther S. Cressman's pioneering work in Fort Rock, Guano, and Catlow Valleys. After Cressman, the area was virtually ignored by archaeologists for thirty years. In the 1960's, students and professors began to make occasional visits to the area. Four major research efforts resulted from this exploration. In 1968, Margaret Weide did research on Warner Valley and Robert Butler analyzed a surface collection of artifacts from Coyote Flat. Stephen Bedwell completed his work on the Fort Rock area, and four years later John Fagan published his research on the problem of Altithermal abandonment in southeastern Oregon.

In the last four years, the Federal government has become involved in archaeological research due to the new Federal legislation protecting antiquities. Government funding has supported many large survey efforts

throughout the northwestern Great Basin.

In 1978 the National Science Foundation awarded a grant to C. Melvin Aikens, Don Grayson, and Peter Mehringer to study the archaeology and paleo-environment of the Steens Mountain area. This study will undoubtably make a significant contribution to Great Basin prehistory. It is hoped that this research will resolve some of the archaeological problems of the Harney Area.

It is difficult to understand the prehistory of the Harney Area without discussing the whole of the northwestern Great Basin. This review will, therefore cover all of the northwestern Great Basin. Four areas surrounding the Harney Area will be discussed. These are the Fort Rock/Summer Lake area, Warner Valley, the Malheur Basin/Owyhee Uplands, and northwestern Nevada. Within the Harney Area, five areas will be covered. They are Guano Valley, the Harney Basin, Catlow Valley, Alvord Valley, and Steens Mountain. Refer to the following map for the location of research projects in the vicinity of the Harney Area (Figure 18).

Fort Rock/Summer Lake Area: The Fort Rock Basin includes Silver Lake in Fort Rock Valley and Fossil Lake in Christmas Valley. The Summer Lake area includes both Summer Lake and Abert Lake. Both areas are located west of the Harney Area. There are a number of important archaeological sites in this area. The most important, Fort Rock Cave was also the first to be excavated in 1938.[62] Below a layer of Mazama ash, Luther Cressman recovered a wealth

TABLE IV

MAJOR RESEARCH IN THE
HARNEY AREA AND VICINITY

	SITE OR SURVEY NAME	NO. OF SITES	REFERENCE
1.	Fort Rock Cave	1	Cressman 1942
2.	Fort Rock Valley	32	Cole 1975
3.	Celilo-Sylmar Line	2	Schoenberg 1976
4.	Connley Caves	3	Bedwell 1970
5.	Cougar Mountain: Caves 1 & 2	2	Bedwell 1970; Layton 1972
6.	Table Mountain Caves	2	Bedwell 1970
7.	Fossil Lake Site	1	Minor & Spencer 1977
8.	Christmas Valley Exclosure	22	Gibson & Spencer 1977
9.	Sycan Marsh	25	Bunton 1977
10.	Paisley Five Mile Point Caves	3	Cressman 1940
11.	Coffeepot Flat Sites	50	Aikens & Minor 1977
12.	Abert Lake Highway Sites	48	Cole 1975; Cole & Pettigrew 1976; 1977; Cannon 1977
13.	Plush Cave	1	Cressman 1944
14.	South Warner Valley Sites	1	Mack 1975
15.	Warner Valley Sites	32	Weide 1968
16.	Altithermal Sites	4	Fagan 1974
17.	Guano Lake Beach and Guano Lake Cave Sites	2	Cressman 1936
18.	Big Spring Site	1	Cressman 1936

	SITE OR SURVEY NAME	NO. OF SITES	REFERENCE
19.	Glass Buttes Sites	131	Mack 1975
20.	Riley Obsidian Quarry	1	Atherton 1966
21.	Blitzen Marsh and Hogwallow Spring Site	2	Fagan 1974
22.	County Line Site	1	Fagan 1974
23.	Malheur National Wildlife Refuge Sites	148	Newman, Bogue, Carley, McGilvra, & Moretly 1974
24.	Windust Sites	4	Fagan & Sage 1974
25.	Stinkingwater Pass Sites	13	Pettigrew 1979
26.	Wagontire Highway Sites	8	Pettigrew & Cole 1977
27.	South Harney Lake	2	Gehr & Newman 1978
28.	Catlow Cave No. 1	1	Cressman 1936
29.	Roaring Springs Cave	1	Cressman 1936
30.	Steens Mountain Sites	54	Aikens, Grayson, & Mehringer 1978
31.	Coyote Flat Sites	10	Southard, 1969; Butler 1970
32.	Windust Sites	1	Fagan & Sage 1974
33.	Alvord Desert Sites	245	Newman, et. al. 1974; Pettigrew 1975; Hauck & Harman 1976; Hauck & Nielson 1977
34.	Owyhee River Sites		Cressman 1937
35.	Bully Creek Reservoir Sites	10	Osborne 1948; Cole 1961; Newman 1964
36.	Juntura Cave	1	Wells 1959
37.	Owyhee Upland Sites	3	Hubbard 1967

	SITE OR SURVEY NAME	NO. OF SITES	REFERENCE
38.	Altithermal Spring Sites	5	Fagan 1974
39.	Moore Ranch Site	1	Long 1974
40.	Dirty Shame Rockshelter	1	Aikens, Cole & Stuckenrath 1977
41.	Vale KGRA Sites	19	Ruebelman 1975; Mack 1975
42.	Camas Creek Sites	151	Plew 1976
43.	Owyhee River Canyon Sites	99	Pullen 1976
44.	Massacre Lake Cave	1	Heizer 1940
45.	Last Supper Cave	1	Layton 1973
46.	Hanging Rock Shelter	1	Layton 1970
47.	Lake Parman Sites	4	Layton 1970
48.	Smokey Creek Cave	1	Layton 1970
49.	Black Rock Desert Sites	7	Clewlow 1968; Cowan 1972
50.	Paradise Valley Sites	37	Stephenson & Wilkinson 1967
51.	Swallow Marsh Site	1	Layton 1970
52.	Little Smokey Shelter	1	Layton 1970
53.	Calico Site	1	Layton 1970
54.	Silent Snake Spring	1	Layton 1970

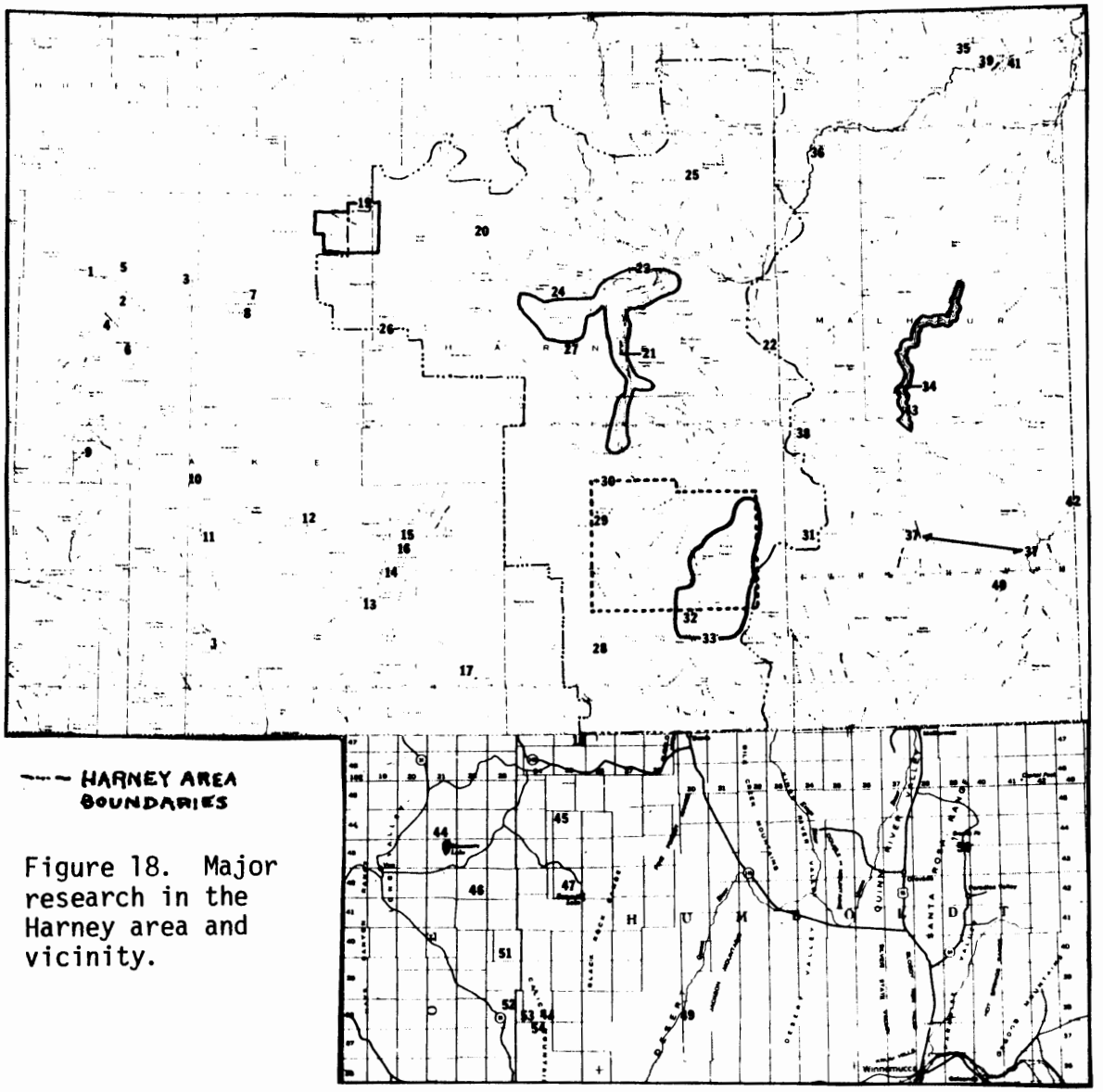


Figure 18. Major research in the Harney area and vicinity.

of organic and lithic artifacts. Between 75 to 100 sagebrush bark sandles were removed from Fort Rock Cave. Cressman was doubted when he estimated these materials to be extremely ancient, but was vindicated 14 years later when one of the sandles produced a radiocarbon date of 9,050 years old.

In 1966 and 1967 Cressman returned to Fort Rock Valley with a graduate student, Stephen Bedwell. They continued excavations at Fort Rock Cave. At the same time they excavated Connley Caves, Cougar Mountain Cave No. 2, and two caves at Table Mountain. From their excavations they developed a chronology of human occupation for the area.63/

In the interim John Cowles, an artifact collector, dug Cougar Mountain Cave No. 1. His excavation methods were so poor that little data besides the actual artifacts were recovered. In 1972 Thomas Layton used obsidian hydration measurements on the projectile points to obtain a relative seriation of the artifacts.64/ His analysis indicates that the chronology of Cougar Mountain Cave No. 1 approximates that for the rest of the basin.

In 1975 David Cole of the Museum of Natural History, University of Oregon contracted with the Bureau of Land Management to survey potential land exchanges in the Fort Rock Valley area. Thirty-two archaeological sites were recorded. Eight of the sites were located on sand bars, nine on low mounds or dunes, and ten on lake bottom deposits. The sites located on sand bars were very extensive and are throught to have been villages.65/

Kenneth M. Schoenberg directed an archaeological survey of the Celilo-Sylmar Transmission Line under contract with the Bonneville Power Administration in 1976. This survey passed throught the Fort Rock-Christmas Lake Basin. Two sites, both simple flake scatters, were recorded in the Fossil Lake-Mound Springs area.66/

In 1977 Eric C. Gibson and Lee Spencer were employed by the Bureau of Land Management to conduct a Class II archaeological survey in Christmas Valley on lands being proposed for closure to off-road vehicles. Twenty-two sites were discovered, including middens, quarries, workshops, and simple flake scatters. One site, which was recorded at this time, was subsequently investigated in depth. It involved exposed fossils of possible antiquity.67/

The same year Rick Minor and Lee Spencer were contracted by the Bureau of Land Management to excavate and evaluate the exposed site at Fossil Lake in Christmas Valley. The site involved camelid bones and cultural materials. It was estimated that the bones were 11,000 to 13,000 years old and were probably the result of hunting by man.68/

The chronology for the Fort Rock Basin developed by Bedwell and Cressman covers 14,000 years. Charcoal recovered from the bottom of Fort Rock Cave was radiocarbon dated at 13,200 years ago. This is the earliest radiocarbon date representing human occupation from the Great Basin. Bedwell and Cressman noted a two-thousand-year period of abandonment by the prehistoric occupants

of the Fort Rock Basin. It began after the eruption of Mount Mazama about 7,000 years ago, and lasted until approximately 5,000 years ago. This period does not apply to the Harney Area. In 1974 John Fagan excavated sites in the Harney Area that were occupied between 7,000 and 5,000 years ago.[69]

The Summer Lake area was also visited by Cressman in 1938.[70] He excavated three caves along the east rim of Summer Lake called Paisley Five-Mile Point Caves, Nos. 1, 2, and 3. All three caves had been occupied prehistorically, but Cave No. 3 bacame the most important. This cave contained artifacts associated with cooking fire ash and bones of horse, camel, bison, mountain sheep, a large dog (wolf), fox, bear (?), waterfowl, hawk and sagehen. Cressman felt this was a certain case of association of artifacts and extinct animals.[71] Cressman suggested an age of 11,500 years for the bottom of the level containing artifacts and extinct animals.[72] While this level has not been dated directly, a radiocarbon date of approximately 7,600 years ago was obtained from just above the level.[73]

West of Summer Lake is a 25,000-acre marsh called Sycan Marsh. In the summer of 1976 Hugh Bunton of the Fremont National Forest conducted an archaeological survey of proposed land exchanges in Sycan Marsh. Twenty-five archaeological sites were discovered along the edge of the marsh. Included were chipping stations, quarry sites, manufacturing areas, hunting sites, two rockshelters, and possible housepits.[74]

South of Summer Lake and east of Abert Lake is an upland meadow called Coffeepot Flat. In 1977 C. Melvin Aikens and Rick Minor conducted an archaeological survey at the request of the Bureau of Land Management. Fifty archaeological sites were discovered. Controlled surface collections at six sites yielded artifacts that suggest the area was occupied continuously from 8,000 years ago to the historic era.[75]

Southeast of Summer Lake lies Abert Lake. David Cole and Rich Pettigrew were contracted by the Oregon State Department of Highways to conduct several archaeological surveys along the east shore of Abert Lake.[76] Since 1975 a tremendous number of sites have been discovered along the highway right-of-way. In 1977 Bill Cannon, the Bureau of Land Management archaeologist for the Lakeview District, discovered several sites with pithouse depressions along the shore of Abert Lake. This is an uncommon feature for the area.[77]

Warner Valley is located west of the Harney Area. It also received attention from Luther Cressman in 1938. He briefly investigated Plush Cave which had been badly vandalized. Cressman recovered an atlatl (spear throwing board) and some fragments of basketry.[78]

In 1968 Margaret Weide published major research on Warner Valley.[79] She conducted an archaeological survey of the area to investigate the lacustrine (lake/marsh) adaptation in the area. Using typological cross-dating of artifacts, Weide developed a three-phase chronology for the valley. In the Early Period, lasting from about 7,000 to 3,500 years ago, occupation

shifted to favor the valley floor. Elko type points dominate this period. The Lake Period, 15,000 years ago to historic times, is characterized by Rose Spring, Eastgate, Desert Side-notch, and Cottonwood point types. Late Period sites again shift to favor upland sites. She concluded that the prehistoric occupants of Warner Valley, during the Middle Period, were primarily oriented to a lakeside and marsh economy.

Weide continued to research Warner Valley archaeology. In 1974 she defined a subsistence network for the north end of the valley based on the distribution of Flint Hills basalt.[80] Sites containing this particular material tended to be clustered together, while sites in the south end of the valley and around Hart Lake contained none of this material. The subsistence network described by Weide includes both valley floor sites and upland sites, although the former predominate. These sites tend to fall into the Middle Period, and she suggests that the distribution of Flint Hills baslat approximates the core territory of a prehistoric band.

In her earlier work Weide hypothesized that the Middle Period occupants of Warner Valley were distinct from the Northern Paiute, who occupied the valley at the time of contact. She suggests that the shift in settlement pattern, between the Middle and Lake Periods, may indicate a withdrawal from the area by the lacustrine oriented occupants and an expansion into the area by the less specialized Northern Paiute.

In 1974 John Fagan conducted research on the Altithermal climatic period in southeastern Oregon. Four of the twelve sites he excavated are located in Warner Valley. They are: Spearpoint Spring, Anthony Spring, Anthony Mound, and Twin Spring. Fagan's research results are discussed in the Harney Basin section.[81]

In 1975 a brief archaeological survey in the southern end of Warner Valley was contracted to Joanne Mack by the Bureau of Land Management.[85] Approximately 7½ sq. mi. were surveyed resulting in the location of 14 archaeological sites. The survey results suggest that the south end of Warner Valley had a settlement pattern similar to that described by Weide for the north end.

The Harney Area consists of five areas: Guano Valley, the Harney Basin, Catlow Valley, Steens Mountain, and Alvord Valley.

Guano Valley is located just to the east of Warner Valley and southwest of Catlow Valley. In 1933 Luther S. Cressman made a survey trip to the area, while engaged in a study of petroglyphs (rock carvings) of Oregon.[83] He was accompanied by Joel Berreman of Stanford University.

In 1934 the two men returned to conduct some surface examination and the excavation of one cave. Guano Lake Cave was unstratified, but contained lithic artifacts and basketry fragments. A surface collection at Guano Lake Beach site yielded Humboldt, Elko and Rose Spring type points. Another

surface collection at Desert Lake site yielded both Humboldt and Elko (?) series points. Just across the Neavda border a surface collection at Big Spring site contained some typologically ancient artifacts. The collection included Great Basin Transverse points (crescents), a fluted point (Clovis?), Haskett type points, and apoints similar to Lind Coulee type. This assemblage is clearly of Bedwell's Western Pluvial Lakes Tradition.[84] Numerous petroglyphs were also found by Cressman in the Guano Valley area.

The Harney Basin lies at the north end of the Harney Area. Roughly, it includes the area that drains into Harney and Malheur Lakes. A large part of this area is encompassed by the Malheur National Wildlife Refuge which is surrounded by private and Federal lands.

In 1965 John Atherton conducted research on an obsidian quarry to the west of Harney Lake. The Riley obsidian quarry is located about four miles from the town of Riley. From his analysis Atherton concluded that the main products of quarries seem to have been "blanks" rather than finished tools.[85]

John Fagan spent fourteen weeks in southeastern Oregon in 1970 testing an hypothesis that during the Altithermal climatic period the area was abandoned by its human occupants. He proposed that during this period rather than regional abandonment, a reduction in the use of lowland sites occurred. Fagan

proposed that higher elevation spring sites became the center of activities during the Altithermal. Thirty-four sites in southeastern Oregon were surface collected for his research. Twelve of these were also test excavated. Of the twelve sites, only three were located in the Harney Area. Two of these, Blitzen Marsh Site (35HA9) and Hogwallow Spring Site (35HA8) are low elevation sites. They are located in the Blitzen Valley. The third site, County Line Site (35HA25) is a higher elevation site. Hogwallow Spring Site was occupied within the last 5,000 years. Blitzen Marsh Site was occupied within the last 7,000 years. It is considered a village site with one house floor radiocarbon dated at about 900 to 1,000 years ago.

On the basis, primarily, of typological cross-dating of artifacts, Fagan determined that 10 of the 12 sites excavated had been occupied during theAltithermal. Furthermore, eight of these Altithermal sites were at higher elevations. While Fagan felt that the data suggested a shift in the settlement pattern from lower to higher elevations sites during this period, this conclusion should be considered tentative, as so few sites were involved in the research. Fagan also developed a four period chronology for the area which was published in 1974.[86] The chronology relies heavily on Antev's climatic sequence.

In 1972 Thomas Newman began what was to be a rather large survey project in the Harney Basin. He proposed to survey the entire Malheur National Wildlife Refuge with modest funding. The work was accomplished over a period

of three years in conjunction with the Portland State University archaeological field school. A total of 148 site areas were located. This count could be considerably extended if the site areas were broken down into individual sites. Tentative conclusions on the chronology of the area are that there was apparent infrequent occupation in immediately post-Pleistocene times, substantial exploitation of the valley from the end of the Altithermal and, continuing for an undetermined period of time, then, within the last two or three thousand years, intensive occupation of the entire Refuge. An impressive diversity of sites were located, including village sites, indicated by pithouse depressions.

Three individual papers were included in the final report to the Refuge. One of these deals with the management of cultural calues; another paper attempts to date some of the sites by artifact seriation; and the last is a functional analysis of discovered stone-rings, commonly known as "teepee rings." The last paper concluded that the best interpretation of these stone-rings is that they were used for habitation or as kitchen areas.87/

John Fagan and Garry Sage reported Windust type projectile points from southeastern Oregon in 1974. They located twelve sites that contained these typologically ancient artifacts. Five of these sites are in the Harney Area. Windust points have been dated between 10,000 and about 7,500 years ago in the lower Snake River region and on the Columbia River. At Fort Rock Cave Bedwell reported Windust projectile points in deposits dated between 11,000 and 8,000 years ago. Of the five Windust sites for the Harney Area, four are

located in the Harney Basin. A single point was found on the shore of Malheur Lake and another single point on the shore of Harney Lake. About three miles north of Harney Lake another site contained seven fragments of Windust points. The last site was located ten miles north of Harney Lake and contained three Windust points.88/

An intensive survey of the Glass Buttes area was contracted to Joanne Mack by the Bureau of Land Management in 1975. Glass Buttes is an extensive obsidian quarry area located northwest of Harney Lake. Nineteen square miles (14%) of the 1,322 square mile lease area were intensively surveyed. A total of 131 sites were located. A variety of site types were present, including campsites, knapping stations, spring sites, stream sites, sand dune sites, quarry sites, and a rockshelter. Many of the sites were dated on the basis of artifact types present and a general chronology for the area was established denoting some changes in the use of the area. The area appears to have been continuously occupied from 11,000 years ago to about 900 years ago. After A.D. 1100 there is a significant absence of occupation in the area.89/

In 1975 and 1976 the Oregon Department of Highways contracted Richard Pettigrew and David Cole to do two right-of-way surveys in the Harney Basin. The first was a Stinkingwater Pass, northeast of Malheur Lake on Highway 20. The second was near the town of Wagontire, southwest of Harney Lake on Highway 395. The Wagontire survey included nineteen and one-half miles of right-of-way and eight archaeological sites were discovered.90/ All the Wagontire sites were related to tool manufacturing for the production of

large flakes, large bifaces, and possibly some finished pieces. Only one site (35HA328) contained projectile points.

The Stinkingwater Pass survey covered eleven miles of right-of-way and thirteen archaeological sites were discovered.91/ Ten of the discovered sites were salvaged by systematic surface collection. Six of these sites were also subjected to testing for buried cultural deposits. Two sites were discovered to have cultural depth and were excavated on a larger scale. A total of 213 projectile points were recovered from the Stinkingwater sites, but only twenty of these were buried. Point typology was therefore not useful in determining the temporal range of the subsurface deposits.

Projectile point typology was used to describe three periods of occupation for the area. Some use of the area occurred during the Early Period (9,000 to 4,000 years ago). Intensive exploitation began during the Middle Period (4,000 to 2,000 years ago) and continued through the Lake Period (2,000 years ago to historic times).

On the basis of the distribution of cryptocrystalline flakes, Pettigrew infers that the Stinkingwater Pass area was used by two distinct groups of people, one from the southwest (Harney Basin) and one from the northeast (Malheur River Valley). He suggests that the Malheur River group preferred using crypto-crystalline for the manufacture of tools. Crypto-crystalline flakes predominate in the northeastern sites and are nearly absent in the southwestern sites. The line of separation is at 35HA70/1 which is a

"primary decortation site for crypto-crystalline."[92] The distribution of crypto-crystalline flakes cannot be explained as a function of distance from HA 70/1 since they are nearly absent insites to the southwest of the 70/1. They are rather a function of direction from HA 70/1.

It seems to this author that the data is being over-extended and manipulated to support a foredrawn conclusion. The presence of two distinct groups is not well supported by the data. Since there is no known source of obsidian in the Stinkingwater Mountains, and obsidian was the preferred material for projectile points, it is likely that people traveling would reserve the obsidian they carried for making points. Locally available materials would, therefore, be used for other tools where feasible. The simplest explanation for the discrete occurrence of crypto-crystalline flakes is that the prehistoric people travelled through the area on their way to harvest salmon in the Malheur River and did not return to Harney Valley by the same route. The most likely explanation for flake distribution is that the apparent discrete occurrence is a function of the limited area covered in the survey and would not materialize if a wider path through the mountains were surveyed.

In 1975 two artifacts were found in the wall of a drainage ditch on the south shore of Harney Lake. Later a general reconnaissance of the area revealed two archaeological sites. It has been determined from research

conducted by Keith D. Gehr and Thomas M. Newman that these sites were occupied when the lake level was at or just below the overflow point of the Basin. Dates approaching 8,700 years ago have been inferred for these sites. A Cascade point-crescent-blade tool complex is suggested for the sites.[93]

Catlow Valley is located south of the Harney Basin on the west side of Steens Mountain. In 1934 Luther Cressman conducted a resonnaissance survey of Catlow Valley.[94] He discovered two large caves in the valley. Catlow Cave No. 1 and Roaring Springs Cave were excavated by Cressman in 1935 and 1937.[95]

Catlow Cave No. 1 is located at the south end of the valley in a large rim overlooking the valley. During the Pleistocene Epoch the valley contained a lake which had a depth of 75 feet.[96] During prehistoric times a lush marsh environment must have existed along the receding lakeshore. Roaring Springs Cave is situated toward the northcentral part of the valley, at an extremely lush location. A number of springs discharge volumes of water just below the cave.

The excavation results of the Catlow Valley caves are quite similar. Both lacked clear cultural stratigraphy except for the lack of basketry in the lower levels. Almost 300 wooden artifacts were recovered from the caves, the most significant of which is the atlatl or throwing-board for darts.

Other wooden artifacts were bow fragments, digging sticks, fire drills, and a flute. Near the surface of Catlow Cave No. 1 a small leather pouch was recovered and from similar provenience in Roaring Springs Cave were recovered two leather moccasins. Basketry and sagebrush bark sandles were the most impressive artifacts from the caves. From Roaring Springs Cave 180 basketry fragments were recovered, and 112 were taken from Catlow Cave No. 1. Twenty-one sandles were found in Catlow Cave No.1 and four in Roaring Springs Cave. In addition numerous coarse receptacles and mats were recovered from the caves. Catlow Cave No. 1 contained skeletal parts of two humans, probably deposited there by wave action. Roaring Springs Cave had skull fragments of at least three individuals. One unusual find was eight sherds of plain pottery from Catlow Cave. Found near the surface it was concluded that the fragments were intrusive.

The lithic artifacts from the caves were numerous. One hundred and ninety-four projectile points were retrieved from Catlow Cave. Other lithic artifacts included 70 scrapers, 3 drills, 1 graver, 58 manos, 35 metates, 2 hammerstones, 1 mortor, and 5 choppers. Roaring Springs Cave had 650 projectile points, 212 scrapers, 17 drills, 63 manos, 23 metates, 5 hammerstrones, 1 mortor, and 5 choppers. The projectile points from the Catlow Valley caves have been described by Thomas Hester. The lower levels contained large projectile points, probably Northern Side-notched and Elko series points. The upper levels contained points probably of the Elko, Rose Spring, Eastgate and Desert Side-notched series.[97]

In 1979 Catlow Cave was re-excavated by a crew from the Steens Mountain Prehistory Project (see section on Steens Mountain). It had been determined that some undisturbed deposits remained in the cave, and it was hoped that more data could be recovered from a small excavation. While the official report is not yet prepared, it seems that the deposits were heavily disturbed by rodent burrows, and some amateur collectors who trespassed during the night to dig the site.[98]

Steens Mountain is a massive north-south trending tilted fault block, located at the southern end of Blitzen Valley and separating Catlow and Alvord Valleys. It has not been the subject of archaeological research until 1978. The National Science Foundation has funded an extensive research project called the Malheur Basin-Steens Mountain Prehistory Project.[99] The principal investigators of the research are: C. Melvin Aikens, from the University of Oregon; Donald K. Grayson, from the University of Washington; and Peter T. Mehringer, from Washington State University. The Steens project involves an interdisciplinary approach to the prehistory and paleoecology of the area. It aims at describing, in detail, the changing environment and patterns of human occupation for the epoch. The major emphasis is on the establishment of a Holocene well-dated sequence of climatic and environmental changes through analyses of lake and spring sediments and to correlate the sequence with human subsistence/settlement systems. The project will involve three years of field work from 1978 through 1980 and will be several years in analysis.

In 1978 Wildhorse Lake and Fish Lake on Steens Mountain were core-drilled to study the pollen and algae deposition through time for the Steens project.[100/] A record from before the fall of Mazama ash was obtained. A pond at Diamond Craters was also cored for a lower elevation site. This pond contained a sedementary record unique to the Great Basin. It is the only known site containing a continuous and well-preserved pollen record.

Another objective of the Steens project is to establish the tephro-chronology of the Steens region. Volcanic ash layers of known age and composition would be important in dating and correlating archaeological sites. Also, if major ashfalls occurred, they could have significantly affected local resources and prehistoric lifeways. Five volcanic ashes and one pumice layer have been recovered, dated, and characterized. The first two ashes are from Mount Mazama (Crater Lake) and are separated by about 150 years. A pumice layer follows about 1,500 years later. The source for this layer is unknown, but could have been from very near the Steens. It would have seriously affected local populations. This layer is followed by three volcanic ashes of more recent age which did not have a great affect on the environment.

The archaeological aspect of the Steens project is well underway. To gain a representative sample of the surface sites, the project area was stratified into three major drainages: Catlow, Alvord, and Malheur.

These were divided into upland and lowland sections. The upland sections were divided into primary, secondary, and tertiary drainages, and a ten percent sample was drawn for survey. Only the right or left hand half of the chosen drainages were inspected. The lowland areas were surveyed using transects one-eighth of a mile wide and three miles apart. Only the Catlow and Alvord lowlands were used.

To record the distribution of artifacts as precisely as possible, the locations of all artifacts were plotted on hand-drawn enlargements of topographic maps. Where dense scatters of materials occurred, the artifacts were mapped, using a plane table and alidade. In 1978 less than half of the chosen areas were surveyed. A total of 54 archaeological sites were recorded. The remainder of the territory will be completed during the following seasons. Over 10,000 artifacts have been catalogued and analysis has begun.

In 1979, buried archaeological deposits are being excavated. Catlow Cave has been re-excavated and work has begun on rockshelters on the east side of the Alvord Valley.

Alvord Valley lies on the east side of Steens Mountain. The Sheepshead Mountains lie on the northeast end of Alvord Valley. On the southeast end are the Trout Creek Mountains. The western side of the valley is defined by Steens Mountain, which grades into another large fault block to

the south called the Pueblo Mountains. Alvord Valley contained an enormous lake during the Pleistocene Epoch. Over the last 10,000 years the lake has receded until it reached its present state, a vast, unvegetated playa surrounded by sagebrush plains.

The earliest archaeological research in the vicinity was in 1968 at Coyote Flat. This playa is located to the east of Alvord Valley. Two amateurs made a collection of artifacts from the lakebed, which B. Robert Butler analysed and reported in 1970.[101] The collection contains many early artifact types including Clovis, Haskett, Alberta, and Scottsbluff types. Numerous Great Basin Transverse points (crescents) were collected. A large number of Humboldt and Pinto series points are present in the collection. Other point types from the collection are Lake Mohave, Elko Eared, Elko Corner-notched, Northern Side-notched, and a very few Desert Side-notched and Cottonwood Triangular points.[102] Thomas Hester notes that the collection contains type artifacts from all prehistoric periods except one. Rose Spring and Eastgate series points are absent, suggesting a gap in occupation in late prehistoric times.[103]

In 1969 a survey party from the University of Oregon Museum of Natural History conducted a small reconnaissance of Coyote Lake, apparently unaware of Butler's work. Nine sites were located around the lake and artifacts were collected from these sites. No identification of the artifacts was made in the report.[104] In 1974 John Fagan and Garry Sage reported collecting a Windust type point from the south shore of Alvord Lake.[105]

The first major archaeological work in the Alvord Valley was conducted in the winter of 1974. The Bureau of Land Management contracted a preliminary archaeological reconnaissance of a large share of the valley to Thomas Newman at Portland State University. The field work and report was executed by Robert Bogue, William Cannon, Ruth McGilvra and Roger Wiggin.[106] The objective was to determine the archaeological value of the area. No systematic survey design was used, since only minimal funds were provided. Areas that were most likely to contain archaeological sites were surveyed. An attempt was made to sample various portions of the valley.

Eighteen site areas were located and artifact collections were made from each. One site area appeared to be particularly important. Of forty-four point fragments, more than thirty were basal fragments of large lanceolate or shouldered forms. Convex, concave, and square bases were represented. They resemble Windust, Milnesand, Black Rock Concave Base, and Plainview point types, all of which are typologically ancient.[107]

In September of 1975 the Bureau of Land Management contracted an intensive survey of the same 180 square mile area of the Alvord Valley to the University of Oregon.[108] A stratified random sample design was used to select which parcels would be surveyed. The area was divided into seven zones based on elevation and vegetation types. A sample of approximately sixty-one square miles was randomly selected to be intensively surveyed.

In addition, twenty man-days were reserved for surveying high probability locations outside the random sample area.

Two hundred and twenty-four archaeological sites were discovered. A total of sixty-five square miles were intensively surveyed, amounting to about one-third of the project area. The 33 percent sample lends a high degree of confidence to predicted density figures as well as giving extremely good information on site distribution patterns. Site density was figured for each zone, and the number of undiscovered sites for each zone was predicted. A total of 211 diagnostic projectile points were collected. Of these, about half (102), were from isolated finds. The remainder fifty-four sites were dated. Using typological cross-dating, a general chronology was established for the area, representing about 12,000 years of human occupation.

A correlation of projectile point ages and the elevations at which they occurred was used to infer the age of ancient beach lines and describe the temporal sequence in which the Pleistocene Lake receded. It was found that the lake had already dropped below 4,050 feet after the time when fluted and Haskett/Lake Mohave specimens were in use (12,000-8,000 years ago). It dropped below 4,020 feet sometime between 10,500 and 8,000 years ago. Another interesting result was that early point types are generally absent above 4,100 feet. These higher elevations were dominated by late point types, indicating an increased use of the uplands after 3,000 years ago.

geothermal energy. Prior to the drilling of temperature gradient holes for this exploration the drill locations and any access roads must be inspected for cultural values. In September 1975 Michael Southard checked eleven drill locations and their access roads.[109] No significant cultural materials were noted at these sites. In June 1976 R. F. Hauck and L. Harmon inspected eighteen drill locations and three access roads.[110] None were found to be located on archaeological sites although two of the proposed access roads were rerouted to avoid approaching the vicinity of known archaeological sites. One new archaeological site was discovered and reported. In August 1977 Harmon and A. Nielson returned to the Alvord Desert to inspect six potential drill locations and associated access roads.[111] Due to the presence of cultural materials, one drill location was cancelled and another moved. Two new archaeological sites were discovered and recorded. Since 1977 numerous drill locations have been checked by the Bureau of Land Management's District Archaeologist. Some locations have been moved or cancelled to avoid impacting cultural values. No new archaeological sites have been discovered.

The Malheur Basin/Owyhee Uplands area includes the part of southeastern Oregon to the east of the Harney Area. There are two major river systems in this area; the Malheur River and the Owyhee River. Unlike the Harney Basin rivers, the Malheur and Owyhee drain to the Pacific Ocean and, therefore, have received salmon runs. The runs were an important natural resource prehistorically, and the aboriginal occupants travelled great distances to harvest the salmon. It is known that the Harney Basin Paiute fished

along the Malheur River.[112] The Owyhee River headwaters extend through southeastern Oregon, southwestern Idaho, and into northern Nevada. The tributaries join at Three Forks, Oregon, forming the main stem of the Owyhee River. Along much of its length, the Owyhee has cut a deep canyon that is often more than 1,000 feet deep. The Owyhee region was occupied ethnographically by both the Northern Paiute and the Shoshone. There appears to have been considerable mixing of Shoshone and Paiute peoples in the area of the Owyhee, with no firmly established territories.[113]

Little archaeological research has been conducted in the Malheur/Owyhee area. The first major research was reported by Luther Cressman in 1937.[114] He noted significant archaeological sites near the Owyhee River. In particular, he described the numerous petroglyph designs found at Hole-in-the-Ground on the lower Owyhee River.

In 1948 Douglas Osborne of the Smithsonian Institution River Basins Survey, conducted a survey at the proposed Bully Creek Reservoir, west of Vale, Oregon.[115] He discovered three small sites at this time. In 1961 David L. Cole resurveyed Bully Creek Reservoir and found another two sites.[116] The reservoir was again surveyed in 1964 by Thomas Newman.[117] Five additional sites were discovered. Newman excavated six sites at the reservoir. He felt they were all of recent age (within the last 1,000 years) and that they were flaking stations and hunting camps.

John Wells excavated a small cave three miles northeast of Juntura in 1957.[118] The cave is located above the Malheur River and contained only a small sample of artifacts.

In 1965 Richard P. Hubbard, accompanied by students from Oregon State University, surveyed and excavated some sites in the Owyhee areas of Oregon and Idaho.[119] Thirteen archaeological sites were discovered, only three of which were located in Oregon. All three were rockshelters. One was located on Rattlesnake Creek (35 ML6) and two on the West Little Fork of the Owyhee River (35 ML 7 & 35 ML 8).

Site #35 ML 6 was actually two associated rockshelters which were excavated separately. This site yielded numerous artifacts. Artifact totals are: 50 projectile points, 28 projectile point fragments, 72 worked flakes, 1,137 unworked flakes, 4 scrapers, 4 knives, 2 drills, 10 choppers, 17 wooden sticks or pegs, 9 fragments of string, 2 coiled basketry fragments, 21 twined basketry fragments, 2 matts, 1 deer skin pouch, 10 sagebrush bark ropes, 7 worked bone and shell pieces, and 452 bone specimens. Two radiocarbon dates were taken. The matt was only 150 years old at the most. The charcoal yielded a date of A.D. 1210 or 740 years old.

The rockshelters on the West Little Fork of the Owyhee River had been partially dug by amateurs. Site #35 ML 7 had no discernable stratigraphy. It yielded 5 projectile points, 10 point fragments, 12 worked bird bones, 56 shell

fragments, and 159 bone specimens. Site #35 ML 8 was also unstratified. It contained 1 projectile point, 3 knives, 3 pounders, 50 cores and flakes, and 16 bone specimens.

Coyote Flat, a pluvial lakebed located on the boundary between the Harney Area and the Malheur/Owyhee area, was researched by Robert Butler in 1970 (see section on the Alvord Desert).[120] John Fagan investigated 34 spring sites in Southeastern Oregon in 1974 (see Harney Basin section).[121] Five of these sites were located on the boundary between the Harney Area and the Malheur/Owyhee area. Four of them were in the Sheepshead Mountains and one was near Turnbull Lake. In 1974 Edward Long excavated a site west of Vale, Oregon, on the Moore Ranch.[122] Many projectile points and milling stones were collected from the site, but no analysis was reported.

The most significant archaeological research that has been done along the Owyhee River occurred in 1975, when the University of Oregon excavated Dirty Sham Rockshelter.[123] It is located on Antelope Creek a short distance above Three Forks, Oregon. Twenty-two radiocarbon dates were used to bracket six cultural zones in the deposits. The cave was occupied from 9,500 years ago to 5,900 years ago. It was apparently abandoned at that time for 3,200 years. The cave was reoccupied 2,700 years ago, continuing until just 400 years ago.

The lithics (stone artifacts), basketry, and sandles from the deposits indicate that the site's cultural affinities are with the Northern Great

Basin.[124] Analysis of human coprolites (feces) indicate that the occupants exploited the plant and animal resources found in the moist canyon bottoms.[125] The dietary evidence suggests a summer occupation of the rockshelter with some indications of use during the fall. Pole-and-thatch structures found in the more recent deposits suggest a longer season of usage, perhaps extending through the winter, may have occurred at this time.

Analysis of the mammalian fauna supports two alternative paleoclimatic reconstructions.[126] One, based upon the number of identified elements per taxon, suggests a sequence of climate similar to that proposed by Antevs. The other is based upon the minimum number of individuals per taxon. This reconstruction suggests that only one major climatic change occurred during the last 10,000 years, involving a shift to decreased effective precipitation at about 7,000 years ago. There is yet no clear choice between the two paleoclimatic reconstructions.

In the spring of 1975 the U.S. Bureau of Land Management contracted a preliminary survey of the Vale Known Geothermal Resource Area to George N. Ruebelmann.[127] This area of two and one-eighth square miles is located at and to the south of Vale, Oregon. While the land is adjacent to the Malheur River, it is, for the most part, upland areas rather than river bottom land. The survey recorded a total of eleven archaeological sites, all of which appeared to be hunting camps or quarries.

In 1975 a follow-up survey of the Vale KGRA was contracted to Joanne M. Mack by the U.S. Bureau of Land Management.128/ She recorded eight archaeological sites in the area. They included a small campsite, five quarry sites, and two rockshelters. The absence of intensively occupied campsites is probably due to the lack of permanent water sources in the area.

Mark Plew conducted an inventory survey in the Camas Creek drainage of south-central Owyhee County, Idaho in 1975.129/ The survey was contracted by the Bureau of Land Management. A total of 151 sites werelocated. Sixty-six of the sites were along or near the creek, 65 sites were on the rim or high escarpment above the creek, and 20 sites were located on benches or terraces above the creek. Surprisingly, few sites were associated with springs, seeps or dry lakes. Four of the sites were test excavated using meter square pits.

The temporal span of projectile points from Camas Creek suggests a time span of 5,000 years ago to the Historic Period. Wilson Butte Plain pottery was present. Generally, Camas Creek appears to have been used repeatedly for short periods for harvesting camas and other plant foods; for communal hunting, as indicated by the presence of antelope drive lanes; and for the procurement of raw materials for the production of stone tools.

In 1974 the Owyhee River from Crooked Creek to the upper end of the Owyhee Reservoir was declared a Wild and Scenic River by the State of Oregon. Two years later the Bureau of Land Management Archaeologist, Reg Pullen,

conducted an inventory of the cultural resources of this area.[130] He recorded 99 archaeological sites and classified them as follows: 14 open sites with varying degrees of stratification, 34 lithic manufacturing stations, 28 open campsites with surficial deposition, 15 utilized rock-shelters, and 8 petroglyph and pictorgraph stations. Thirty-four projectile point forms were observed on the survey. The most typical form resembled the Elko-eared and side-notched forms.

Northwestern Nevada is located directly south of the Harney Area. It was occupied by the Northern Paiute before the historic era. The environment is very similar to the south end of the Harney Area.

The earliest archaeological research in northwestern Nevada was done by Robert F. Heizer in 1940. He excavated a small cave located on Massacre Lake in Long Valley just 28 kilometers south of the Oregon line.[131] The cave was 3 X 4.3 meters in size and occupation had centered around a firepit just inside the entrance. Beside the firepit was a buried cache containing a small twined basket and a sagebrush bark bag wrapped in several thicknesses of matting. The cave also contained other basketry specimens, some cordage and wood objects, and bone and stone tools.

In 1966 C. William Clewlow, Jr. and Richard Cowan led a survey party into the Black Rock Desert. Seven large surface sites were surface collected, yielding a total of 288 projectile points and 82 Great Basin Transverse Points

(crescents).[132] This latter fact is an outstanding feature of the collection. No stratified sites were located, but on the basis of typological cross-dating Clewlow suggests that man entered the area after 9,700 years ago. This is a very conservative age estimate, since the Western Pluvial Lakes Tradition is well represented in the collection and is generally considered to have much greater antiquity.

The area appears to have been almost continuously occupied except possibly during the Altithermal. Points diagnostic of great antiquity include Black Rock concave base, Clovis, Borax Lake fluted, Lind Coulee, "Milnesand - like," and Great Basin Transverse types. Later types include Northern Side-notched, Pinto, Humboldt, Rose Spring, Eastgate, and Gunther Barbed points. Point types indicative of the late prehistoric period, such as Desert Side-notched and Cottonwood, are surprisingly absent from the collection. Thomas Hester notes that the greater share of the projectile points are attributable to the Western Pluvial Lakes Tradition.[133]

In 1972 Richard Cowan published the results of an excavation at Barrel Springs quarry workshop site in the Black Rock Desert. The site was characterized largely by Elko series points. The occurance of two Rose Spring-Eastgate series points suggests that occupation of the site may have continued as late as 1,300 years ago (A.D. 700).[134]

In 1967 Robert L. Stephenson and Kent Wilkinson conducted an archaeological survey of five valleys, including Paradise Valley.[135] Paradise Valley is

located to the east of the Black Rock Desert between the Santa Rosa Range on the west and Table Mountain on the east. A total of 37 sites were discovered in Paradise Valley. Two of these were petroglyph sites and the remainder were surface sites. Most of the sites were adjacent to minor water sources, but rarely were griding stones present. This suggests intermittent and temporary occupations.

A total of 345 artifacts were collected. This included 114 projectile points, 4 drills, 15 stone slivers, 117 blanks, 4 chopping tools, 19 core tools, 5 manos, 4 milling stones, 1 pecked stone, 1 striated stone, 55 scrapers, and 6 blades. Included in the projectile points were the following: 11 Desert Side-notch, 22 Elko Corner-notch, 11 Elko Eared, 29 Humboldt Concave Base, 4 Pinto, 10 Eastgate, 5 lanceolate, eight Cottonwood, 4 leaf-shaped, and 2 bipoints. The point types suggest an occupation of the area beginning around 6,000 years ago and continuing until about 500 years ago (A.D. 1500).[136]

Thomas Layton began research in northwestern Nevada in 1965. He continued his work for the next five years, eventually developing a regional chronology for the High Rock Country.[137] The High Rock Country is the area just north of the Black Rock Desert and south of the Nevada State line.

In 1965 Layton excavated Smokey Creek Cave. The cave was 35 feet long and 20 feet wide at the mouth. There were approximately four feet of

moist, unstratified midden deposit in the cave. A total of 104 projectile points were recovered. Forty-six percent of these were Elko series points. Just below the cave was an area containing a widely dispersed scatter of surface materials. This site was called Calico Site. An uncontrolled sample yielded 55 projectile points, half of which were from the Parman series.

Three sites were test excavated in 1967. Little Smokey Shelter is located about four miles northwest of Smokey Creek Cave. It is 70 feet wide at the mouth and 25 feet long. It contained about four feet of moist midden deposit. Seventeen projectile points were recovered, 14 of which are typologically post-Altithermal.

Swallow Marsh Shelter had been almost completely looted. Two test pits were excavated in the five-foot deep midden deposit in front of the cave. A total of 51 projectile points were recovered. Twenty-one of these were from the Elko series and thirteen from the Rose Spring and Eastgate series.

The last site to be excavated in 1967 was Silent Snake Springs. It was a large, open midden deposit located at the mouth of a canyon. The excavation recovered 73 projectile points, 4 drills, 2 manos, 7 milling stone fragments, and 2 bone awls. The site yielded a single radio-carbon date of 5,300 $\pm$ 380 years ago. This site appears to have been occupied right after the thermal maximum of the Altithermal climatic period. It is the only evidence of

Altithermal occupation that Layton found in the High Rock Country.

In 1968 Layton excavated one site and surface collected several others. Hanging Rock Shelter contained stratified deposits. The cultural materials were recovered from only the upper 36 inches. The basal deposits in the site are called the Yellow Stratum and are dated between about 10,000 and 8,000 years ago. This stratum lacks milling stones. The overlaying stratum, the Suborganic Stratum, marks the beginning of intense occupation of the site. It is dated between about 8,000 to 2,000 years ago. This stratum contains milling stones. Ground stem and lanceolate projectile points forms predominate in the Yellow Stratum (Black Rock Concave Base, Humboldt, Cougar Mountain, and Lake Parman). Notched, triangular forms predominate in the Suborganic Stratum (Elko and Pinto Series). Obsidian hydration analyses of artifacts from the Suborganic Stratum suggest a period of abandonment which Layton equates with the thermal maximum of the Altithermal.

The Organic Stratum overlays the Suborganic Stratum and contained perishables, shells, and lithic artifacts. Desert Side-notch and Cottonwood series point types predominate. Dates for the occupation of this stratum are based on typological cross-dating of point types and on correlations of shell ornaments with the central California sequence. The site was apparently abandoned between about A.D. 200 and A.D. 1300. The Organic Stratum dates from the beginning of the Christian Era to about A.D. 1920.

Aboriginal occupation of the site ended about A.D. 1918. The deposits were capped by the "manure Statum" which contained artifacts of European manufacture.

A total of 378 projectile points were recovered from Hanging Rock Shelter. Also recovered were 94 knives, 13 drills, 7 manos, 25 milling stones, 10 bone or antler tools, 14 shell ornaments, 1 atlatl weight, 1 pipe fragment, 10 clay pieces, 5 basketry fragments, 38 pieces of cordage, and 135 items of European manufacture. A single radio-carbon date of 3,140 $\pm$ 120 years ago was termed by Layton "meaningless".

Layton surface collected four localities around a playa called Lake Parman. Seventy-three tools were recovered, of which 61 are projectile points. Points with square and tongue-shaped stems were abundant. Seed grinding implements were absent from the sites. Layton suggests that the area was most intensely occupied towards the end of the Western Pluvial Lakes Tradition, just prior to the final drying up of the lakes and marshes (about 8,000 years ago).

In 1973 Layton excavated Last Supper Cave.[138] The cave is located on Hell Creek. It is 35 feet wide at the mouth and 70 feet long. The deposits contained five strata, but the two basal strata were unoccupied or non-cultural. The cultural deposits begin with the Shell Stratum. It contained dowel-shaped, edge-ground, stemmed points including Cougar Mountain

and Parman series types. No milling stones were present. A radio-carbon date on shells yielded a date of 9,045 ± 365 years ago and 1,075 ± 180 years ago.

The surface materials at Last Supper Cave represent the final breakdown of traditional aboringinal subsistence patterns. Three, roughly circular, loose stone enclosures ranging from eight to 12 feet in diameter were mapped. These were probably sleeping areas that were originally filled with grass beds and matting. The surface of the cave was littered with the butchered and cooked remains of domestic horses and cows as well as an antelope. Blood-stained stakes for pegging out hides were scattered with the bones. The pegs had been cut with a metal blade. The butchering of these animals was one of the last activities of the Indians at this site and is the reason for its name.

Last Supper Cave was 60 percent excavated in 1973. A total of 3,761 catalogued artifacts and four pollen columns were recovered. Forty-three radio-carbon samples were collected.

Synthesis of Layton's research has resulted in a regional chronology for the area's prehistory (Figure 19). The period of Earliest Times is diagnosed by the presence of Western Clovis Points. Layton gives no beginning date for this period. The most ancient dated human occupations in North America are from southern Idaho at Wilson Butte Cave (15,000 ± 800 B.P. and

Earliest Times (? to ca. 10,000) B.P.)

*Western Clovis Point

Western Pluvial Lakes Tradition

Parman Phase (ca. 10,000 - ca. 8,000 B.P.)
*Parman Series Points
*Cougar Mountain Point
*Black Rock Concave Base Point
*Great Basin Transverse Point

Transition Period

Calico Phase (ca. 8,000 - ca. 7,000 B.P.)
Humboldt #4a. Point
*Humboldt #1 and #3a. Points
Abandonment (ca. 7,000 - ca. 6,000 B.P.)

Desert Culture Tradition

Silent Snake Phase (ca. 6,000 - ca. 3,500 B.P.)

*Silent Snake and Bare Creek Series Points
Willow Leaf Shape Point
*Humboldt #2 and #3 Points
Humboldt #4 Point
*Northern Side - Notch Point

Smokey Creek Phase (ca. 3,500 B.P. - ca. A.D. 500)
Rose Spring and Eastgate Series Points
*Elko Series Points
Hanging Rock Phase (ca. A.D. 1300 - ca. A.D. 1843)
*Desert Side - Notch Series Points
*Cottonwood Series Points

Historic Period

Last Supper Phase (ca. A.D. 1843 - A.D. 1920)
European manufactured artifacts

Figure 19. Nevada High Rock Country Chronology (Layton 1970)
*Most diagnostic of phase

14,500 ± 500 B.P.) and at Jaguar Cave (11,900 ± 250 B.P.), and from southeastern Oregon at Fort Rock Cave (13,200 ± 720 B.P.).

The Western Pluvial Lakes Tradition is represented in the High Rock Country by Layton's Parman Phase. This is a period of intensive occupation of the lakesides. The pluvial lakes have receded to shallow lakes and extensive marshlands. Diagnostic of the period are Parman series, Cougar Mountain, Black Rock Concave Base, and Great Basin Transverse (crescents) point types. Milling stones are absent from the Parman Phase.

A Transitional Period follows the Parman phase. The transition begins with the Calico Phase, which is diagnosed by the presence of Layton's Humboldt #1 and #3a point types. Milling stones are still absent from the assemblage. By this time the pluvial lakes have disappeared. The subsistence pattern has broadened to include intensive use of the uplands for the first time. In the High Rock Country intensive occupation of Hanging Rock Shelter and Calico Site begin in the Calico Phase. The Transitional Period includes and ends with an apparent abandonment of the region during the thermal maximum of the Altithermal climatic period.

The Desert Culture Tradition includes three of Layton's regional phases. It begins with some reoccupation of the area after the thermal maximum in the Silent Snake Phase. Diagnostic projectile points are the Silent Snake and Bare Creek series, Layton's Humboldt #2 and #3 types, and the Northern Side-notch

type, Manos and milling stones appears in the deposits for the first time. Silent Snake Springs site is the only Altithermal occupation in the High Rock Country found by Layton. It was intensively occupied during this phase. The faunal remains at the site were 99 percent artiodactyls, of which 85 percent were mountain sheep. The hunting of large game was apparently an important part of the subsistence pattern.

The Desert Culture Tradition continues in the Smokey Creek Phase. Elko series points are diagnostic of this phase. By this time the climate was considerably more mild and moist. The area was completely reoccupied. This is the most intense period of human occupation during the area's pre-history. Smokey Creek Cave, Little Smokey Shelter, and Swallow Marsh Shelter are all intensely occupied during the Smokey Creek Phase. The bow and arrow was introduced late in the phase and there is a gradual shift in hunting from artiodactyls to rodents.

The final phase of the Desert Culture Tradition is the Hanging Rock Phase. Desert Side-notch and Cottonwood series points are diagnostic of this phase. The proto-historic Northern Paiute arrive in the High Rock Country during the Hanging Rock Phase.

The Historic Period is uniquely documented by Layton's research of Last Supper Cave. The Last Supper Phase marks the break-down of traditional subsistence patterns. Caucasians began to occupy and expell the Paiutes

from their traditional camps. Game bacame more scarce and the Indians often found themselves in competition with cattle for the seeds and edible plants. The rustling and consumption of domestic horses and cattle was resorted to by the few remaining non-reservation Paiute.

FOOTNOTES

1. Jennings, Jesse D., 1968. Prehistory of North America. San Francisco: McGraw-Hill, p. 32-37 & 11-14.

2. Bernal, I., 1964. Concluding remarks. In Prehistorical Man in the New World, ed. Jennings and Norbeck. University of Chicago Press, p. 560.

3. American archaeologists take their degrees in anthropology. Anthropology, loosely defined as the study of man and culture, includes four related subjects: linguistics, archaeology, society, and physical man.

4. Eggan, Fred and Warren L. d'Azevedo, 1966. Introduction. In the Current Status of Anthropological Research in the Great Basin, ed. d'Azevedo, Davis, Fowler, and Stuttles. Desert Research Institute Publications in the Social Sciences No. 1, p. XVI.

5. Swanson, Earl H., 1966. The Geographic foundations of the desert culture. In the Current Status of Anthropological Research in the Great Basin, eds. d'Azevedo, Davis, Fowler, and Suttles. Desert Research Institute Publications in the Social Sciences No. 1, p.138.

6. Davis, Wilbur A., 1966. Theoretical problems in western prehistory In The Current Status of Anthropological Research in the Great Basin, ed. d'Azevedo, Davis, Fowler, and Suttles. Desert Research Institute Publications in the Social Sciences No. 1, p. 148.

7. Jennings, Op. cit., p. 136.

8. Rozaire, Charles E., 1963. Lake-side cultural specializations in the Great Basin. Nevada State Museum Anthropological Papers No. 9.

9. Davis, Op. cit.

10. Aikens, C. Melvin, 1978a. Archaeology of the Great Basin. Annual Review of Anthroplogy, p. 83-83.

11. Jennings, Op. cit, p. 135.

12. Antevs, Ernst, 1948. Climatic changes and pre-white man. Bulletin of The University of Utah 38.

13. Mehringer, Peter, 1977. Great Basin late quarternary environments and chronology. In Models and Great Basin Prehistory: A Symposium, Desert Research Institute Publications in the Social Sciences No. 12, page. 113.

14. Ibid, p. 114.

15. Aikens, C. Melvin, 1978b. The far west. In Ancient Native Americans, ed. Jennings, p. 163.

16. O'Connell, James and Paul Hayward, 1972. Altithermal and medithermal human adaptations in Surprise Valley, northeast California. In Great Basin Cultural Ecology: A Symposium, ed. Don Fowler. Desert Research Institute Publications in the Social Sciences No. 8, p. 226

17. Cressman, Luther S., 1973. An approach to the study of far western North American prehistory: early man. University of Oregon Museum of Natural History Bulletin No. 20.

18. Ibid., p. 6.

19. Ibid.

20. Martin, Paul S. 1976. Pleistocene overkill. Natural History, p. 32-38.

21. Cressman, Luther S., Howel Williams, and Alex D. Kriegerr, 1940. Early man in Oregon. University of Oregon Monographs, Studies in Anthropology No. 3.

22. Cressman, Luther S., 1943. Results of recent archaeological research in the northern Great Basin region of south-central Oregon. Proceedings of the American Philosophical Society, Vol. 86, No. 2, p. 236-246.

23. Cressman, Luther S., 1942. Archaeological researches in the northern Great Basin. Carnegie Institution of Washington, Publication 538, p. 136.

24. Personal communication - Bill Cannon.

25. Jennings, Op. cit., p. 65

26. Aikens, 1978a., Op. cit., p. 74.

27. Wilke, Philip, Thomas King and Robert Bettinger, 1974. Ancient hunters of the far west. Nevada Archaeological Survey Research Paper No. 5, p. 86.

28. Tuohy, Donald, 1974. A comparative study of late paleo-Indian manifestations in the western Great Basin. Nevada Archaeological Survey Research Paper No. 6., p. 97.

29. Cressman, Luther S., 1936. Archaeological survey of the Guano Valley region in southeastern Oregon. University of Oregon Monographs, Studies in Anthropology No. 1.

30. Butler, B. Robert, 1970. A surface collection from Coyote Flat, southeastern Oregon. Tebiwa Vol. 13, No. 1.

31. Strong, Emory, 1969. Stone Age in the Great Basin. Portland: Binfords and Mort.

32. Mack, Joanne M., 1975a. Cultural resources inventory of the potential Glass Buttes geothermal lease area, Lake, Harney, and Deschutes Counties, Oregon. Final report to the United States Bureau of Land Management. Copy on file, University of Oregon Department of Anthropology.

33. Pettigrew, Richard M., 1975. Cultural resources survey in the Alvord Basin southeastern Oregon. Final Report to the United States Bureau of Land Management. Copy on file, University of Oregon Department of Anthropology.

34. Aikens, 1978a., Op. cit., p. 75.

35. Fowler, Catherine S., 1972. Some ecological clues to Proto-Numic homelands. In Great Basin Cultural Ecology: A Symposium, ed. Don Fowler. Desert Research Institute Publications in the Social Sciences No. 8, p. 106.

36. Lamb, Sydney M., 1958. Linguistic prehistory in the Great Basin. International Journal of American Linguistics No. 24, p. 99.

37. Madsen, David B., 1975. Dating Paiute-Shoshoni expansion in the Great Basin. American Antiquity 40 (1), p. 82-86.

38. Aikens, 1978b., Op. cit. p. 149.

39. Ibid.

40. Bedwell, Stephen F., 1973. Fort Rock Basin Prehistory and Environment. Eugene: University of Oregon Books.

41. Hester, Thomas Roy, 1973. Chronological orderings of Great Basin prehistory. Contributions of the University of California Archaeological Research Facility No. 17.

42. Hauck, F.R. and D.G. Weder, 1978. Archaeological reconnaissance in the May Lake locality of Lake County, Oregon. Report to the United States Bureau of Land Management. Copy on file, Archaeological-Environment Research Corporation, Salt Lake City.

43. O'Connell, James, 1971. The archaeology and cultural ecology of Surprise Valley, northeast California. Ph. D. dissertation, University of California, Berkeley.

44. Cressman, Howel, Williams, and Krieger, Op. cit, p. 16.

45. Bedwell, Op. cit.

46. Heizer, Robert F. and Martin A. Baumhoff, 1970. Big Game hunters in the Great Basin: a critical review of the evidence. Contributions of the University of California Archaeological Research Facility No. 7, p. 1-12.

47. Meighan, Clement W., 1959. Varities of prehistoric culture in the Great Basin region. Masterkey, 33, p. 46-58.

48. Rozaire, Op. cit., p. 72-77.

49. Bedwell, Stephen F., 1970. Prehistory and environment of the Pluvial Fort Rock Lake area of south-central Oregon, Ph. D. dissertation, University of Oregon Department of Anthropology.

50. Rozaire, Op. cit., p. 73.

51. Rozaire, Op. cit.

52. Ibid.

53. Bedwell, Op. cit.

54. Tadlock, W. Louis, 1966. Certain crecentic stone objects as a time marker in the western United States. American Antiquity 31(5), p. 662-675.

55. Hester, Op. cit., p. 65

56. Bedwell, Op. cit.

57. Ibid.

58. Weide, Margaret L., 1968. Cultural ecology of lakeside adaptation in the western Great Basin. Ph.D. dissertation, Department of Anthropology, University of California, Los Angeles.

59. Aikens, C. Melvin, 1970. Hogup Cave. University of Utah Anthropological Papers No. 93.

60. Hester, Op. cit.

61. Cressman, 1942, Op. cit., p. 91.

62. Ibid.; also Cressman, Howel, Williams, and Krieger, Op. cit.

63. Bedwell, 1970, Op. cit.

64. Layton, Thomas, 1972. Lithic chronology in theFort Rock Valley, Oregon. Tebiwa 15 (2).

65. Cole, David L., 1975a. Survey for archaeological sites in the Fort Rock Valley. Report to the Bureau of LandManagement, Lakeview District. Copy on file, Lakeview.

66. Schoenberg, Kenneth M., 1976. Phase I: Survey of the Bonneville Power Administration Celilo-Sylmar transmission line right-of-way for non-renewable resources. Report to the Bonneville Power Administration. Copy on file, Department of Anthropology, University of Oregon, Eugene.

67. Gibson, Eric C. and Lee Spencer, 1977. Fossil Lake archaeological survey, Fossil Lake ORV temporary closure area. Report to the Bureau of Land Management, Lakeview, Oregon. Copy on file, Lakeview.

68. Minor, Rick, and Lee Spencer, 1977. Site of a probable camelid kill at Fossil Lake, Oregon. Final report to the United States Bureau of Land Management, Lakeview, Oregon. Copy on file, University of Oregon Department of Anthropology.

69. Fagan, John L., 1974. Altithermal occupation of spring sites in the northern Great Basin. University of Oregon Anthropological Papers No. 6.

70. Cressman, 1940, Op.cit.

71. Cressman, Luther S., 1966. Man in association with extinct fauna in the Great Basin. American Antiquity 31: 886-867.

72. Cressman, Luther S., 1951. Western prehistory in the light of carbon-14 dating. Southwestern Journal of Anthropology 7: 289-313.

73. Hester, Op. cit., p. 79.

74. Bunten, Hugh, Jr., 1977. Cultural resource inventory report on the proposed Sycan Marsh land exchange. Report to the Fremont National Forest, Lakeview, Oregon. Copy on file, Lakeview.

75. Aikens, C. Melvin and Rick Minor, 1977. The archaeology of Coffeepot Flat, south-central Oregon. University of Oregon Anthropological Papers No. 11.

76. Cole, David L., 1975b. Survey of the Hogback Summit-Pikes Ranch section of the Lakeview-Burns highway for historical, archaeological and prehistorical sites.

Cole, David L. and Richard M. Pettigrew, 1976. An archaeological survey of the proposed improvement of the Pikes Ranch-Valley Falls section, North Unit, of the Lakeview-Burns highway, Lake County, Oregon.

Pettigrew, Richard M. and David L. Cole, 1977a. Archaeological survey of the Abert Lake rock production project, Lakeview-Burns highway, Lake County, Oregon.

77. Cannon, William J., 1977. Cultural resources survey of the west shore of Lake Abert. Report on file, U.S. Bureau of Land Management, Lakeview District.

78. Cressman, Luther S., 1944. New information on south-central Oregon atlatls. Southwest Museum Masterkey 18(6): 311-312.

79. Weide, 1968, Op. cit.

80. Weide, Margaret L., 1974. North Warner subsistence network: a prehistoric band territory. Nevada Archaeological Survey Research Paper 5: 62-79.

81. Fagan, John L., Op. cit.

82. Mack, Joanne M., 1975b. Cultural resources survey in the southern Warner Valley, Oregon. Report to the U.S. Bureau of Land Management. Copy on file, University of Oregon Department of Anthropology.

83. Cressman, 1936, Op. cit.

84. Hester, Op. cit, P. 75.

85. Atherton, John H., 1966. Prehistoric manufacturing sites at North American stone quarries. Masters Thesis, University of Oregon Department of Anthropology.

86. Fagan, Op. cit.

87. Newman, Thomas M. and Robert Bogue, Caroline Carley, Ruth McGilvra and Donald Moretty, 1974. Archaeological reconnaissance of the Malheur National Wildlife Refuge, Harney County, Oregon. Report to the United States Department of Fish and Wildlife. Copy on file, Portland State University Department of Anthropology.

88. Fagan, John and Garry L. Sage, 1974. New Windust sites in Oregon. Tebina, Vol. 16, No. 2, p. 68-71.

89. Mack, 1975a., Op. cit.

90. Pettigrew, Richard M. and David L. Cole, 1977b. Archaeological survey of the proposed improvement of the Peterson Ranch - Lake County line section of the Lakeview-Burns highway, Harney County, Oregon. Report to the Oregon State Department of Transportation Highway Division. Copy on file, University of Oregon Museum of Natural History.

91. Pettigrew, Richard M., 1979. Archaeological investigations at Stinkingwater Pass, Harney County, Oregon. University of Oregon Anthropological Papers No. 15.

92. Ibid.

93. Gehr, Keith D. and Thomas M. Newman, 1978. Preliminary note on the late Pleistocene geomorphology and archaeology of the Harney Basin, Oregon. The ORE BIN, Vol. 40, No. 10.

94. Cressman, 1936, Op. cit.

95. Cressman, Howel, Williams, and Krieger, Op. cit.; also: Cressman, 1942, Op. cit.

96. Snyder, C.T., George Hardman, and F.F. Zdenek, 1964. Pleistocene lakes in the Great Basin, United States Geological Services Map.

97. Hester, Op cit., p. 79.

98. Personal communication, Jim Wilde.

99. Aikens, C. Melvin, Donald Grayson, and Peter Mehringer, 1978a. Malheur Basin-Steens Mountain prehistory project. National Science Foundation grant proposal manuscript. Copy on file, University of Washington Anthropology Department, Seattle.

100. Aikens, C. Melvin, Donald Grayson, and Peter Mehringer, 1978b. Preliminary report on the Steens Mountain project to the U.S. Bureau of Land Management, Burns District. Copy on file, U.S. Bureau of Land Management, Burns District.

101. Butler, Op. cit.

102. Hester, Op. cit.

103. Ibid.

104. Southard, Michael, 1969. Coyote Lake survey. Report to the U.S. Bureau of Land Management. Copy on file, Museum of Natural History, University of Oregon.

105. Fagan and Sage, Op. cit., p. 68.

106. Newman, Thomas, Robert Bogue, William Cannon, Ruth McGilvra and Robert Wiggin, 1974. Alvord Desert potential geothermal resources area cultural resource survey. Report to the U.S. Bureau of Land Management. Copy on file, Portland State University Department of Anthropology.

107. Ibid., p. 113 and 42.

108. Pettigrew, Richard, 1975. Op. cit.

109. Southard, Michael, 1975. Cultural resources survey of Al-Aquitaine test well locations in the Alvord Desert geothermal project area, southeastern Oregon. Report to the U.S. Bureau of Land Management. Copy on file, University of Oregon Department of Anthropology, Eugene.

110. Hauck, F.R. and L. Harman, 1976. Archaeological reconnaissance report, June 28, 1976. Report to the U.S. Bureau of Land Management. Copy on file, Archaeological-Environmental Research Corporation, Salt Lake.

111. Harmon, L. and A. Nielson, 1977. Archaeological Reconnaissance Report, August 10, 1977. Report to the U.S. Bureau of Land Management. Copy on file, Archaeological-Environmental Research Corporation, Salt Lake.

112. Whiting, Beatrice Blyth, 1950. Paiute sorcery. Viking Fund Publications No. 15.

113. Pullen, Reg, 1976. Archaeological survey of the Owyhee River Canyon. Report to the U.S. Bureau of Land Management. Copy on fiel, U.S. Bureau of Land Management, Vale District.

114. Cressman, Luther S., 1937. Petroglyphs of Oregon. University of Oregon Studies in Anthropology No. 2.

115. Osborne, Douglas, 1948. Appraisal of the archaeological resources of Mason Reservoir, Baker County; Ryan Creek Reservoir, Umatilla County; and Bully Creek Reservoir, Malheur County, Oregon. Smithsonian Institution River Basin Surveys, Columbia Basin Project Appraisal. On file, Museum of Natural History, University of Oregon.

116. Cole, David L., 1961. Survey of the Bully Creek Reservoir, October 31-November 1, 1961. Report to the National Park Service. Copy on file, Museum of Natural History, University of Oregon.

117. Newman, Thomas M., 1964. Excavations in the Bully Creek Reservoir area near Vale, Oregon. Report to the National Park Service. Copy on file, Portland State University.

118. Wells, John E., 1959. The archaeology of Juntura Cave, Site M. 2 Masters Thesis, University of Oregon, Department of Anthropology.

119. Hubbard, Richard P., 1967. Preliminary report on the archaeological survey of the Owyhee uplands in Idaho and Oregon, 1965-1967. On file, Department of Anthropology, Oregon State University.

120. Butler, Op. cit.

121. Fagan, Op. cit.

122. Long, Edward T. (ed.), 1974. The Moore Ranch Dig: A Preliminary Report. Treasure Valley Community College Press, Ontario.

123. Aikens, C. Melvin, David L. Cole, and Robert Stuckenrath, 1977. Excavations at Dirty Shame Rockshelter, southeastern Oregon. Tebiwa No. 4.

124. Hanes, Richard C., 1977. Lithic tools of the Dirty Shame Rockshelter: typology and distribution. Tebiwa No. 6.

125. Adovasio, J.K., R. Andrews, and R. Carlisle, 1977. Perishable industries from Dirty Shame Rockshelter. Tebiwa No. 7.

126. Hall, H. J., 1977. A paleoscatological study of diet and disease at Dirty Shame Rockshelter, southeastern Oregon. Tebiwa No. 8.

126. Grayson, Donald K., 1977. Paleoclimatic implications of the Dirty Shame Rockshelter mammalian fauna. Tebiwa No. 9.

127. Ruebelmann, George N., 1975. Archaeological assessment of the Vale KGRA Supplement. Report to the U.S. Bureau of Land Management. Copy on file, U.S. Bureau of Land Management, Vale District.

128. Mack, Joanne M., 1975c. Cultural resources survey of the Vale KGRA, Malheur County, Oregon. Report to the U.S. Bureau of Land Management. Copy on file, University of Oregon, Department of Anthropology.

129. Plew, Mark G., 1976. An archaeological inventory survey of the Camas Creek drainage basin, Owyhee County, Idaho. Report to the U.S. Bureau of Land Management. Copy on file Boise State University, Department of Societal and Urban Studies.

130. Pullen Op. cit.

131. Heizer, Robert F., 1942. Massacre Lake Cave, Tule Lake Cave and Shore sites. Carnegie Institute of Washington Publication 538.

132. Clewlow, C. William, 1968. Surface archaeology in the Black Rock Desert, Nevada. Report of the University of California Archaeological Survey No. 73: 1-93.

133. Hester, Op. cit., p.99

134. Ibid. p. 101.

135. Stephenson, Robert L. and Kent Wilkinson, 1969. Archaeological reconnaissance of the Winnemucca - Battle Mountain area of Nevada. Nevada Archeological Survey Research Papers No. 1.

136. Hester, Op. cit., p. 101.

137. Layton, Thomas Nutter, 1970. High Rock archaeology: an interpretation of the prehistory of the northwestern Great Basin. Ph.D. dissertation, Harvard University, Cambridge, Massachusetts.

138. Layton, Thomas Nutter, 1973. The Nevada-High Rock ecological project Last Supper Cave expedition. Preliminary Report of the 1973 Season submitted to the Nevada State Museum, Carson City, Nevada.

ETHNOGRAPHY OF THE HARNEY AREA

The people native to the Harney Area were Northern Paiute. They spoke a language that belonged to the Uto-Aztecan family of languages. This group of related languages extended from the Northern Great Basin south through Mexico and into Middle America (Figure 20). It is thought to have been a single language about 5,000 years ago. There is no agreement for the exact location of its homeland, but it may have been in the western portion of the Southwest or southern California.

The presence of only three closely related languages (Northern Paiute, Shoshone-Comanche, and Southern Paiute-Ute) in the Great Basin suggests a relatively recent occupation of the area. Most linguists agree that a northeastward expansion of these Uto-Aztecan speakers from the southwest into the Great Basin occurred about one thousand years ago. Prior to that time the people occupying the large part of the Great Basin are unaccounted for linguistically.

The Northern Paiute occupied an extensive territory containing approximately 78,000 square miles of desert land, shaped roughly like an isoseles triangle. They occupied all of southeastern Oregon and northwestern Nevada, a substantial portion of southwestern Idaho, and a small part of California east of the Sierra Nevada's (Figure 21). Neighbors, to their immediate north and west, were speakers of Penutian languages, a completely different family

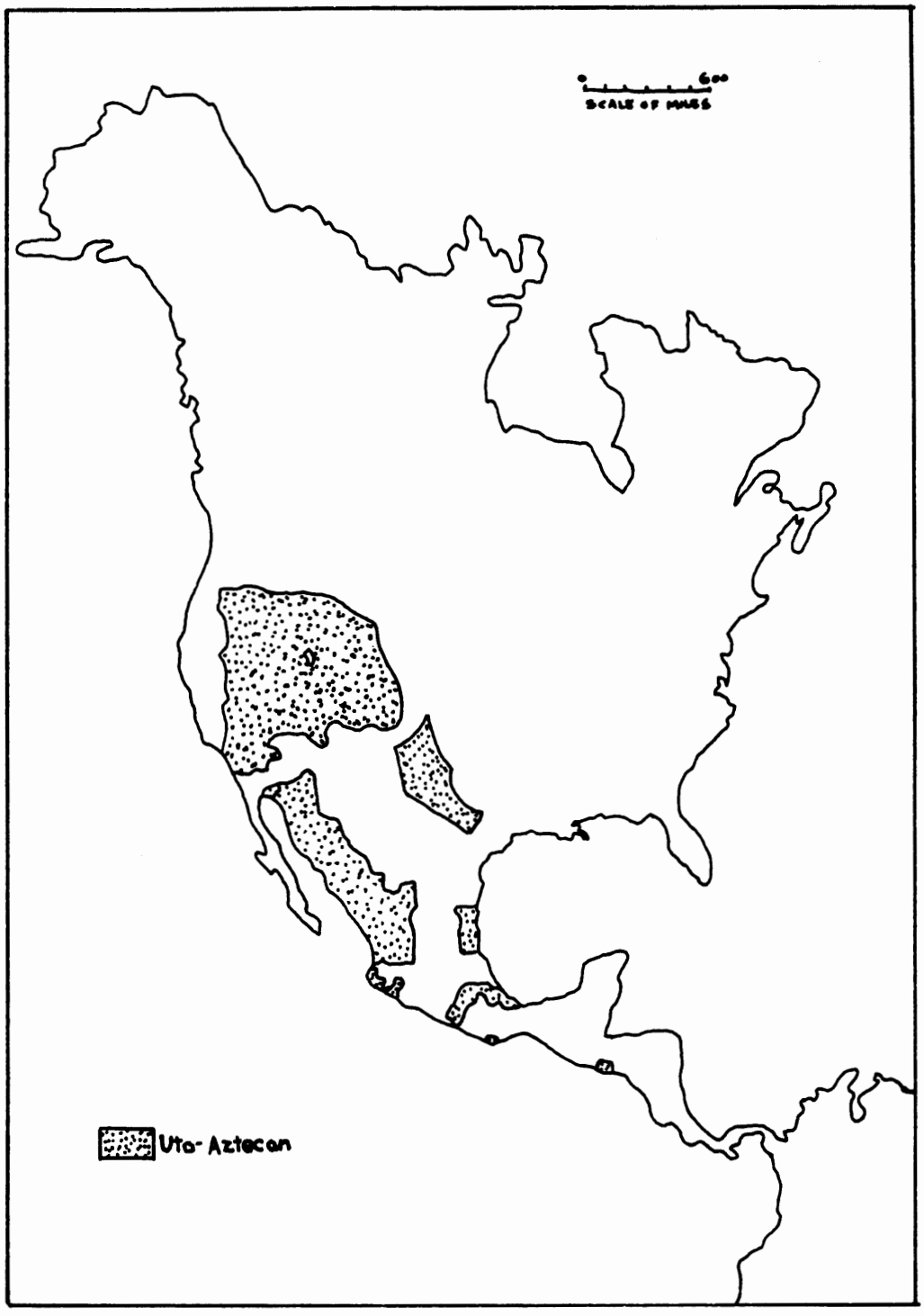


Figure 20. Uto-Aztecan language family (from Driver).

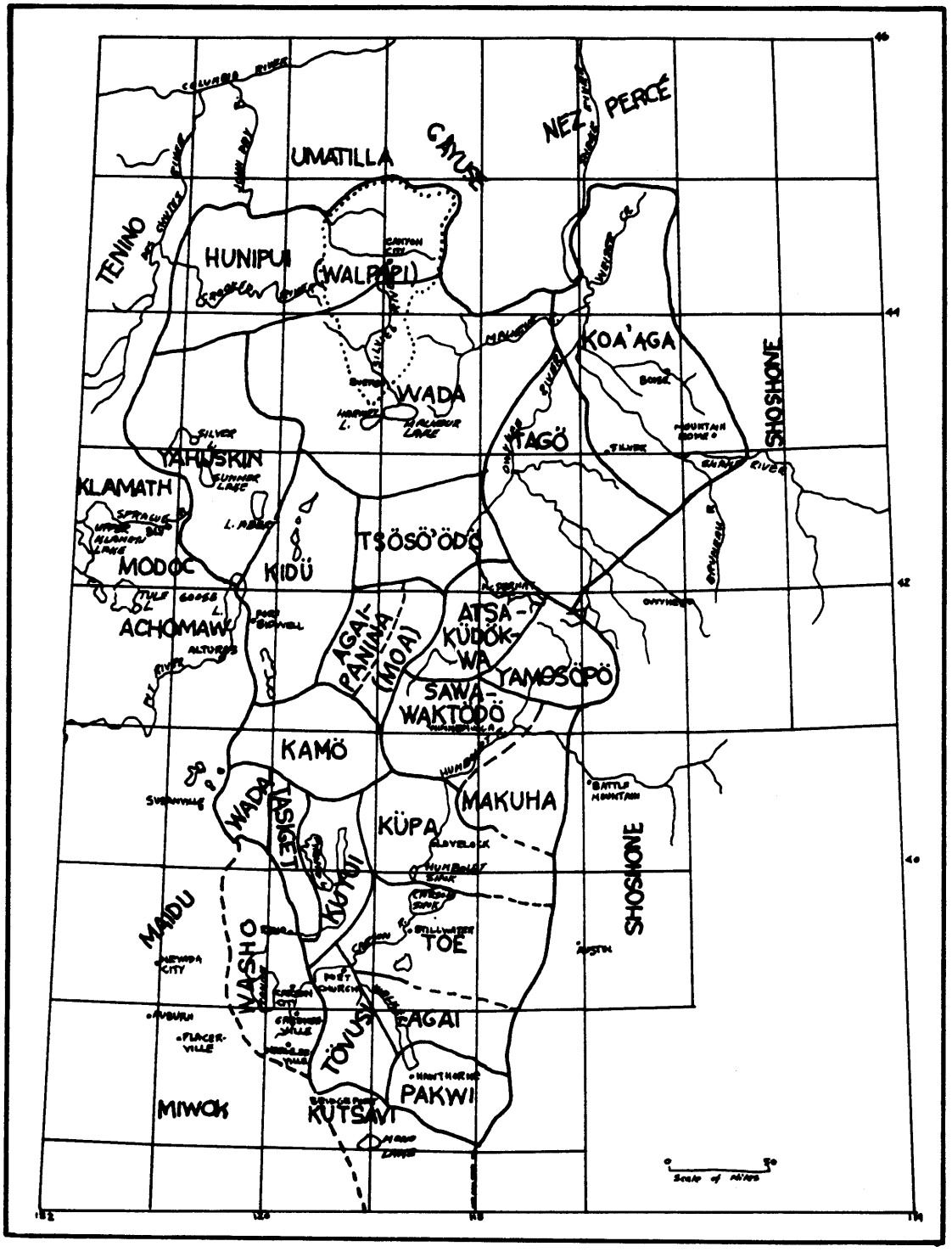


Figure 21. Northern paiute bands (Steward)

of languages. On the east were the Shoshone who spoke a language closely related to Northern Paiute.

The range of the Northern Paiute has remained basically unchanged up to the mid-nineteenth century. The Teit-Berreman hypothesis that early post-contact Salish migrations were caused by a westward movement of Sahaptins when mounted "Snake" Indians appropriated their eastern lands is unproven. To the contrary, historic sources and native testimony document that the Northern Paiute were without horses or arms until after 1850. Conflict between the Sahaptins (Umatilla, Cayuse, and Nez Perce) and Shoshonean speakers (Paiute, Shoshone, and Bannock) was traditional yet no attempt was ever made by either to conquer territory. After the turn of the century the situation changed somewhat.

Acquiring arms and ammunition at the Columbia River trading posts, the Sahaptins gained a decided military advantage over the Paiutes. By the 1830's and 1840's they had expanded south into the Blue Mountains and the Grande Ronde Valley. Motivation for expansion was supplied by the encroachment of whites in the Columbia River Valley where game was being depleted along the river. Sahaptin presence was also noted in some of the John Day River Valleys, but the Paiute were never expelled from these areas. These valleys continued to be exploited jointly until the removal of the Indians to reservations.

Socio/political organization among the Northern Paiute was extremely fluid

and informal. Tribal unity was based on common territory, culture and language. The Paiute recognized themselves collectively as Nomo (people), as opposed to neighboring tribes. Boundaries with neighboring tribes were pictured exactly while inter-band boundaries were vague.

There were twenty-one separate bands of Northern Paiutes (Figure 21). Each band was named, usually for some natural resource in the area, and the band names were known by most other bands. In the Harney Area two bands were located, the Wadatoka (wada seed eaters, Suaeda Depressa) and the Tsoso 'odo tuviwarai (cold dwellers). The territorial boundaries of the Wadatoka encompassed about 5,250 square miles. The general boundary line ran from near Hampton, Oregon northeast for about 100 miles to the south end of the Blue Mountains; then east along the mountains for about 60 miles, almost to the Snake River; then southeast along Cedar Mountain about 110 miles, to the north end of Steens Mountain; then west about 50 miles, to the desert east of Juniper Mountain; then north along the west side of Wagontire Mountain 65 miles, to Hampton. The territorial boundaries of the Tsoso 'odo tuviwarai were defined by neighboring bands to encompass about 2,600 square miles of desert and desert mountain east of Steens Mountain.

The total population for the Northern Paiute has been estimated at having been between 7,000 and 10,000. Band population figures were variable depending largely on environmental differences. For the two bands in the

Harney Area, no figures are available. Density figures vary from one person for 33 square miles to one person for 2 square miles, averaging out to approximately one person for 10 square miles for the entire Northern Paiute area. Density figures are somewhat misleading for semi-nomadic peoples. Each Paiute band had an area of reasonably productive land surrounded by often extensive, more arid lands of low productivity. This backcountry was not exclusively claimed and probably not heavily utilized.

Bands were loosely organized around a territory and to some degree around a "leader" or spokesman. Family ties to a particular band were weak. Loose, bilateral kinship provided affinal and consanguineal ties with other bands. If a family didn't like a particular leader or some members of a band, they simply moved off on their own or joined up with a relative's band. Fission would result not only from disagreements, but also because of a food shortage in one area or a food abundance in another. This flexible social structure permitted the most effective exploitation of resources in a marginal region.

Band leaders were recognized, but their authority was extremely limited and dependent upon voluntary compliance. Leadership was informal; a man was followed only because he had good advice, good ideas, or was particularly capable at some task. The position was not permanent, exclusive, or inherited. It developed out of daily life as a man became more respected for his abilities and judgement. Leadership was occasional and often task specific. Leaders

might be called upon to settle disputes or lead a special hunt. Politics of the band were basically democratic and decisions were likely to be made by informal council of the members.

The basic socio/economic unit was the family. The family group has been called the nuclear family by some authors and the kin and clique group by others. While the nuclear family was certainly central to this unit, any variety of relatives and/or close friends might be part of the family. Actual composition of the group was so variable that specific relatives likely to be included cannot be enumerated. Furthermore, insistence on calling the unit the nuclear family has some basis in that they were the core members while others were free to attach themselves elsewhere and frequently did so. The family or household was a self-sufficient unti economically, socially, and politically. Ecvept for certain times of the year, it functioned independently of other such groups. The average household was about six persons, although ten members was not uncommon.

Marriage was very definitely an economic alliance. Both sexes cooperated in providing subsistence, and neither could afford independence for long without being seriously deprived. Although divorce was frequent, remarriage was essential to survival. Most adults were married to one individual or another for most of their lives.

A variety of marriage customs were practiced. The sororate (marriage to a deceased or barren wife's sister) and the livirate (marriage to a brother's

widow) were both practiced. Sororal polygyny (sisters as multiple wives) and fraternal polyandry (brothers as multiple husbands) both occurred, although the latter often amounted to nothing more than a temporary extension of sex privileges to a brother. No definite system of exogamy (marrying outside a set kin group) existed amount the Paiute. In summation it may be said that no marriage prescriptions or prohibitions were universal among the Northern Paiute except the prohibition of incest.

There was no prescribed rule of post-marital residence among the Paiute although initial matrilocal residence was most common. The reasons for this could be many. Presence of the maternal grandmother at the birth of the first child was preferred. Another explanation could be found in the detailed knowledge of the land required of women for plant gathering purposes. Categorization of post-marital residence is complicated by a number of cariables, e.g. abundance or scarcity of resources, the number and composition of either partners family, convenience, location of favorite relatives, etc.

The Northern Paiute, like other North American Indians, was extremely religious. Religion was a part of their every day life. Technicially their religion would be termed animism, which is defined as the belief in spirit beings. The natural and supernatural world were not distinguished but were regarded as two facets of reality. A host of gods, ghosts and miscellaneous spirits were involved in the lives of men. Gods were powerful beings recognized by all adults, ghosts were soul of the deceased, and the other spirits were those

that had not attained the rank of gods nor formerly lived as humans. All three were believed to have emotions, intelligence, and personalities. They could be benevolent, malevolent,or simply unconcerned in their dealings with man. All were susceptible to human pleadings and prayers.

Integral to the practice of their beliefs was the obtaining of impersonal supernatural power. Individuals who had obtained such power would be defined as shamens. Through the use of this power they could control events that effected the welfare of people such as cure sickness, cause sickness, effect a successful hunt, influence gods, ghosts and spirits, and divine the unknown.

Supernatural power could be sought or unsought. Power was obtained through dreams when a spirit would appear and instruct the individual in ritual, songs, and materials to use. It was common for an individual to refuse or resist "the call" initially. Becoming a shamen entailed a lot of responsibility, but provided few rewards. In fact if a shamen's curing went wrong he might be accused of bad magic and killed for his troubles. Shamens could be of either sex.

A great deal of a shamen's efforts were spent on hunting rites and sickness. While hunting was economically unreliable in the region, it was apparently highly valued for other reasons. Curiously, plant gathering which was the main source of food received little attention from shamanistic rites. Sickness may have been prevalent among the Paiute due to dietary deficiencies and parasites.

Private property among the Northern Paiute was virtually non-existent. Individuals owned personal items that they carried with them or cached such as tools, baskets and charms, but individual ownership of natural resources or real estate was unknown. A few exceptions to this occurred, particularly in the southern areas where pinyon pine trees were sometimes owned. The right to use resources was based on the idea that the first to arrive were the first to be served. Even property that had been developed somewhat, such as antelope corrals or campsites, once abandoned could be freely used by anyone.

The notion of communal ownership is not clear. While some authors claim it did not exist, many sources state that band territories were claimed. Non-band members could freely obtain food within a claimed area without asking permission, but it was understood that they were visitors. It seems that this may have been an incipient concept of communal ownership.

The Northern Paiute subsisted on both hunting and plant gathering as did all other Great Basin peoples. While general practices are much the same throughout the basin, regional variation in exactly what and how it was hunted or gathered resulted from minor environmental differences. Recent research by M. Couture enumerates many of the plants utilized by the Harney Area Paiute (Figure 22). Generally all basin groups gathered seeds, roots, greens, berries, and insects. They all hunted game, but only two animals (rabbit and wildcat) are reported to have been eaten by all Great Basin peoples. Fishing was

Native Term	Scientific Name	Common Name
SEEDS		
Waada	Sueda depressa	Seepweed; seablite
Aki	Wyethia sp.	Mule's Ears
Waiya	Elymus cinerus	
Tyba	Pinus ponderosa	Pine nuts
A'ca	Sisymbrium sophia	Tansy-mustard
Guuha	Mentzelia sp.	Blazing Star; Stickleaf
Kusiaki	Balsamorhiza hookeri	Rock balsamroot; sunflower
Suunuu	Atriplex sp.	Saltbrush
ROOTS		
Toiby	Typha latifolia	Cattail; bulrush
Yampa	Perideridia bolanderi	Wild carrot; Indian carrot
Kyyga	Allium sp.	Wild onion
Kanici	Lewisia rediviva	Bitterroot
Cuga	Lomatium cous	Biscuit root
Cana-cuga or Haapi	Lomatium canbyi	Biscuit root
Paazigo	Camassia quamash	Blue camas; sweet camas
Koogi	Calochortus sp.	Mariposa or Sego Lily
Saiby	Scirpus validus	Bulrush; tule
BERRIES		
Pokopisa or tooisabui	Prunus virginiana demissa	Chokecherry
A'capui	Ribes cereum	Squaw currant
Pokopisa	Ribes aureum	Golden currant
Native term unknown	Shepherdia argenta	Buckberry
To'kabonoma	Vaccinium membranaceum	Black huckleberry; blueberry
Waapi	Juniperus occidentalis	Juniper berries
GREENS		
Kyyga	Allium sp.	Wild onion
Native term unknown	Lomatium nudicaule	Wild celery
MISCELLANEOUS		
Woda's Kwasiba	Achillea millefolium	Yarrow - used medicinally
Sigupi	Chrysothamnus nauseosus	Rabbitbrush - sap use as chewing gum
Sawabi	Artemisia tridentata	Sagebrush - used medicinally
Puihibamo	Nicotiana attenuata	Tobacco - smoked for pleasure or used medicinally
Pakwana	Mentha arvensis	Wild mint - used as a tea or occasionally boiled leaves eaten with sugar

Figure 22. Some of the plants gathered by the Harney area paiute (from Couture, 1978).

practiced only by those groups that had access to streams, rivers or lakes. Basically all species of fish that occurred were consumed.

The family was the subsistence unit. Women did most of the gathering of plants as well as preparation of the food. Men did the hunting of large game. Small game such as rodents and insects were hunted or gathered by both men and women. Most popular were ground hogs, prairie dogs, squirrels, jackrabbits, porcupines and beaver. Hunting was complimentary to harvesting. Vegetal foods provided as much as 80% of the diet; yet game provided other essentials, particularly skins for clothing.

Most hunting was done on an individual or family basis. Collective hunts depended on environmental conditions when an abundance of animals existed. Rabbit drives and antelope hunts were the most common communal hunts. Rabbit drives were usually undertaken in the fall or winter. One or more long nets (100 to 200 feet) were strung on bushes and sticks. A number of people drove the rabbits toward the nets. Men stationed along the nets clubbed the rabbits when they bacame entangled in the nets.

Communal antelope hunts usually occurred in the fall or winter also. Two methods are described. In the fall of the year a group of hunters would station themselves along an escape route, while a couple of other hunters would frighten the antelope to run towards the concealed hunters. In the winter when antelope collected in large herds they were driven into brush corrals, where they were killed.

Deer were occasionally hunted in groups. The most common method was a fire surround. Several hunters set small fires in a circle around a herd of deer. The fire was forced inwards decreasing the diameter of the circle and trapping the deer. This was practiced during late summer. Deer were also driven towards concealed hunters.

Elk were hunted either individually or in small groups in the forest to the north of Burns. Mountain sheep, once plentiful in the region, were frequently hunted. Bison had once been plentiful in the Harney Basin and were hunted by the Paiute. They had disappeared from the area prior to Peter Skene Ogden's arrival in 1826. Buffalo or bison skeletons were noted at Malheur Lake by Ogden.

The Harney Area Paiute fished for salmon in the Malheur and John Day rivers. Native trout were caught in many of the local creeks. They used both a fish trap and a combination trap and dam.

The fish trap was a willow "sock-like" basket, five to eight feet long and three feet in diameter at the mouth. It was held by a woman while the men and boys frightened the fish towards her. When a fish entered the trap she caught it and killed it with a club. A burden basket on her back stored the catch.

The fish trap and dam combination is described in Kelly (1932).

> The same informant described a combined dam and trap which was used about Malheur. A frame was made by placing two rows of sticks together lean-to fashion with the series of projecting tops on the down-stream side somewhat lower than on the other.

> The lower part of the frame was filled solid with willows and formed an effective dam. Fish proceeding upstream tried to jump the barrier and were caught in the trough formed at the top by the projecting crossed rods. This dam was called wa'ma and was used for fish that were pretty big, but not salmon.

Almost all Great Basin peoples suffered periodically from starvation. This usually occurred in late winter or early spring when cached food supplies were exhausted and before spring resources were available. Periodic droughts or particularly hard winters also caused shortages. In times of shortages the least industrious families were the first to want. Attempts to secure food from other band members were often circumvented. Such harsh treatment of hungry neighbors was reserved for those too lazy to provide for themselves. Industrious individuals who suffered as a result of food loss or who were physically incapable usually received aid from relatives. During prolonged periods of starvation the old or infirm were abandoned.

Most Northern Paiute bands followed a seasonal migratory route that took advantage of various micro-environments within their range. The only sedentary period was during the winter when subsistence was primarily from stored foods. Even then, while some families remained the entire winter in one site, most had at least two camps. When supplies were exhausted at one camp they moved on to the next.

Little research has been done on the actual migratory pattern of the Harney Basin band known as the Wada'tika. The following excerpt from B.

Whiting's Paiute Sorcery generally describes the pattern and some of the foods utilized. No data is available for the band located east of the Steens, the Tsoso'odo tuviwarai.

> In the old days, the entire life of the Paiutes was oriented around the quest for food, which was none too plentiful. Around the first of May, when the first green shoots broke through the ground, they left their winter camps and went to those places where they knew the early edible roots abounded. Nigger Flat, in the northeast corner of the valley, was the most frequented place and many families camped there. While the women dug epos (Yapa, Carum oreganum Wats), bu.ni'bui (Lomatium macrocarpium C and R), tsuga and yapa for storage, the men visited the Drewsey River to set up and repair their salmon traps so that they would be ready for the spring run. When their work was over, the women moved down to the river with their skin sacks full of roots and helped the men dry salmon which they caught. When the run was over, the group broke up and families wandered off by themselves, hunting deer, sagehens, and other birds and collecting the different seeds and roots as they ripened. The first seed to ripen was the sunflower, aki and kusiaki (Balsamorihiza hooken Nutt). Later the women went to those places where atza' (Sisymbrium Sophis L.) grew in large quantities. This seed was cached for winter consumption. Most of these early plants grew well in the northern part of the valley.
>
> Around the fifteenth of July, families began to congregate at Cow Creek, about five miles east of Harney. Families from all over the valley and from the Hunibui Eater band to the north came to gather crickets. The women went out early in the morning and caught them, were back by sunrise and spent the rest of the day roasting, drying, and pounding them and putting them in bags to be cached for the winter. In the evening the men and women gathered for gossip and gambling.
>
> For the rest of the summer the families wandered off by themselves again. July was the month when ground hogs were considered to be the best. Currants and other berries were picked and eaten as they ripened. Fish were caught in the streams. Any game which was encountered was killed and eaten.

The families often wandered up toward Seneca and John Day and hunted deer in the timber. In the fall some of the families went up to Canyon City, the men to hunt elk and the women to pick huckleberries.

Around the first of September the families began to turn south to the vicinity of Malheur Lake and Saddle Butte. Everyone wanted to be on hand when the wada (Suaeda depressa var. erecta Wats.) ripened. This was one of the staple seeds and was picked in large quantities for winter consumption. Probably the largest number of people came together at this time and there were many festivities, including circle dances and games of all kinds. Other seeds were gathered at the same time or a little later: su.nu - saltbrush, tomonmi (unidentified), i'ape (Chenpodium), and wata (Chenpodium Album L.). From the lakes many people went to Crow Camp to pick chokecherries, which were made into cakes and sun-dried for winter. At this time there were also communal antelope and rabbit drives.

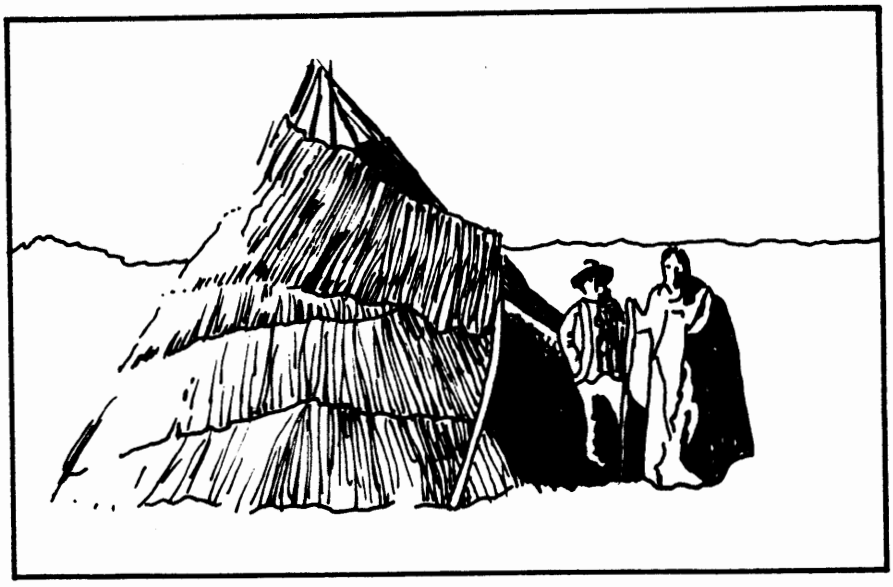
By the first of November the families started to collect their cached foods and to move into their winter camps. Sites were selected which had a spring or some other source of water, a good supply of wood, and where it was known that there was not likely to be a heavy snowfall. Most of the camps were at the foot of hills or in protected regions near the lakes. Here tule mat houses were set up. (During the summer sagebrush enclosures were the only type of structure used.)

The size of the camps ranged from three to ten households. The people who wintered in these camps did not always return to the same place and hence the personnel of the groups changed from year to year. The constituent households of a camp were sometimes related. For example, the group who used to winter at what is now the P Ranch consisted of about six households. Household 1 was made up a man and his wife, an unmarried daughter, and a divorced son and his child. Household 2 consisted of a man, his wife and children, and an unmarried brother. Household 3 consisted of a man and his wife and his two unmarried brothers and one unmarried sister. The last two households were married couples with their children. The man in Household 1 was the father of the wife in Household 3. Other than this, there does not seem to be any

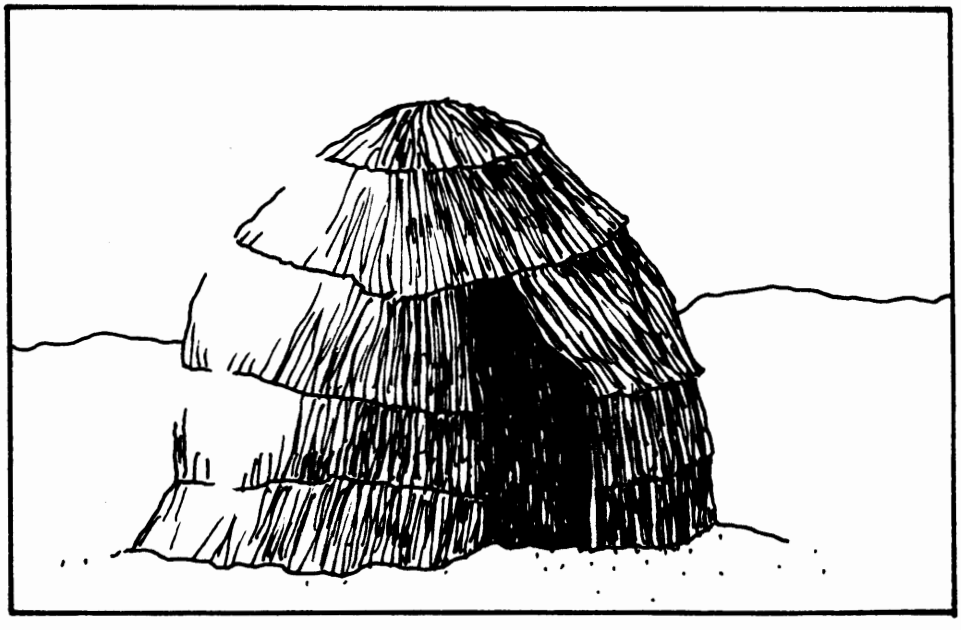
> kinship tie between the different households. In the camp at what is now Caesar's Ranch there were three households. The head of Household 1 was the brother of the head of Household 2. The sisters of these two men and their husband (they were married to the same man) made up Household 3. One brother also had two wives who were sisters. At the camp at Wright's Point there were four households. In Household 1 lived a man and his wife and two unmarried sons and one unmarried daughter. In another house (Household 2) lived a man and his wife and daughter, and next door to him (Household 3) lived his brother and his family. Household 4 consisted of a man and wife, their married daughter and her husband, and an unmarried son. Thus it would seem that the constituent households in camps were sometimes brothers and their families, sometimes brothers and sisters and their families, sometimes families with married daughters or married sons living in the household or close by, and sometimes unrelated families.
>
> Wada, tsuga, yapa, crickets, chokecherries, some dried meat and dried fish made up the winter food supply. Rabbits were occassionally snared; sometimes nets were put out in the snow and communal drives were held. Often the food supplies ran very low before spring. Sometimes one camp group ran out of food and moved over and joined another group which still had supplies. Food was always shared, even with people from other bands. One famine was recorded when large groups of Tagu Eaters came over from the Jordan Valley and ate Wada Eaters' food. When there were horses they were usually eaten before the end of winter.

The material culture of the Paiutes was extremely simple and limited, being adapted for a semi-nomadic lifestyle. Furthermore, the environment was so homogeneous that raw materials with few exceptions were widely available. Many of the items were designed for temporary use, to be abandoned once they served their purpose.

The Paiute used three different types of dwellings. The winter house was a mat-covered conical or dome-shaped lodge (Figure 23). One source claims



Mat-covered conical lodge or wickiup (from Weide).



Dome-shaped lodge

Figure 23. Winter Houses of the Northern Paiute.

that the conical lodge replaced the earlier dome-shaped structure. The framework consisted of a series of willows placed in an unexcavated circle and lashed together at the top. Additional willows were attached laterally. The vertical willows did not project beyond the intersection. The diameter was approximately 12 feet, although size varied according to family size. Men constructed the framework.

The framework was shingled with a series of seven or eight overlapping mats of tule or grass. This work was done by the women. Tule mats were made by "sewing" them together with twine. Grass mats were twined. A smoke hole was left in the top of the lodge which was covered by a blanket during inclement weather. A mat door was supported by sticks along three sides so that it could be swung open. A fire was built in the center of the lodge and occupants slept around it on grass bedding.

Two very simple summer structures were used. The shade was a series of poles that supported a brush roof. The brush enclosure was simply an unroofed brush wind break (Figure 24). It was small, circular and had a fire at its center. Some were nothing more than clumps of brush planted among a circle of stones. Others were more carefully constructed, using willow supports around clumps of grass or tules, and had a swinging door. One source calls the enclosure a summer kitchen.

An additional structure used by some of the Paiute was the sweat-house. It is not known whether the Harney Area bands used this kind of structure.

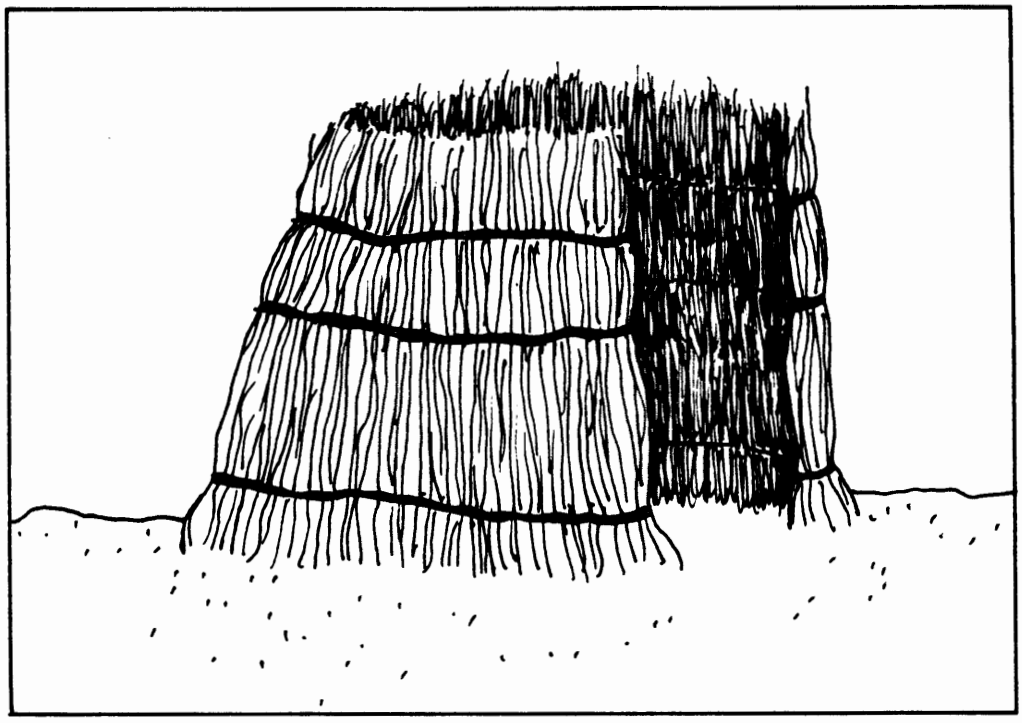


Figure 24. Brush enclosure or summer kitchen.

It was about four feet in diameter and tall enough only for sitting. Made of bent willow, it was covered with grass, brush, and perhaps an old hide or blanket. In more recent times canvas and cloth were used. Heated stones were placed inside and water applied to them. The sweat-house was used principally by men, but occassionally by women. Sweating seems to have had religious associations.

Paiute clothing was made from sagebrush bark or buckskin. The buckskin type clothing is said to have been introduced from the Plains fairly recently. Traditional clothing was made from sagebrush bark. Women wore a double apron that hung to the knees covering the front and back of the lower body. A women whose husband was a successful hunter wore a buckskin dress made from two large hides of deer or antelope, although antelope was rather thin. The dresses were decorated with dryed porcupine quills. A woman also wore a buckskin breechclout for underwear. Men wore a buckskin shirt that reached just above the knees. This was usually accompanied by a breechclout although a loin cloth was sometimes worn. Both men and women wore rabbit skin or sagebrush bark blankets in the winter.

Footwear was traditionally sagebrush bark sandals, but mocassins of deer hide were introduced from the Plains. Leggings were worn by both men and women. Two types were known. Full length leggings were attached to a belt. Knee length leggings might be tailored to fit or simply be a piece of hide wrapped around the leg and tied on. Snowshoes were worn by some Northern

Paiute bands. They were made of a round frame of Serviceberry bush wood with smaller sticks for webbing. They were tied to the foot. Women wore basket type hats or buckskins bandannas. Men wore fur caps of various designs.

The Paiutes used a variety of tools in their daily lives. Most of the traditional items were made from stone, wood, skin, bone, tule or grass. There is some evidence that Paiutes in the Harney Area had begun to make plain, fired, clay pottery. In historic times many of the native materials were substituted for with metal, glass and cloth.

Stone tools were manufactured in two manners, either by chipping or grinding. Most chipped stone items were made from obsidian although chert was frequently used. Commonly chipped tools were arrow points and knives. The latter were both hafted (mounted on a wooden handle) or unhafted. Another commonly chipped tools was the scraper, used to work hide.

Ground stone tools were principally made from basalt, often vesicular. The most common were the mano and metate, used to mill seeds and nuts. The metate was a flat slab of basalt, roughly shaped for a milling surface. It became somewhat bowled out from use. The mano was any hand sized stone suitably shaped to pound and grind the seeds on the metate. It became smooth through use. Mortors and pestles were occasionally used although it is not known whether the Paiutes deliberately fashioned them or simply took advantage of prehistoric specimens.

Mortors as well as some metate surfaces can be found on large boulders and in the bedrocks floors of caves. Two other items are worth mentioning. Shaft smoothers were small stones that became grooved from abrading arrow shafts to make them smooth and straight. Stone pipes (with wooden stems) were also made.

The esstential wooden tools were the digging stick, the fire drill, the bow, and the arrow shaft. The fire drill was made of any kind of wood, but usually tipped with sagebrush. The digging stick, used to excavate roots, was probably made of any strong wood available. Juniper was commonly used in making bows. Rose, currant, service, and arrow cane were all used for arrow shafts. Cradle board frames were made of chokecherry or willow. Two wooden musical instruments were made by the Paiutes. Elder was often used in making simple flutes. Chokecherry or juniper was used for the base of drums. Drums are a recently introduced item to Paiute culture.

Skin or hide, as previously noted, was principally used for clothing. The main exception is the arrow quiver which was made of hide. Some cords and ropes were made of hide also. Sinew was used for sewing.

Bone was used for a few items. The most important were fish hooks, awls, and needles. Awls were pointed piercing tools used in fashioning buckskin clothing. Bone scrapers for preparing hides were also used.

At least nine different "baskets" were twined or coiled by the Northern

Paiutes. The only material used for basketry was willow. Peeled but unsplit rods were used for the foundation of baskets. Split rods supplied the strands for twining or coiling. The following baskets were made: conical burden basket, mush bowl or cup, and the water jar. The water jar was made watertight by applying juniper or pine gum to the exterior.

Sagebrush bark was rolled to make two-ply string and rope. It was also used in making sandals, food storage bags, and blankets. Nets were also made from bark of an unidentified plant resembling sagebrush. True weaving, as in cloth making, was unknown to the northern Paiute, but rabbit skins were woven into blankets. A simple frame of two upright posts were used. The skins were twisted together and strung between the two posts. Sagebrush string served as the weft.

One unique item made by the Paiute is the balsa or raft. It is not known whether the Harney Area Paiute used such a craft, but it is documented for the Surprise Valley Paiute in northeastern California. A balsa was made of two large bundles of tules tied at both ends. The ends were curled up. Individual rafts were about four feet long. Larger rafts were made to hold four or five individuals. The balsa was used on lakes for hunting ducks and geese.

Prior to actual settlement of Harney County white influence was felt by the Paiutes. Encroaching white settlement on the Columbia River and in southwestern Oregon had forced most Indian tribes on to reservations by 1860.

By 1865 a number of Paiute bands had given in to white pressure and supposedly moved to the Klamath and Warm Springs Reservations. Many of them simply deserted their homeland though, and moved into the territory of Harney Area Paiutes in the vicinity of Drewsey and the headwaters of the Malheur River.

Harney County was the last part of Oregon to be settled. Not until 1867 was permanent settlement made at Camp Harney. Prior to that time the military made occasional skirmishes against the Paiutes. It was during this early period of hostility that actual chiefs developed among some Paiute bands. In response to stress these men came up with plans of action and were followed by the rest who did not know what to do. Some of the more well known chiefs were Weewa, Oites, Egan, Winimucca, Leggins, and Ochico.

Actual settlement began with John S. Devine, to the east of Steens Mountain, in 1869 and George A.Smyth, in the Harney Valley, in 1870. Other cattlemen quickly followed. Horses and cattle were both competitors for plant resources with the Indians. Furthermore, both were easy game for the Paiutes who most likely viewed the livestock as a resource to be harvested. Friction also resulted from conflicting ideas of property rights. The Paiute had no concept of land ownership and trespass; the whites,no realization of the Indian nomadic lifestyle and notion of unrestricted rights to resources. Both groups favored many of the same, well-watered and fertile sites. It is unlikely that under any circumstances the conflict of cultures could have been avoided.

In 1872 the Federal government set aside the Malheur Reservation for the various bands in the area who had been rounded up by General Howard. The Reservation encompassed approximately 2,285 square miles, including the region drained by the three forks of the Malheur River. It was bounded on the west by the Silvies River, and on the Nouth by Strawberry Butte, on the east by Castle Rock, and on the south by Malheur Lake (Couture). Twelve thousand acres of the land were considered tillable. Major Sam Parish was appointed the agent. He was extremely popular with the 800 Indians settled on the Reservation. A dam and irrigation ditch two miles long and ten feet wide was constructed by the Indians. In 1878 an agency headquarters was begun eighteen miles north of the mouth of the north fork of the Malheur in what is today called Agency Valley. Only five buildings were ever completed.

In 1876 Parish was replaced by an agent called Rinehart who immediately began to have difficulties with the Indians. Appropiations lagged and debts were incurred by the Reservation. The Paiutes charged Rinehart with harsh treatment and systematic starvation. In 1876, soon after Rinehart assumed his post, a total of 762 Indians were reported to be on the Reservation, but the greatest number of rations issued was 459. More than 300 people soon left the Reservation. Many of the Harney Area Paiutes camped on the eastern slopes of Steens Mountain.

In 1978 the Idaho Bannocks went on the warpath gathering discontented Indians as they wandered around the country. Some of the Malheur Paiutes

joined them, including chiefs Egan and Oites. Chief Winimmucca refused to participate and took his people to McDermitt. After the resolution of conflict, attempts were made to re-establish the Reservation which had been deserted by the Indians during the uprising. The army had occupied the Reservation, and when they left the property was considerably run down.

They had set fire to many of the improvements and stolen and sold the movable supplies, tools and equipment. When the army abandoned the Reservation many white settlers and stockmen encroached and squatted on the Indians' lands. Resistance to re-establishing the Reservation was strong among local settlers who felt the Indians should be dispersed to prevent future uprisings as well as to open the Reservation lands to homesteading. The rebels who had participated in the uprising were removed to the Yakima Reservation in Washington. Others were moved to the Warm Springs Reservation.

In 1879 the treaty between the Paiute Indian tribe and the U.S. Government was abrogated. In 1882 the land was returned to the State of Oregon which opened it to full-scale homesteading.

The Paiutes on the reservation, particularly the Yakima Reservation, were unhappy and began to steal away and return home. In 1883 a number had squatted on land outside of Burns, Oregon. In 1908 the government sent out a special agent to allot land to the Indians. One hundred and four grants of 160 acres were made to the Indians, but most of it was of poor quality. In The

dry-land farming boom of 1910 to 1914 twenty-seven of the Indians sold their grants.

One hundred and thirty Indians continued to inhabit the camp at Burns. No longer able to support themselves fully from hunting and gathering because so much of the country was privately owned, they turned to foraging in garbage cans and some begging. Indians took jobs on ranches, particularly to do haying. They worked as domestics in homes, and they were employed by the local brewery where the only wage they received was what they could consume of the product.

In 1924 the government supplied the Indian camp with nineteen army tents, and later built twenty small houses, a church, and a school. In 1928 the school was closed in an attempt to enter the children into public school, but white residents opposed this on the grounds that the Indians were diseased.

In 1934 or 1935 a local priest and attorney succeeded in acquiring land for the Paiutes. Under a Subsistence Homestead and Rehabilitation program, 760 acres of land north of Burns were purchased, and the Indians were moved to their present location. Homes, facilities, a meeting hall, and school were built under the same program. In 1946 the Indian children were entered into the public school system (Couture).

The Malheur Indians won a favorable judgement for their lost reservation lands in 1960. The 1,778,560 acres, with interest, were appraised at $617,827.00. This amount, minus $98,000 for expenses and attorney's fees, was paid directly

to descendants of the original inhabitants of the Reservation in 1969. Two hundred and fifty-four Burns Paiute Indians shared in the award, which amounted to $743 each. In 1968 the Burns Paiute colony received tribal status under authority of the Indian Reorganization Act of 1933. The 760 acres are held in trust for the 250 members. Only 150 of the Indians are in residence (Couture).

ENDNOTE

Sources researched for ethnographic data are:

Couture, Marilyn, 1978. Recent and contemporary foraging practices of the Harney Valley Paiute, Masters Thesis, Portland State University Portland.

Curtis, Edward, 1926. The North American Indians, Vol. 15.

Driver, Harold E., 1961. Indians of North America, University of Chicago Press.

Fowler, Don, 1966. Great Basin social organization. In The Current Status of Anthropological Research in the Great Basin; 1964. Desert Research Institute Publications in the Social Sciences No. 1.

Kelley, Isabel T., 1932. Ethnography of the Surprise Valley Paiute. University of California Publications in American Archaeology and Ethnography, Vol. 31.

Lamb, Sydney M., 1958. Linguistic prehistory in the Great Basin. International Journal of American Linguistics, Vol. 29.

Madsen, David B., 1975. Dating Paiute-Shoshoni expansion in the Great Basin. American Antiquity, Vol. 40, No. 1.

Minor, Rick and Audrey Recor, 1977. Cultural resource overview of the Willamette National Forest, western Oregon. University of Oregon Anthropological Papers, No. 12.

Park, Willard Z., 1934. Paviotso shamanism. American Anthropologist 36.

Ray, Verne and others, 1938. Tribal distributions in eastern Oregon and adjacent regions. American Anthropologist 40.

Riddell, Francis A., 1960. Honey Lake Paiute Ethnography. Nevada State Museum Anthropological Papers No. 4.

Steward, Julian H., 1938. Basin-Plateau aboriginal sociopolitical groups. Smithsonian Institute Bulletin No. 120.

Steward, Omer C., 1939. The Northern Paiute bands. University of California Anthropological Records 2:3. Berkeley.

Suphan, Robert J., n.d. Ethnological report on the Umatilla, Walla Walla, and Cayuse Indians relative to socio-political organization and land use. The Confederate Tribes of the Umatilla Reservation of Oregon v. The United States of America. Indian Claims Commission, Docket No. 264 and No. 198, Def. Ex. #18.

Wheat, Margaret, 1967. Survival Arts of the Primitive Paiute. University of Nevada Press, Reno.

Whiting, Beatrice, 1950. Paiute sorcery. Viking Fund Publications in Anthropology No. 15.

HISTORY OF THE HARNEY AREA

FOUNDING THE OREGON TERRITORY
1804-1823

The American west assumed immense proportions in 1803 when Emperor Napoleon of France sold to the United States the lands west from the Mississippi River to the Rocky Mountains. Known as the Louisiana Purchase, this action necessitated western exploration. President Thomas Jefferson was eager to explore the limits of the continent and to establish some claim to the Columbia Basin Region. Jefferson appealed to Congress that if the Missouri River proved navigable, some of the fur trade, now going almost exclusively to the British, could be diverted into American control. Furthermore, if an easy portage from the Missouri to Columbia River could be discovered, the Pacific fur trade could be captured by the Americans. Even more important, the discovery of a water route across the continent would provide the country with a much desired short-cut to China.1/

In 1804 Meriwether Lewis, the President's private secretary and a former Army officer, and William Clark, also an Army officer, were funded by the U.S. Congress to make an exploratory journey to the Pacific. They travelled up the Missouri River to its headwaters, crossed overland to the headwaters of the Columbia River, and followed it to the Pacific Ocean.2/

The journey took two years and realized no commercial consequence. The upper Missouri was not navigable and the route to the Pacific was impractical for trade. But the consciousness of the nation was fired by the adventure, and the far west became a reality in the minds of the Americans.3/

John Jacob Astor came to the Pacific northwest a successful fur trader. He had established the American Fur Company in St. Louis and owned ships that navigated the Pacific, trading furs to China for tea and spices. The British North West Fur Company had conceived the idea of opening trade in the Pacific northwest, and Astor intended to circumvent their plan. He arrived at an agreement with the Russians to purchase their furs from Alaska, since the Russians were excluded from the port of Canton.4/ Now all he needed was a Pacific port to expedite his plans. When Lewis and Clark popularized the vast Columbia River, Astor decided on the mouth of the Columbia as his port.

The Astor expedition traveled both overland and by sea. His ship, the Tonquin, sailed around Cape Horn to the Columbia while a land force of more than fifty men set out on Lewis and Clark's trail. Both contigents suffered ordeals, but the post Astoria was established near the mouth of the Columbia in 1811. While Astor was the first to arrive, he was not alone. His competitors, the North West Company, soon established posts in the new territory. In 1813 Astor conceded failure and sold his interests to the North West Company.5/

While international relations remained amiable in the Pacific Northwest, the War of 1812 erupted in the eastern United States. The conflict resulted from difficulties with Britian over seamen's rights. Land hungry farmers, eyeing

Canada's rich farmlands, demanded retribution for England's violation of American neutral rights on the high seas. America declared war, but the invasion of Canada was a failure from the start. The treaty of Ghent in 1814 barely addressed the original difficulties. It did determine national boundaries, settling on the 49th parallel between the Great Lakes and the Rockies. This resolution later weighed in America's favor during the boundary dispute in the Pacific Northwest.[6/]

When Astor retired from the northwest, the area was abandoned to the British. American claims to the Columbia Basin laid by Grey and reaffirmed by Lewis and Clark became tenuous, and American interest waned. In 1818 the two countries convened to decide the rightful occupancy of the region. The area became known as the Oregon Territory. Both countries recognized the Continental Divide as its eastern boundary. America, in treaty with Spain, had set its southern national boundary at the 42nd parallel, but Britian recognized no southern boundary. To the north the region was bound by Russia and Alaska. It was decided to retain the Oregon Territory in joint occupancy for ten years, as both countries had reasonable claim to it. Thus, the stage was set to focus special significance on all future activity in the region concerning both countries.

FOOTNOTES

1. David Lavender, Land of Giants; The Drive to the Pacific Northwest 1750-1950, 1958, p. 64.

2. Ibid., p. 65-76.

3. Ibid.

4. Ibid., p. 83.

5. E.E. Rich, ed., "Peter Skene Ogden's Snake Country Journals 1824-25 and 1825-26, "The Hudson's Bay Record Society, 1950, p. xxviii to xx.

6. George Dangerfield, "Mr. Madison's War", The American Story. ed by E. S. Miers, 1956.

EXPLORATION: THE FUR TRADE IN SOUTHEASTERN OREGON 1823-1835

The fur trade boomed in the early 1800's when the demand for furs rose in Europe. This demand was a result of changing fashion. The fashion item most responsible was the top hat made of felt, as the principal ingredient of felt was a beaver fur.1/ American and British trappers progressed westward as they exploited new fur regions. In 1821 the two major British fur companies, the North West Company and the Hudson's Bay Company, merged to form a formidable army of trappers.2/ This army advanced in full force on the Oregon Territory in 1823.

Concurrently, the politics of empire-building made the British and Americans competitors for control of the Oregon Territory. In the convention of 1818 the British had been willing to cede all the territory south of the Columbia River. The Americans wanted a westward extension of the boundary set as a result of the War of 1812, which was the 49th parallel. The area of contention was the land situated between the Columbia River and the 49th parallel. This parcel was valued for its navigable waters, the Columbia River and the harbors of the Juan de Fuca Strait.3/

The British recognized the progression of the American frontier; fur trappers opened new territory with permanent posts and settlement followed.

They hoped to arrest this progression by creating a fur desert in the path of the American trappers. The Snake River drainage was the most accessable part of the Columbia basin to the Americans and became the key to control.4/

The Snake country had been trapped regularly since 1818 by Donald McKenzie in the employ of the North West Company. In 1823 Alexander Ross led a moderately successful expedition into the area for Hudson's Bay Company. The following year Ross was replaced by Peter Skene Ogden as Chief Trader in charge of the Snake country expeditions.

Ogden came to his post with instructions to trap the Snake River and its tributaries until the area would no longer produce a profitable harvest. He made six expeditions during the years 1824 through 1830. On his second expedition (1825-1826), Ogden sent Antone Sylvaille with five men to trap in the Malheur and Harney areas. Ogden himself went through the Harney Basin on his third (1826-1827) and his fifth (1828-1829) expeditions (Figure 25 and 26). Out of a total of six expeditions, three penetrated the Harney Area.

On his second expedition Ogden travelled from the Deschutes River east to the Snake River, passing through what is today Dayville, John Day, and Prairie City.5/ From the Snake River he sent Antone Sylvaille with five men to trap the Owyhee River (then known as the Sandwich Island River) and the Malheur River (called the Unfortunate River). Sylvaille left February 21, 1826. His approximate route was up the Owyhee and then over the Malheur River. From the headwaters of the Malheur he crossed to the Silvies River, which he

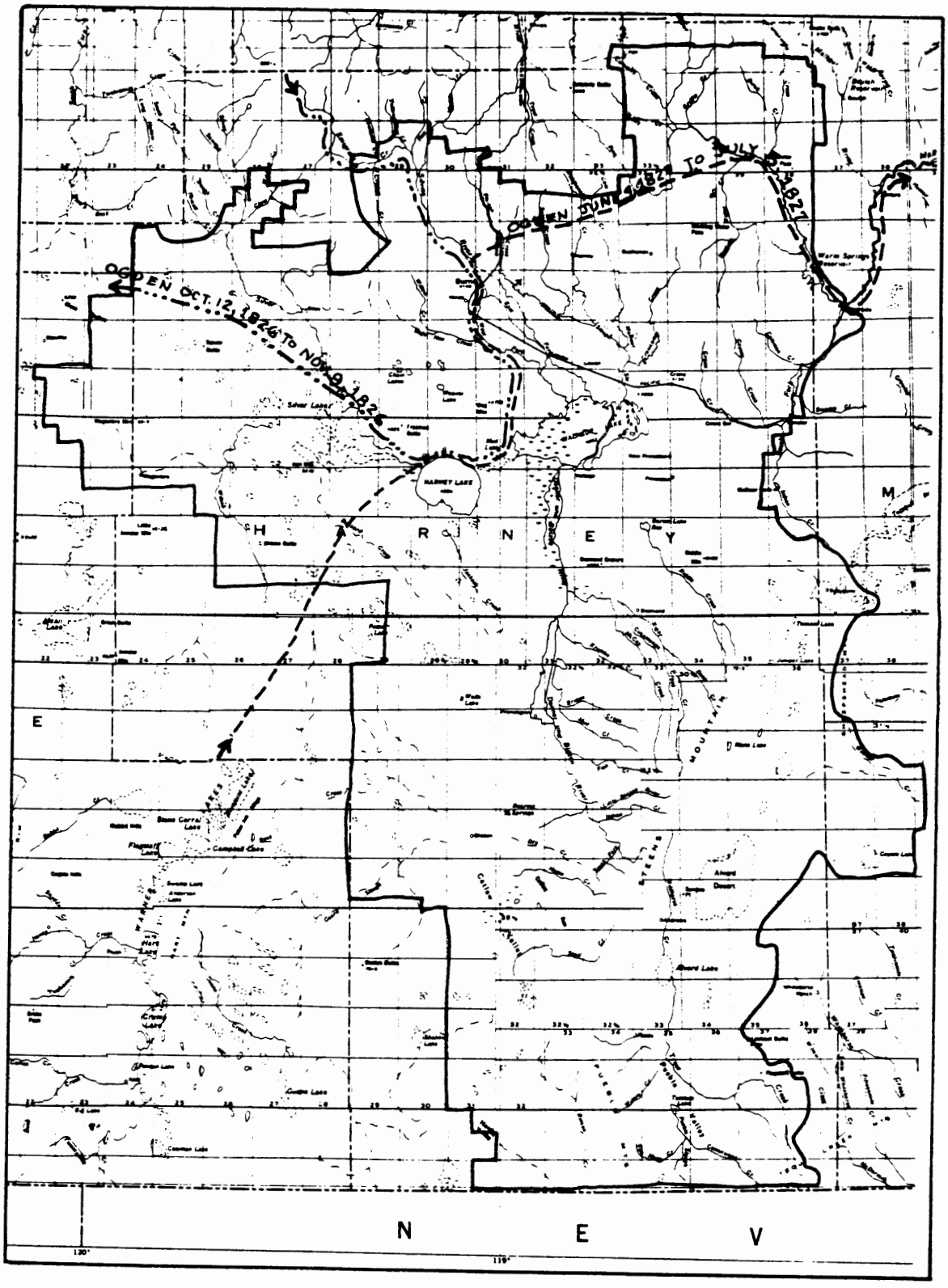


Figure 25. Ogden's Route through the Harney area 1826-1827.

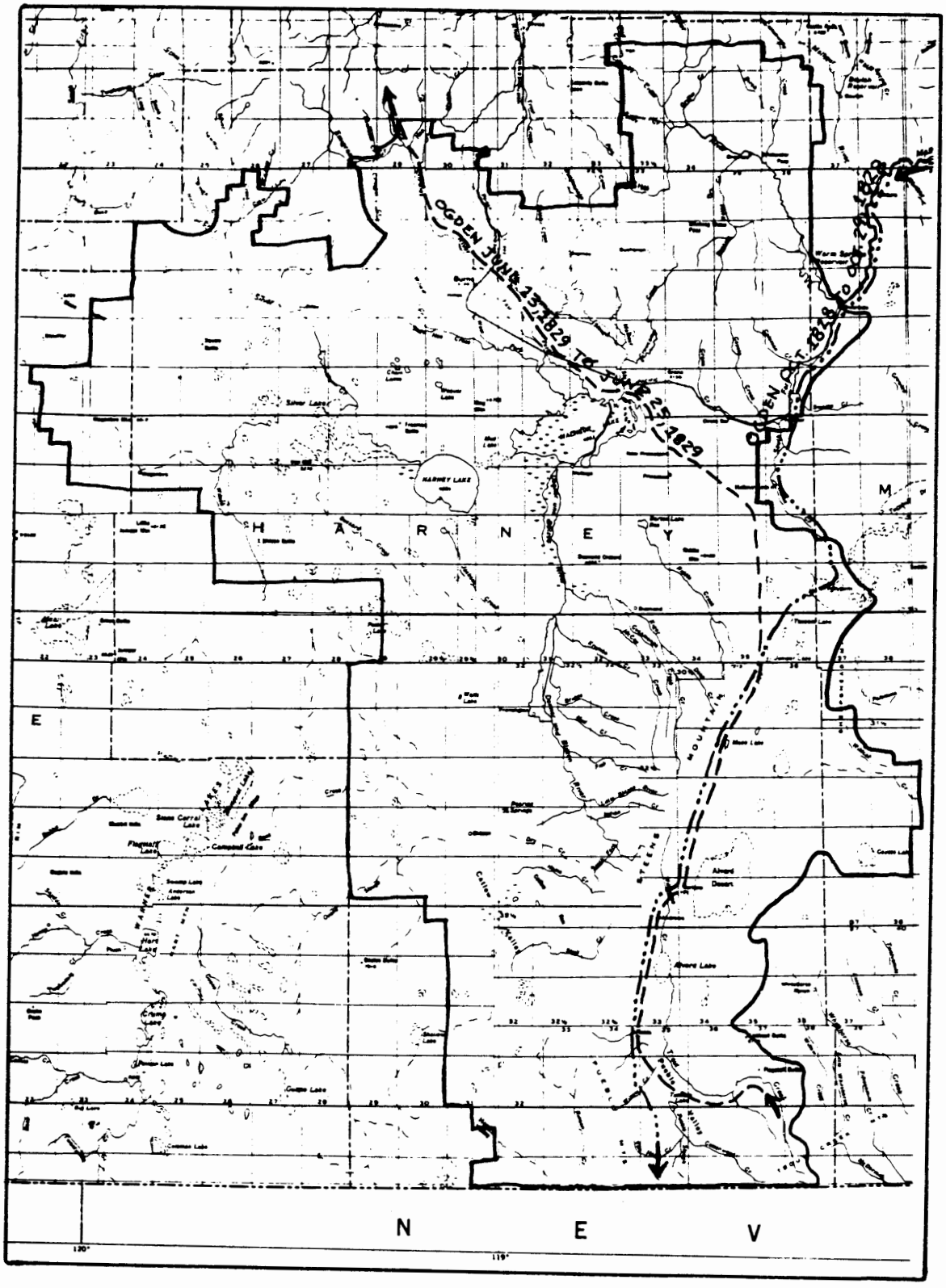


Figure 26. Ogden's route through the Harney area 1828-1829.

followed upstream. He then crossed to the Crooked River, following it to the Deschutes, which he descended to the Columbia River. From there he returned to Fort Vancouver.6/

The following year Ogden's third expedition commenced at Fort Vancouver. They traveled up the Columbia River to the mouth of the Deschutes. From the Deschutes they turned east at the Crooked River. In October, Ogden reached the Silvies River and followed its course downstream, camping near what is now Burns. They moved on to Malheur Lake where the skeletons of buffalo were noted. Except for fowl the country was devoid of game. At this time Harney Lake, called Salt Lake by Ogden, was separated from Malheur Lake by a land bridge an acre wide. On the first of November part of the group left to travel west along the banks of Harney Lake to ascertain its length and to find whether any rivers discharged into it. They returned to say the area lacked beaver.7/

From Harney Basin Ogden moved west along the high plateau to Klamath Lake and into northern California. He ventured into the Rogue River Valley. His return east took a course via present-day Harney Lake, Drewsey, the Malheur River, Juntura and on to the Snake River.8/

On his fifth Snake country expedition, Ogden set out to explore the region south of Silvies (Malheur) Lake. This trek took him into present Nevada where he discovered the Unknown River. In 1845, Fremont renamed it the Humboldt River. A principal motive for Ogden's travel into Nevada was his search for the Buenaventura River, believed to exist south of Salt Lake. It was supposed to originate in a lake and flow to the Pacific. The discovery

of a water route directly to the Pacific could save tremendous time and expense in the fur trade. Eventually, its existence was disproved.9/

Leaving Fort Nez Perce (present Walla Walla), Ogden followed a familiar route until he was near present Baker, Oregon. Here he divided his company, sending six men to trap the sources of the Burnt River then to continue on to the north and middle forks of the Malheur. He also sent five men to examine other tributaries of the Malheur. Ogden moved on to present Huntington, Oregon where he separated eight men, sending them to trap the Weiser, Payette, and Boise Rivers.10/

With the remaining ten men, Ogden crossed over to the Malheur River and camped near present Vale. His course took him up the Malheur, leaving the main stream to reach the north fork near Beulah. Here he was rejoined by five of his men. Moving downstream, they passed by present Juntura and Riverside. At Indian Creek, about four miles south of present Venator, they were rejoined by the group of six men.11/

Ogden was now venturing into unknown country. Their course led them to Follyfarm, probably crossing the mountains through Summit Pass. After camping in the vicinity of Follyfarm they turned south. Traveling down the Alvord Valley, they camped the following night at Mann Lake. The succeeding night was spent at Alvord Lake. In three days, by October 29, they had crossed over into Nevada in the vicinity of Denio.12/

Ogden's exploration took him to the Quinn River and the Humboldt near Winnemucca. Returning through Utah and Idaho, they camped for the winter on Bear River. There they attempted to lay in a supply of buffalo for the return trip to the Columbia.13/

When the weather lifted they broke camp and began backtracking their earlier route. Again, Ogden camped at Alvord Lake. Hoping to trap more beaver by varying his route, Ogden led his men across the Steens. Their most probable route was up Juniper Grade and through Anderson Valley. They passed around the east shore of Silvies (Malheur) Lake to the mouth of the Silvies River. Traveling up river, they began to find beaver scarce. On July 27 they crossed the divide from Yellow Jacket Creek to the South Fork of the John Day River. There they encountered about fifty families of Indians fishing for salmon. The return to Fort Nez Perce was uneventful.14/

In 1830 Peter Skene Ogden was transferred and the Snake country expeditions were taken over by John Work. The brigade of 1830-1831 left Fort Nez Perce, traveling southeast into Idaho. They moved on down into Nevada to the Humboldt River, returning to Fort Nez Perce through southeastern Oregon. They crossed into Oregon on June 28, 1831. Work led them northwest past Crooked Creek Springs, over a spur of the Sheepshead Mountains, and down into Alvord Valley. They camped at the base of Steens Mountain just north of Mann Lake. They continued north along the east face of the Steens, finding many eggs to eat at Juniper and Ten Cent Lakes. The game was so scarce that a couple of horses were

killed for food. On reaching Malheur Lake, the brigade made camp near the present site of the Malheur National Wildlife Refuge headquarters. Their route took them around the east side of the Lake to Silvies River. They traveled up river, camping near present Seneca and crossing the divide to the John Day River. From here they turned west along the river to present Dayville and then north again towards present Kimberly.15/ (Figure 27).

John Work's expedition returned to Fort Nez Perce with the loss of eighty-two horses. Relatively few beaver pelts were collected for their labors. He informed the Hudson's Bay officials that although the Snake country was not totally devoid of beaver, it could no longer support a profitable fur brigade.16/

The British had succeeded in sterilizing the Snake Country, and it was soon abandoned by the American fur trappers. Yet, the successful campaign of the British failed to halt encroaching American colonization. The theory that American settlement followed on the heels of the fur trappers had historical validity, but in the case of the Oregon Territory another factor came into play. Evangelizing was a growing national passion. Formerly, fur trappers had been the ones to disseminate knowledge about new territory, but in this instance the informant's role was played by missionaries. Through their funding drives in the east and their correspondence, the missionaries spread the word about the Oregon Territory.17/

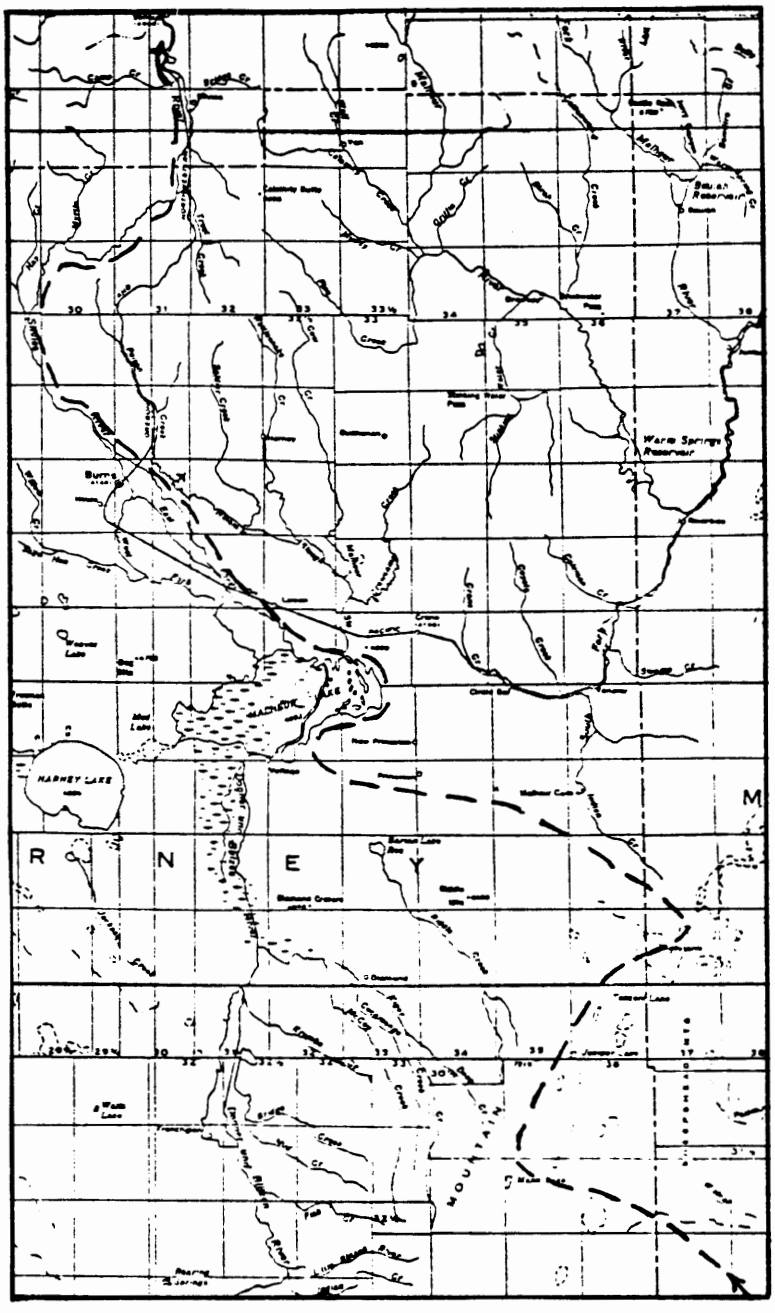


Figure 27. John Work's snake country expedition of 1830-1831 through the Harney area.

FOOTNOTES

1. Frederic Athern, An Isolated Empire: A History of Northwest Colorado, Cultural Resources Series No. 2, Bureau of Land Management, 1976, p. 12.

2. Frederick Merk, "Snake Country Expedition 1824-25", The Oregon Historical Quarterly, Vol. 35, No. 2, 1934, p. 93.

3. Ibid. p. 94

4. Francis D. Haines, ed., The Snake Country Expedition of 1830-1831. John Work's Field Journal, 1971, p. xvii.

5. E.E. Rich, ed., "Peter Skene Ogden's Snake Country Journals 1824-25 and 1825-26", The Hudson's Bay Record Society, 1950.

6. Charles H. Carey, General History of Oregon, 1971, p. 227.

7. K.G. Davies, ed., "Peter Skene Ogden's Snake Country Journal 1826-27," The Hudson's Bay Record Society, 1961

8. Ibid.

9. Glyndwr Williams, ed., "Peter Skene Ogden's Snake Country Journals 1827-28 and 1828-29", The Hudson's Bay Record Society, 1971.

10. Ibid.

11. Ibid.

12. Ibid.

13. Ibid.

14. Ibid.

15. Haines, Op. Cit.

16. Ibid.

17. Ibid.

WESTWARD MIGRATION AND THE OREGON TRAIL CUTOFF 1835-1850

Americans were avid missionaries. The far west, untamed and largely unknown, represented a new frontier for enterprising Christians. To this purpose came some of the earliest Oregon residents. As missionaries spread the word about the new territory, a fever of excitment began to build among many would-be pioneers.

In 1835 Jason Lee settled at Vancouver, becoming the first permanent missionary in the Oregon Territory. The Congregationalists who supported Lee's work commissioned his nephew Daniel Lee to establish another mission at the Dalles in 1837 or 1838. In 1836 Doctor Marcus Whitman and Henry Spalding established a mission at Waiilatpu near Walla Walla, Washington, and another to the east at Lapuaii, near present Lewiston, Idaho.1/

Seeking additional financial support for this work, Jason Lee returned east in 1838. Immigration societies had been formed in the east as early as 1829. Lee lectured to many of these in eastern states, presenting not only his missionary cause, but advocating settlement of the Oregon Territory by Americans. Lee carried with him a memorial drawn up by the settlers in Oregon requesting the protection of the United States Government. They also wrote a letter to a member of Congress urging a Government guarantee to the

settlers in Oregon that the land they had taken and improved would be granted to them, and that American protection and law enforcement would be instituted in the Territory.2/

Jason Lee's speaking tour stirred up interest in the Oregon Territory, but the most significant stimulant to "Oregon Fever" was a proposal being discussed in Congress to donate free land to immigrants.3/ In 1843 the Territorial Government of the Oregon Territory drafted an act allowing any man who homesteaded in the country to claim 640 acres. When the Territory became American, the Federal Government nullified all Territorial acts and laws. Outraged settlers who had risked so much to pioneer the Territory protested and finally Congress relented. In 1850 the Donation Land Act was passed providing grants of 320 acres to any man who had resided in Oregon and had cultivated the land for four years. An additional 320 could be claimed by a man's wife. Later immigrants could qualify for half that amount.4/

The desire to improve their economic situation was the most common motive to immigrants of the "great migration" of 1843. This was the first large wave of pioneers to Oregon, and it decided the political future of the region.

In 1846 British and American representatives convened to reconsider the joint occupancy treaty. The Americans held an advantage in the competition over the boundary due to the recent explosion of American settlers in the Territory. It was finally resolved to extend the 49th parallel from the Rockies west to Puget Sound.5/ The Americans gained title to the important water ways: The Columbia River and Juan de Fuca Strait.

The pioneers, for the most part, were not the poor and the ignorant, nor the recent immigrants from Europe that already crowded the eastern cities.

Rather, they were substantial citizens, mostly rural farmers. Many had already homesteaded a farm or were the children of such homesteaders. They uprooted themselves for a variety of reasons. Opportunity and the promise of free land were compelling motives. Some came to escape the constraints of society or simply for adventure. In 1837 the United States suffered from depression, high unemployment, and generally poor working conditions. Those that could afford to turned west toward new opportunities. The four-to-six month journey on the Oregon Trail cost a substantial sum. An overload outfit and a year's subsistence without harvesting a crop cost roughly $800 to $1200.6/

The first wagon train of one hundred people arrived in the Willamette Valley in 1842, showing that it could be done. The following year approximtely 875 immigrants made the two-thousand-mile trek. In 1844, 400 pioneers made the trip. In 1845-46 more than 5,000 people accomplished it. In 1847-48 thousands traveled west. The discovery of gold in California in 1848 caused a rush to the west in 1849 of over 20,000 people. Between 1841 and 1869 close to 275,000 pioneers made the journey west. At least 20,000 died on the trail.7/

The Oregon Trail was routed from Fort Boise (near present Parma) northwest to the Columbia River. Consequently, almost all of the immigrant traffic missed southeastern Oregon. Only four trains passed through Harney County.

In 1843 Captain Francis Payette led a wagon train from Fort Boise southwest to California. They blazed a trail across Harney County by way of the Silvies, Malheur and Harney Lakes, Silver Creek and on through Lake County.8/

In 1845 the unfortunate Meeks Wagon Train crossed Harney County headed for the Willamette Valley (Figure 28). Stephen Meek, an ex-mountain man was commissioned as scout for one dollar a wagon, board, and $250. They abandoned the Oregon Trail at the Malheur River for what was to become known as Meek's cut-off. The route was not only thought to be shorter, but it avoided the additional difficulty and expense of river travel from the Dalles to the Willamette Valley. Approximately 1,500 people, involving about 200 families, followed Meek on the untried trail.9/

Leaving Fort Boise in late August, they traveled southwest through the rough country between the Owyhee and the South Fork of the Malheur River. They arrived at Crane Prairie on September 7. Passing along the north end of Malheur Lake, they reached Harney Lake. From this point on the route is confused because the wagon train became lost. Some accounts record the train having turned northwest into the John Day region, but more popular accounts have the train turning southwest to Wagontire Mountain.10/ For days they wandered around searching for water, often having to backtrack to a previous campsite. Provisions were low and the pioneers, in a panic, threatened to hang Meek who had to abandon the train to protect his life.

It was during this confused wandering that discovery of the mythical Blue

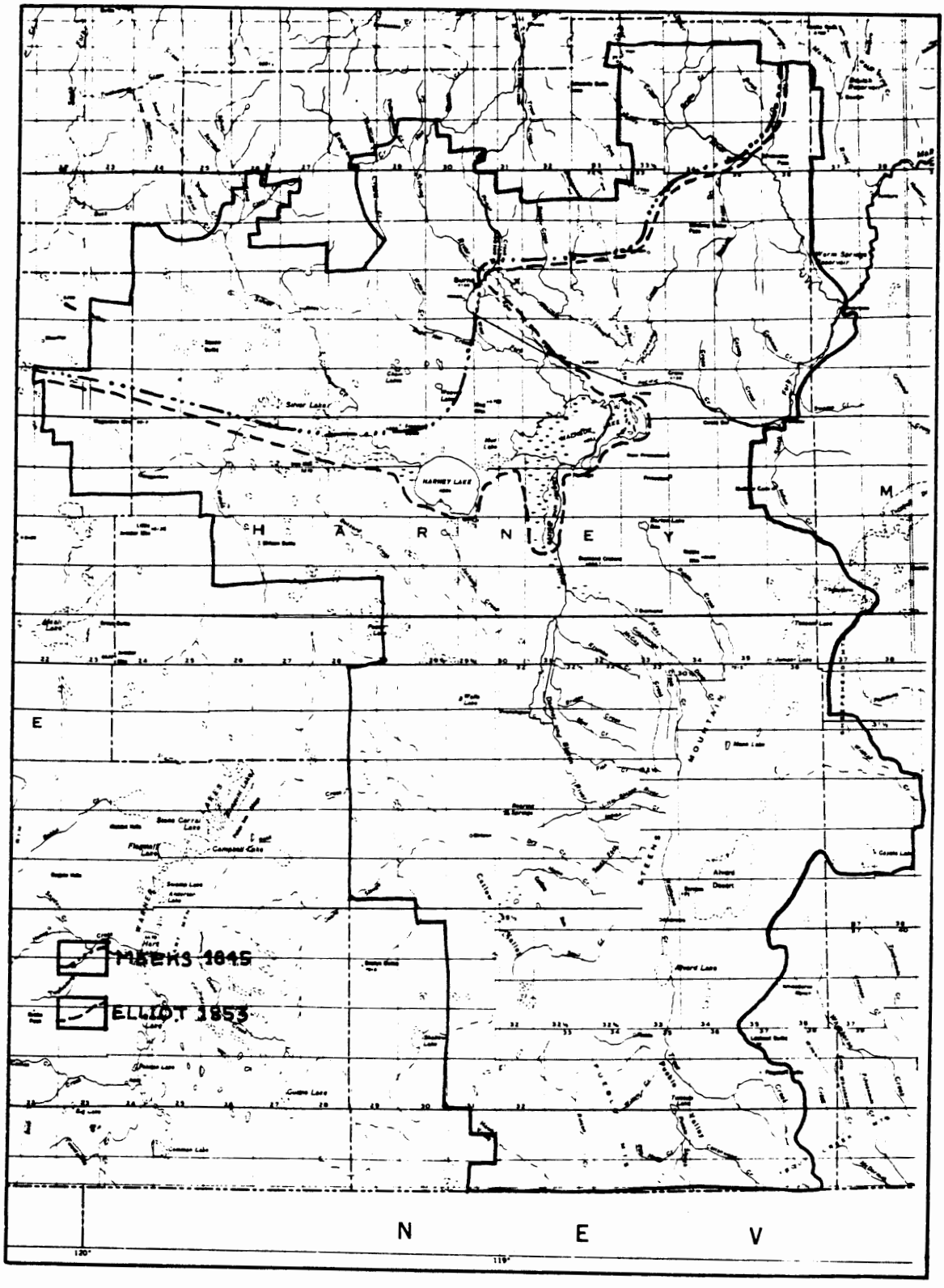


Figure 28. Approximate routes of wagon trains across the Harney area.

Bucket Mine was made. Buckets, customarily painted blue, were carried under the wagons. At some point a spring was located and shiny yellow pebbles found there by an immigrant were thrown into one of these buckets. Much later it was discovered that these were gold. Attempts to relocate the source have been unsuccessful.11/

Eventually reaching the Deschutes River, the immigrants gave up their westward trek and turned north to the Columbia River. They arrived at the Dalles in early October. Many lost their lives; some estimate that up to fifty people died on this disasterous crossing.12/

It had always seemed incongruous to immigrants that at the Malheur River crossing the Oregon Trail turned northwest. All the many miles before its direction had been generally west, and now so close to their destination this inexplicable detour. At Turner's Trading Post on the Malheur (present Vale), they were roughly opposite the upper end of the Willamette Valley. They did not know that the northern route was the easiest crossing of the Cascades.

The Territorial Government in the Willamette Valley passed a bill in January 1852 to consider building a road across the middle Cascades to intersect the Oregon Trail at Vale. Settlers in the southern part of the valley were eager to bring immigrants directly to their area. Growing impatient with the legislature, they organized their own investigation of a route only three months after the bill's passage. They took up a collection and, in August,

sent seven volunteers east across the Cascades to discover a feasible route. The volunteers made it as far as Harney Lake, where they fled from an Indian attack. Turning northwest, they abandoned the proposed route and headed for the Oregon Trail.13/

Soon after this episode the sponsors of the middle route commissioned Elijah Elliot to carry word of the new route along the Oregon Trail as he went to meet his family. Elliot was to return to the valley via the new route. The settlers of Eugene City assured him that the trail over the Cascades would be blazed and cut through by autumn. Elliot himself had never been over the mountains, marshes, and deserts of eastern Oregon.14/

There were several reasons why pioneers were willing to try a new trail. In this case most thought not only had Elliot been over the route, but that Meek had also. By 1853 tens of thousands of wagons had already traveled the Oregon Trail. Those following suffered from contaminated waters that gave them diarrhea and fever, and campsites that lacked grass for the stock. The dust on the trail was so thick that livestock died of breathing it. By the time they reached the new cut-off, supplies were short and the immigrants worn out. It is no wonder that the promise of good grass, a fresh trail, and a route shorter by a hundred miles appealed to the pioneers.15./

The Elliot train abandoned the Oregon Trail at the Malheur River in late August 1853. Twenty wagons and about a hundred people traveled with Elliot.

Others followed their tracks, some closing the gap and joining the lead wagons. A total of at least 250 wagons, from 1,000 to 2,000 immigrants, and about 6,000 head of stock took the new cut-off.16/

The main error made by the Elliot train immigrants was that they didn't really know the actual distance to the Deschutes River. They thought that a source of the Deschutes lay much further southeast than it does, and they looked for it in the Harney Basin. When they couldn't find it they thought they were hopelessly lost in the desert and threatened to hang Elliot. His wife's pleadings saved him, but he had lost the confidence of the train and no longer functioned as their leader.17/

The route the train blazed was very similar to Meek's, and in many places they followed his tracks (Figure 28). They passed by the locations of present day Harper and Westfall, and accounts note that the road was the worse they had experienced west of the Missouri. They descended Immigrant Hill to Warm Springs Creek just northeast of present Beulah Reservoir. From the North Fork of the Malheur the pioneers traveled west to the head of Cottonwood Creek, there turning south along the east bank of the stream to about the location of the Altnow Ranch.18/

After crossing the Middle Fork of the Malheur, the train camped in the vicinity of Drewsey. From Drewsey they crossed the Stinking Water Mountains and descended into the Pine Creek drainage. Mounting a hill to the north of present Buchanan, they viewed Harney Valley for the first time.19/

On reaching the Silvies River the immigrants disagreed with Elliot, who wanted to ford the river following Meek's tracks. The rest of the train chose to go around the south side of Malheur and Harney Lakes. Many days of precious food reserves were wasted going around the lakes. They passed by Sodhouse Spring and crossed the Blitzen at Rock Ford. They did find good grass for the livestock in the Blitzen Valley.20/

The train was running out of food, so seven men were sent ahead on horseback as a relief party. They took with them provisions for seven days and expected to return with help in ten days. Obviously they had a very distorted conception of the distance and difficulty of the terrain ahead. The relief party took eleven days to reach the Deschutes River, arriving on September 25. Upon reaching the Cascades, they mistook the Three Sisters for Diamond Peak. Since they were trying to find the Willamette Pass, which is south of Diamond Peak, it was a disastrous mistake. They became lost in the mountains and suffered terribly. On October 19, they were rescued in the western foothills of the Cascades.21/

It took the wagon train sixteen days to reach the Deschutes River. This part of the journey was extremely dry and at times they had to retreat when no water could be found up ahead. After resting at the Deschutes, the wagons proceeded to the Cascades. The journey up the east side of the Cascades, though not heavily forested, provided little feed for the weary oxen. Near the summit they encountered the first snowfall. Food was extremely short and thoughts

of the 1846 Donner Party disaster in the Sierras came to mind. Travelling down the Cascades along the Middle Fork of the Willamette involved twenty-seven crossings of the dangerous stream.22/

A massive rescue effort was mounted in the valley when news of the immigrants was received. The first supplies reached the wagon train just weeks after the relief party was rescued. Many women and children were immediately taken out of the mountains on horseback. Supplies were sent freely, including 20,000 pounds of flour, bacon, potatoes, onions, salt, sugar and 290 head of work and beef cattle.23/

The condition of the trail was appalling to the road promoters. They immediately filed suit against the contractor who had agreed to build the road to the Deschutes River. At the same time one of the road commissioners, William M. Macy, who had also been the leader of the original survey party, began to plan a second trip over the cut-off. He was commissioned to relocate the route where practical and lead back any immigrants that would follow him. Leaving the Willamette early in the summer of 1854, Macy reached the Malheur River sometime during mid-summer. Prior to June 20, Macy set out from Turner's Trading Post for the return trip with twenty wagons. They arrived safely in the Valley before September 1. Their trip was uneventful, indicating that with an experienced guide and a relocated trail the route was feasible.24/

The twenty-year migration over the Oregon Trail changed the character of the Oregon Territory radically. Previously the range of Indians and fur trappers, it became the new frontier of civilization. By the early 1840's the fur trade had virtually died. The industry failed for two reasons. Beaver had become scarce, and fashion had changed. The popularity of the felt hat in Europe had created a demand for beaver pelts; the era of the silk had removed the demand.[25/] The trappers and mountainmen of the early days were replaced in the Territory by settlers and merchants. The region was rapidly being segmented into counties, and local gevernments were being organized. The era of initial settlement ended in 1859 when Oregon was admitted to the Union.

FOOTNOTES

1. Charles H. Carey, General History of Oregon, 1971, p. 306.
2. Ibid., p. 292-3.
3. Ibid., p. 482
4. Paul Gates, History of Public Land Law Development. 1968, p. 118.
5. E.E. Rich, ed., "Peter Skene Ogden's Snake Country Journals 1824-25 and 1825-26", The Hudson's Bay Record Society, 1950, p. 1 xxvi.
6. Bureau of Land Management borchure, The Oregon Trail. Migrating West ... One Step At a Time, n.d.
7. Ibid.
8. B. C. Payette, The Northwest, 1964.
9. K. Clark and L. Tiller, The Terrible Trail; The Meek Cutoff, 1845, 1966.
10. H. M. Corning, ed., Dictionary of Oregon History, 1956, p. 164.
11. Clark and Tiller, Op. Cit.
12. Ibid.
13. L. C. Menefee and L. Tiller, "Cutoff Fever", Oregon Historical Quarterly. December, 1976.
14. L. C. Menefee and L. Tiller, "Cutoff Fever, II", Oregon Historical Quarterly, March,1977.
15. L. C. Menefee and L. Tiller, "Cutoff Fever, III", Oregon Historical Quarterly, June, 1977.
16. Ibid.
17. Ibid.
18. Ibid.

19. L. C. Menefee and L. Tiller, "Cutoff Fever, IV", Oregon Historical Quarterly, September, 1977.

20. Ibid.

21. Ibid.

22. L. C. Menefee and L. Tiller, "Cutoff Fever, V", Oregon Historical Quarterly, December, 1977.

23. Peter Peterson, Our Wagon Train is Lost, 1975.

24. L. C. Menefee and L. Tiller, "Cutoff Fever, V", Oregon Historical Quarterly, December, 1977.

25. Frederic Athern, An Isolated Empire: A History of Northwest Colorado, Cultural Resources Series, No. 2., Bureau of Land Management, 1976, p. 19.

PIONEERING THE HARNEY AREA
1860-1880

The pioneers who traveled southeastern Oregon brought with them tales of the endless wasteland that was crossed. Being farmers and dairymen, they saw no potential in the arid region. Southeastern Oregon was to suffer this disparaging description until the arrival of the first cattlemen.

In 1861 the United States was racked by turmoil and civil war when eight states seceded from the Union, but this conflict had little actual effect on the new state of Oregon. The following year the first general homestead act was passed by Congress. It authorized unrestricted settlement on public lands to any person who was the head of a family or twenty-one years of age, who was a citizen or intended to become one, and who did not own at least 160 acres. The Act required residence and some improvement on the 160 acres. After six months the homestead could be purchased for $1.25 an acre, and after continuous years the land could be patented for a $15 filing fee.[1] The Act was geared to the small farm and did not provide any legal means for acquiring enough land in semi-arid regions to make livestock grazing feasible. Consequently, in southeastern Oregon it led to numerous fraudulent entries.[2]

Southeastern Oregon did not immediately receive an influx of homesteaders with passage of the new Homestead Act. The conditions necessary for settlement were still lacking. The region was poorly known and thought to be a useless

wasteland unsuitable for habitation. Access to the area was undeveloped. It not only lacked roads, but even routes of cross-country travel. Finally, the country was far from any markets where a settler's products could be sold and supplies purchased. Military and mining activities were to change these conditions in the early 1860's and open this frontier just as the last of the good homestead land was being appropriated in the Willamette Valley.

In 1861 gold was discovered in northeastern Oregon around present Auburn and Baker. The following year gold was found in Canyon Creek in present Canyon City and John Day. Almost simultaneously strikes were made near present Lewiston, Idaho. Shortly thereafter, strikes were made in the Boise Basin. A rush of miners and prospectors invaded eastern Oregon or crossed it to the Idaho mines. Shipping records on Columbia River streamers show that 24,500 people made the trip from Portland to the Dalles in 1862. An additional 22,000 made the trip the following year, and in 1864, 36,000 more did.[3] By the end of 1862 the population at Auburn had swelled to between 5,000 and 6,000 individuals.[4] The Canyon City camp was of similar size.

Not all of the gold seekers traveled the northern route. Some crossed the middle Cascades to the mines along the Free Emigrant Road of 1853. By 1863 trade in the mines was energetic. Freight and livestock were transported

or trailed to the mines from Walla Walla, western Oregon, and California. From California thousands of sheep and cattle were trailed to the mines, with considerable numbers being lost to the Indians in southern Oregon.5/ Enroute to the gold fields many crossed the Harney Basin, noting the area held some well-watered, grassy valleys. The influx resulted in instantaneous settlements in northeastern Oregon and Idaho.

It also caused knowledge of the southeastern corner of the state to be widely dispersed. For the first time good words were spoken of the Harney Basin.

The mass movement of people to and through eastern Oregon pointed out the need for roads and military presence in the eastern half of the state. Occasional attacks by Indians had caused losses to travelers. Settlers in the Columbia River area complained of Indian raids on their livestock. As the military began to provide protective escorts, not only the need for roads was confirmed, but their expeditions contributed to the dispersal of knowledge about southeastern Oregon.6/

In 1864 the military established its first outpost in the Harney Area on the east side of Steens Mountain. Camp Alvord, as it was called, was a temporary camp amounting to little more than some excavated rifle pits and earthen breast works (Figure 29).7/ The following year two more camps were established. Camp Wright, initially called Adobe camp, was built at the

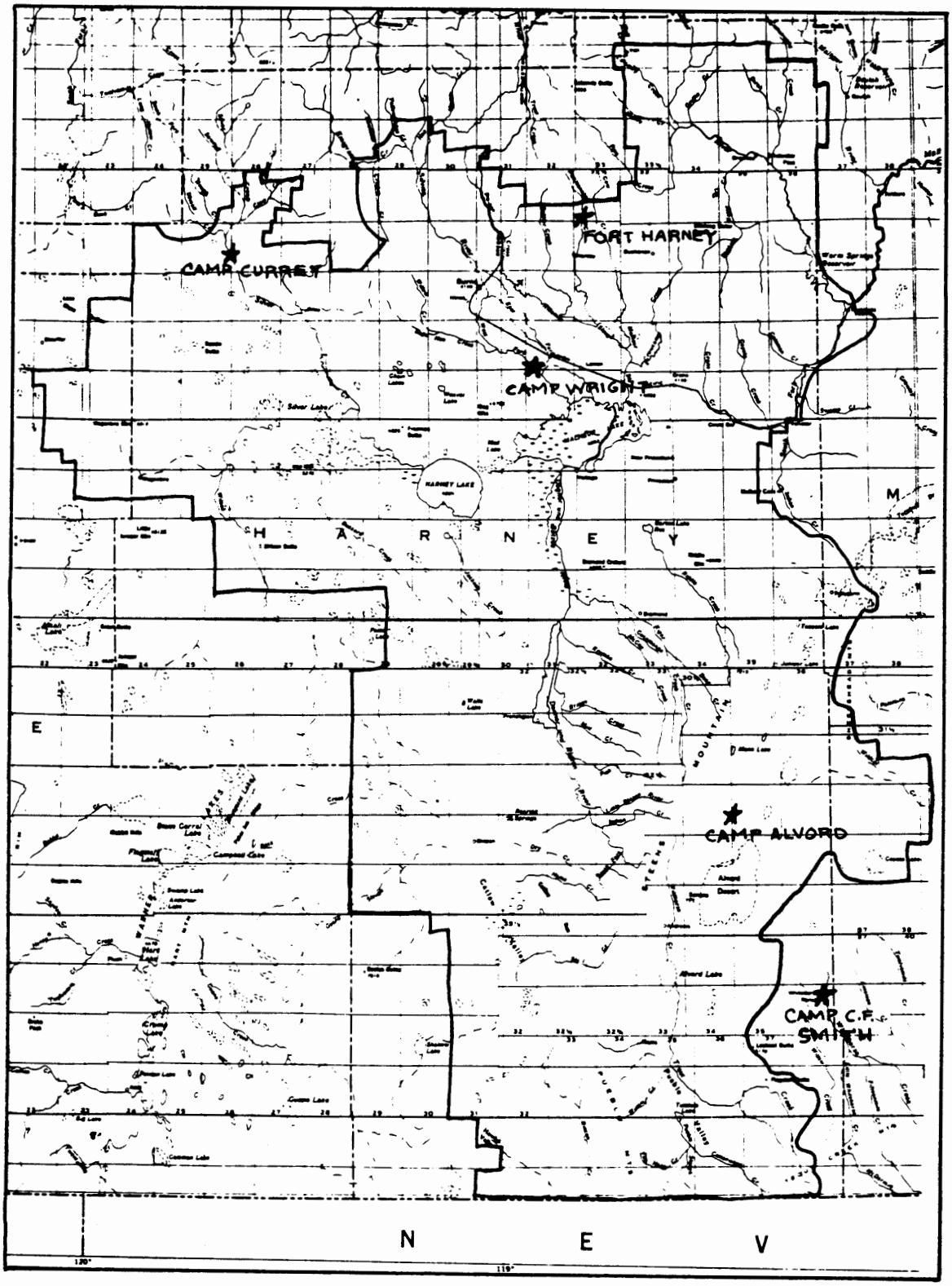


Figure 29. Military camps in the Harney area.

northeastern tip of Wright's point, a long narrow ridge near Malheur Lake.[8] Similar to other temporary camps. Camp Wright was never substantially fortified. It consisted of sod walls and an earthen roof. Approximately eighty men (60 infantry and 20 calvary) were located there.[9]

Camp Currey was established at Indian Springs on what is now known as Silver Creek, to the northwest of Harney Basin. In 1866 Camp Alvord was abandoned in favor of a location on Whitehorse Creek in the Trout Creek Mountains. The new camp was named C. F. Smith, probably in honor of Major General Charles Ferguson Smith.[10]

The only permanent military facility constructed in the Harney Area was Fort Harney. Located on Rattlesnake Creek about ten miles east of present Burns, it was first known as Camp Steele, then Camp Crook, and finally was named to honor Major General W. S. Harney.[11] Founded August 16, 1867, the fort consisted of twenty-five buildings and was not stockaded. Regularly occupied by approximately fifty men, its ranks swelled to about 300 soldiers during the Indian uprising of 1878.[12]

At the same time that military camps were being established in the area, the first land grant roads were being surveyed. In the early 1860's Congress became impressed with the need for military roads in all parts of the county. The disastrous experience of the War of 1812 had convinced Congress that it was necessary to have roads connecting the settlements with the exposed frontiers.

Military access was the principal argument presented by supporters of Federal Land Grant roads. Grants of public domaine were requested by Oregon to help defray road building costs.13/

The objective of the Oregon land grant road promoters was to develop access to the eastern part of the state as an inducement to settlement. It was planned that the road would serve as a highway to and from the mines and would ultimately connect to the Union Pacific Railroad, then under construction.14/

Several developers from Lane County organized a road company in 1864. They advertised the sale of stock in the company and eventually gathered a capital stock of 30,000.15/ The Oregon Central Military Wagon Road was to extend from Springfield, near Eugene, across the Cascades to the southeastern corner of the state (Figure 30). The stock was presented to the public as a richly paying investment. It was stated that the road would become a great thoroughfare once the potentially rich mineral resources of the Owyhee and Pueblo regions were developed. With construction of the proposed railroad from Portland down the valley, and a good road from there to southeastern Oregon, all freighting would have to pass through Springfield.16/

The same year Congress passed into law a land grant to Oregon for road construction. The grant allowed alternate sections of public land, to the width of six sections along the road, to be awarded to the contractor. Thirty sections could be sold prior to construction, but the remainder could be dis-

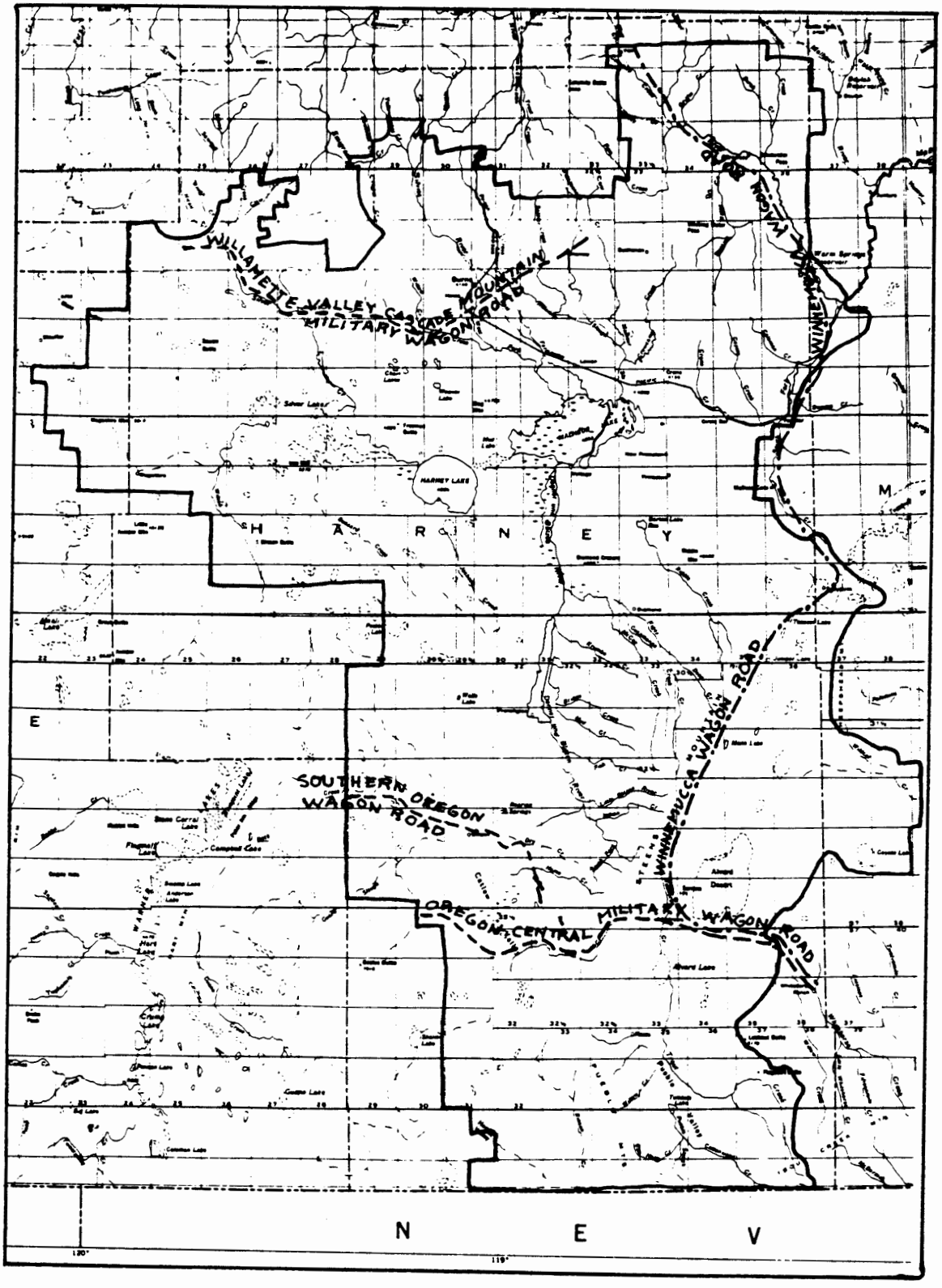


Figure 30. Land grant roads in the Harney area.

posed of only as the work progressed. The work was to be completed within five years.17/

The road was surveyed and some work done in the following several years. The greatest amount of construction was done on the mountain section, yet even this portion was barely passable. In 1866, 845,536 acres of land were awarded to the road company. Due to the poor quality of the road, the land grant was contested and extended litigation followed. Title was eventually confirmed, and after a series of title transfers the property was acquired by Martin and Borders, who organized the Oregon Valley Land Company. They sold ten, twenty, and forty acre tracts of agriculturally worthless land to suckers from all over the country. Much of the land later reverted to the counties through which the road passed due to tax default.18/

The route of the road is known from the original survey notes of the United States. In the Harney Area it crossed Catlow Valley south of Garrison Lake, climbed Steens Mountain at Skull Creek, entered Alvord Valley at Andrews, crossed the valley south of Alvord Desert, and passed through Little Sand Gap to Camp C. F. Smith (Figure 30). 19/ Over most of this section, it was hardly more than a generalized route involving little actual construction.

At the same time that the Oregon Central Military Wagon Road was being planned, citizens in Albany were promoting their own road.20/ The Willamette Valley Cascade Mountain Military Road commenced at Albany, crossed the

Cascades near Black Butte to Camp Polk, and passed through present Prineville and Paulina to Camp Currey on Silver Creek. From Camp Currey, the route went downstream to the present location of Riley, there turning east to Fort Harney. From Fort Harney the road continued east through Crane, Venator, Crowley and Harper, reaching Fort Boise by passing north of Malheur Butte (Figure 30).21/

The road began as a private venture which fell into financial difficulties, subsequently turning to the Federal Government for assistance. In 1866 the Federal Government made the same type of grant for the Willamette Valley Cascade Mountain Road as they had for the Oregon Central Road. On June 25, 1866, the State of Oregon awarded 861,512 acres of public land to the road company.22/

Both the U.S. Government and the State of Oregon failed to supervise and administer the grant efficiently. Much of the raod was located on already existing trails or constructed to very minimum standards. In many cases it meandered to take advantage of the most fertile and valuable land. In 1878 the quality of the road was contested by local citizens. A special federal agent was sent to investigate. He estimated the cost of the road to be $40,000.23/ In 1880 the Government sued for cancellation of the land patents. The case lingered in the courts for twelve years and was finally decided in favor of the defendants, due to the fact that the Government had certified the road complete.24/

Two more roads were to effect Harney County. The Dalles Military Wagon Road was the third land grant road across eastern Oregon. It connected The Dalles with Canyon City and involved similar awards as the other two. The road was approved in 1867, was poorly constructed, and constituted another major fraud. None-the-less, it drew more settlers to the eastern part of the state.

In 1867 William Clark, a Canyon City merchant, conceived the idea of building a road to the new railhead. In 1868 he obtained an appropriation from the legislature.25/ The route, after passing Warm Springs, led over the Blue Mountains and Summit and Crane Prairies to Otis Valley. It followed Otis Creek south to a ford on the Malheur's middle fork near the present town of Drewsey, turned south to cross the Malheur River, and mounting a spur of Steens Mountain entered Barren Valley. The road followed the base of the mountain down through Alvord Valley, passing Juniper and Mann Lakes. Reaching the Alvord Desert it crossed over through the Sand Gap and White Horse to Nevada. The road was poorly constructed and not well traveled. There was no proper rest station along its route. Eventually, though, it drew enough attention to the south end of the country to aid settlement.26/

The final impediment to the permanent settlement of the Harney Area was the presence of non-reservation Indians. In 1866 General George Crook, commander of Fort Harney, mounted a relentless campaign against the Indians. It is said that two-thirds of all non-reservation Indians in southeastern

Oregon were killed in Crook's battles.[27] The campaign brought the Indians to the treaty table. On December 10, 1868 the Malheur Paiutes signed a treaty with the U.S. Government, but it was never sent to the Senate for ratification. Not until 1872 were the reservation boundaries actually set.[28] Nonetheless, the campaign and treaty did keep the Indians in the Harney Area peaceful for a decade.

The colonization of eastern Oregon was a reversal of the traditional westward migration. Settlers came largely from the western part of the state or from California. Those arriving from the Willamette Valley were mainly aspiring farmers. The California immigrants were mostly large-scale cattlemen or employees of these men. The coincident arrival of both settlers and cattlemen in the Harney Area resulted in the establishment of a symbiotic social order despite the many opposing objectives of the two groups.[29]

Most of those who came to eastern Oregon from the Willamette Valley were survivors of the Oregon Trail. They had arrived in the valley at a time when the cost of good land was often more than the average pioneer could afford.[30] They had turned east again because they had failed to establish successful farms in the valley for one reason or another. As the knowledge of lush valleys in southeastern Oregon spread, their hopes were kindled and they set out to pioneer this new frontier.

The California immigrants were mostly cattlemen forced to seek new

rangeland for two reasons. In 1864, California, under pressure from Sacramento farmers, passed herd laws ending the era of the open range over most of the state. The herd laws placed the burden for crop damages caused by cattle on the cattlemen. This meant the rancher, not the farmer, had to fence his rangelands. The drought of 1868 in California was the second reason for the immigration.31/

The earliest permanent residence in the Harney Area was built well before the era of colonization. In 1862 two sets of brothers, Peter and Lewis Stenger and John and Henry Chapman, built a sod house at the present site of the Malheur National Wildlife Refuge headquarters. In the style typical of prairie homesteads, the brothers cut thick blocks of sod with which to construct their cabin. The cabin was used as a base of operations while they trapped in the area. After their departure it continued to be used as an overnight stop by passing travelers.32/ Today, the community still bears the name, Sod House, after its first residence.

Actual settlement of the Harney Area began with John Devine who settled at Whitehorse Creek in the Trout Creek Mountains in 1869. He chose the site of the abandoned C. F. Smith Military Camp as his headquarters. Devine was in partnership with W. B. Todhunter, a wealthy Californian. During the next twenty years Devine built up an extensive cattle empire in the Harney Area, including three major ranches: Whitehorse Ranch, Alvord Ranch, and Island Ranch.

Over the next few years many other stockmen moved into the Harney Area. In 1870 Mace McCoy from California settled in Diamond Valley. In 1871 A. H. Robie from Idaho claimed land in the Blitzen and Diamond Valleys. His diamond-shaped brand gave the valley its name. The same year, James Abbott and H. Whiteside settled at Alvord Creek, and Phillip Mann made a claim on House Creek south of Mann Lake. In 1872 George A. Smyth, who had passed through the area on the Elliot Train in 1853, left Roseburg and moved his family to Warm Springs, near the present site of the Hines Lumber Mill. The following year they moved to Diamond Valley. John Catlow from Silver City, Idaho, set up ranching operations on Trout Creek in the Alvord Valley in 1872. His foreman, David Shirk, left him to establish his own ranch in 1876. Shirk claimed land on Home Creek in Catlow Valley, which he named for his former boss. Also in 1871, the Riddle family settled in Happy Valley, while Thomas Prather, John Boone and John Chapman made claims in other parts of the country.33/

By far the most notable figure to enter the Harney Area in 1872 was John William French, commonly called Pete French.34/ Financially backed by Dr. Hugh Glenn, French drove twelve hundred head of cattle from California to Catlow Valley. He set up corrals at Roaring Springs, established headquarters at the south end of the Blitzen Valley, and began to build what was to become, in just twenty-eight years, the largest single cattle ranch in the United States.35/ The French-Glenn Livestock Company eventually controlled over 100,000 acres of land, mostly in the Blitzen Valley.

During the middle 1870's some of the other pioneers to settle in the Harney Area were the Venators, Joe Cooksey, Frank McLeod, Peter Stenger, Logue and Carl Cecil, and Doc Kiger and his wife Dolly.[36] In 1875 Amos W. Riley and James A. Hardin established the Double O Ranch in Warm Springs Valley. Riley was a California capitalist and Hardin was a leading cattle king in Nevada. By 1900 Double O Ranch was one of the "big three" in Harney County. Together with French-Glenn and Pacific Land and Livestock, they owned 64.3% of all the cattle in Harney County.[37]

In 1872 the Federal Government set aside 1,778,560 acres of land, approximately 2,285 square miles, for all the roving bands of Indians in southeastern Oregon. It was called the Great Paiute Reservation (Figure 31).[38] The reserve included roughly the region drained by the three forks of the Malheur River. Eight hundred Paiutes settled on the reservation and relations were aimable due to the capable Indian agent, Major Sam Parish. When he was replaced by an agent named Rinehart, difficulties began. Appropriations lagged and debts were incurred. Encroachments by white settlers and stockmen on the reservation were persistent despite Rinehart's attempts to have them evicted.[39]

In the meantime, the Bannocks in southern Idaho, disturbed by treaty violations concerning Camas Prairie, resorted to warfare. With the military in pursuit, they fled to southeastern Oregon, where some of the discontented Paiutes joined them. The remaining Paiutes abandoned the reservation, many fleeing to California and Nevada to wait out the conflict at military posts

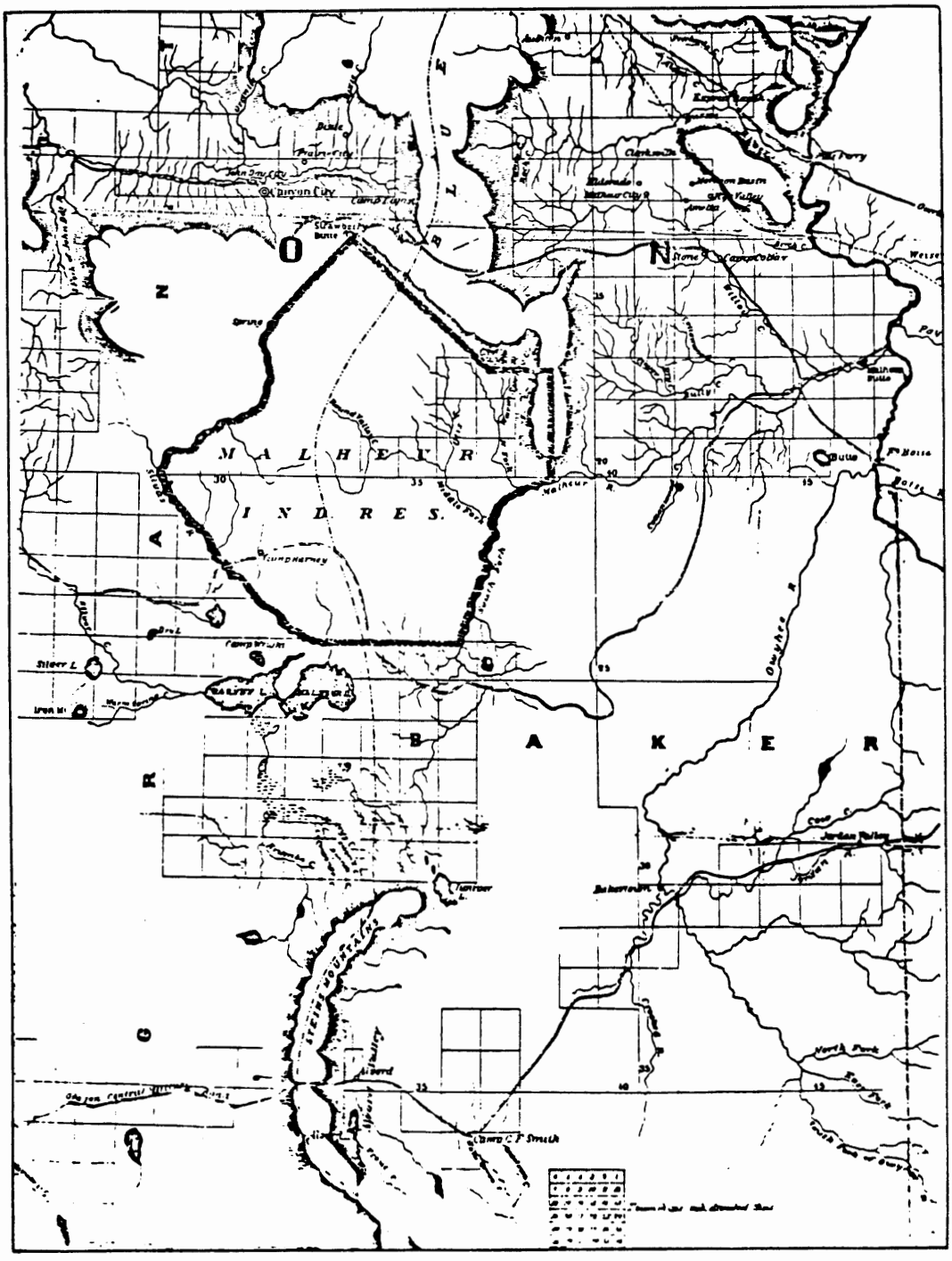


Figure 31. The great paiute reservation (from Preston).

or at other reservations.

After the resolution of conflict, attempts were made to re-establish the Malheur reservation. But resistance to this move occurred among local settlers, who felt the Indians should be dispersed to prevent further uprisings. The Malheur Paiutes were sent to the Yakima and Warm Springs Reservations.40/

In 1879 the treaty betwen the Paiute Indian Tribe and the U.S. Government was abrogated. Settlers and stockmen, encouraged by rumors that the reservation was to be closed, defiantly appropriated reservation lands for themselves. With all threat of Indian troubles removed, the soldiers abandoned Fort Harney on June 13, 1880.

In 1882 the reservation was officially condemned and the lands opened to homestead entry. The following year the Fort Harney property was restored to public entry.41/

The Bannock War of 1878 was the last major uprising in the Pacific Northwest. With it ended the era of military involvement in southeastern Oregon, as well as the final deterrent to full-scale settlement of the Harney Area.

FOOTNOTES

1. Bureau of Land Management brochure, Historical Highlights: Some Historical Dates, n.d.
2. David Lavender, Land of Giants: The Drive to the Pacific Northwest 1750-1950, 1958, p. 398.
3. M. F. Potter and H. McCall, "The Golden Years of Eastern Oregon", The Ore Bin, Vol. 40, No. 4, 1978.
4. H. C. Brooks and Len Ramp. Gold and Silver in Oregon, 1968, p. 43.
5. J. O. Oliphant, On the Cattle Ranges of the Oregon Country, 1968, p. 71.
6. Charles Carey, General History of Oregon, 1971, p. 638.
7. Stella Calderwood, personal interview.
8. Lewis McArthur, Oregon Geographic Names, 1974, p. 3.
9. H. C. Voegler IV, personal interview.
10. McArthur, Op. cit., p. 90.
11. H. M. Corning, ed., Dictionary of Oregon History, 1956, p. 88.
12. Marcus Haines, personal interview.
13. H. S. Bruce, A History of The Oregon Central Military Wagon Road Company with Reference to the Histories of Four Other Land Grant Companies in the State of Oregon, 1936, p. 6.
14. Ibid., p. 10.
15. Ibid., p. 69.
16. Ibid., p. 11.
17. Ibid., p. 15.
18. Corning, Op. cit., p. 181.
19. Original Survey Notes of the United States.

20. Corning, Op. cit., p. 268.

21. Original Survey Notes of the United States.

22. Corning, Op. cit., p. 141.

23. Bruce, Op. cit., p. 59.

24. Corning, Op. cit., p. 268.

25. George F. Brimlow, Harney County and Its Rangeland, 1951, p. 56.

26. Ibid.

27. Ralph Shane, "Early Explorations Through Warm Springs Reservation Area", Oregon Historical Quarterly, December 1950.

28. Peter K. Simpson, A Social History of the Cattle Industry in Southeastern Oregon, 1973, p. 35.

29. Ibid., p. 36.

30. Ibid., p. 37.

31. Ibid., p. 36.

32. Malheur National Wildlife Refuge Brochure, Historical Notes, n.d.

33. Simpson, Op. cit., p. 17 and Oliphant, Op. cit., p. 96.

34. M. J. LoPiccolo, Some Aspects of the Range Cattle Industry of Harney County, Oregon, 1870-1900, 1962, p. 37.

35. Simpson, Op. cit., p. 12.

36. James J. Donegan, Historical Sketch of Harney County, Oregon, 1937.

37. LoPiccolo, Op. cit., p. 119.

38. Corning, Op. cit., p. 156.

39. George F. Brimlow, The Bannock Indian War of 1878, 1938.

40. Ibid., p. 192

41. Ibid., p. 194.

SETTLING THE HARNEY AREA
1880-1900

The 1880's in the Harney Area were the first big homesteading years. By 1890 the population of the region had increased over 600 percent, from 419 to 2,559 people. The newcomers still came from California, the middle west, and the Willamette Valley; but unlike the previous decade, midwesterners are now the largest contributing group.[1] They came via California or directly by rail to southeastern Oregon.[2] Pioneers from the Willamette Valley were the fewest in number to settle in southeastern Oregon during the decade. One surprising fact of the population pattern of the 1880's is that three-quarters of the immigrants from the 1870's had left the area by the 1890's.[3] The homesteaders of the 1880's proved to be a more stable group.

The immigrants of the 1880's were generally better off than those of the previous decade, and had suffered relatively few hardships on their overland passage. Most came at least part of the way on the new transcontinental railroads. The Northern Pacific Railroad had been completed to the mouth of the Snake River in Washington by 1884. The Union Pacific Railraod was complete from Omaha, Nebraska to San Francisco, California by 1869. A branch line, the Oregon Short Line extended from Wyoming to Huntington, Oregon by 1884. Another branch line of the Union Pacific reached Winnemucca, Nevada in the same year. A

private company, the Oregon Railway and Navigation Company, was complete from Portland through the Columbia River Gorge to Huntington around the same time.4/

By the early 1880's many of the major valleys in the Harney Area had become cattle kingdoms. Pete French controlled the Blitzen Valley and north Catlow Valley. He had also purchased land in Diamond Valley and bought out John Catlow in the south end.5/ John Devine had bought out Abbott and Whiteside at the Alvord Ranch, Phillip Mann at the Mann Lake Ranch, properties in Anderson Valley, and had made extensive swampland purchases in the area, later known as Island Ranch in Sunset Valley.6/ He effectively dominated Alvord Valley, and from Whitehorse Ranch, he dominated the Trout Creek Mountains, as well. Riley and Hardin of the Double O Ranch had little competition in Warm Springs Valley. Henry Miller, another California cattle baron, had in partnership with Tom Overfelt, bought into the Drewsey area, controlling the small, but lush, Agency Valley. The south Catlow Valley was controlled by the Shirk brothers, who owned Home Creek Ranch, Three Mile Ranch, and Rock Creek Ranch.

The cattle barons expanded their holdings by a variety of both honest and dishonest means. In the 1870's three land acts had been passed into law. In 1873 the Timber Culture Act was enacted. It was designed to encourage reforestation as a means of conservation.7/ The act authorized any person who planted and cared for 40 acres of trees in good condition to acquire title to an additional 160 acres of public land. By 1878 the minimum acreage had been

reduced from 40 to 10 acres.[8] A surprising number of homesteaders and cattlemen used this Act to gain additional acreage in southeastern Oregon. Many of these filings were less than honest. The Act was repealed in 1891, having been determined unsuccessful.[9]

The Desert Land Act was passed in 1877 as an inducement to reclamation and as an aid to aspiring homesteaders. It allowed individuals to acquire 640 acres of arid public lands at $1.25 an acre, provided the land became irrigated within three years. In 1891 the acreage was reduced to 320 acres. In some cases the intent of the Act was served and arid lands were made more productive; but frequently, even though improvements were made on the land, the difficulties of reclamation technology caused failure. Some cases were intentionally fradulent.[10]

One of the most common methods of expansion used in southeastern Oregon to acquire enough land to make livestock grazing feasible was fradulent homestead entries. Many of the cattle barons had their employees file claims on 160 acres of public land. As soon as title was acquired, the cattle baron purchased the land from the employee for a nominal fee. The French Glenn Livestock Company acquired about 16,000 acres from employees between 1882 and 1889.[11] Small-scale cattlemen also made use of this method, or claimed and sold the 160 acre tract themselves, to acquire capital.

Perhaps the most abused land law was the Oregon Swampland Act of 1870. The Act was passed to aid in draining lands classified as wet. It allowed an

individual to be both buyer and witness to the quality of land, thereby making it easy for the land to be falsely identified.12/

In the Harney Area many acres of arable land were purchased fraudulently as swampland. Most of it went to the large owners, resulting in an even greater concentration of ownership. John Devine was the most flagrant violator of the Oregon Swampland Act in the Harney Area. In 1884 Devine purchased about 34,800 acres of so-called swampland around Malheur Lake for $37,069.13/ This land is today part of the Island Ranch.

Fraudulent swampland entries became so notorious that the General Land Office allowed outraged settlers to file homestead claims on land claimed by big cattle corporations under this Act. If, as the settler insisted, the land proved naturally dry, he became the legal owner.14/ In the General Land Office, swampland acreage was marked in red ink with the letter S as it was filed on. Devine's claim showed up as a "field of red S's", and so became known as the Red S Fields. Title dispute over the Red S lasted for many years.15/ In 1891, two years after Devine had sold the property, the Secretary of the Interior decided in favor of the new owners, Pacific Land and Livestock, and the courts ejected the settlers from the Red S. Fields.16/

The various land acts were used by all kinds of landowners in the Harney Area. Fraud was by no means limited to the big companies. Rather, they were simply more visible since their greater capacity to amass capital allowed them to perpetuate larger frauds. The early land acts, designed for small farms in

moderate climates, essentially prevented prospective ranchers in eastern Oregon from acquiring sufficient land legally. In the arid and semi-arid west, other means, often fraudulent, were resorted to in order to acquire enough land to make livestock grazing feasible.17/

Successful ranching depends upon a profitable cattle market, and the Harney Area ranchers were relatively isolated. Camp Harney had supplied a local market for small operators until it was abandoned in 1880. The large companies were independent of local markets; those in southeastern Oregon used mainly the regional market in San Francisco. They could afford the expense of a long cattle drive, which required a large herd and many cowhands to be profitable.18/ When Camp Harney closed only two local markets remained. Small owners could sell to the big operators in the area, or trail their cattle to the mining towns in Canyon City and John Day. Failing to make a profitable sale in these mining towns, the small operator was forced to trail to the railheads at Huntington, Ontario, or The Dalles and ship his livestock to the regional markets. Even then he was faced with a fluctuating market where his profits could easily be eliminated.19/ During this time, 1879-1880, homestead turnover was quite high in the Harney Area.20/ The Indian scare of 1878, the loss of the only reliable local market and a couple of hard winters were too much for many settlers.

The cattle barons and the small owners were friendly, or at least mutually tolerant, as long as times were good. Mutual interest and a close association

had led to the development of an interdependent relationship. Through the 1880's the range barons constituted the most desirable market for small owners due to proximity.21/ They regularly bought local stock, and although their prices were never as good as those of the larger regional markets, they were at least reasonable. The large operations also provided an opportunity for settlers to work for wages. Their small yearly livestock sales augmented by these wages were the only income sources for most small ranchers. On the other hand, the cattle barons had come to rely on the settlers as a ready labor pool during the peak seasons. This mutually advantageous labor situation fostered friendly and even trusing relations, despite some opposing objectives.22/

The development of towns in the Harney Area was largely due to the small ranchers and homesteaders. The cattle barons not only opposed substantial development of the country, but they were also independent of local merchants. The towns grew in response to the settler's needs. Most of them contained a store, a post office, a school and maybe a saloon. Few towns developed in the south end during the 1880's and 1890's. This area was largely the province of big cattle barons. Only three post offices were recorded for the south end prior to the turn of the century.

The earliest post office in the south end was established at Alvord Ranch in 1874 by Abbott and Whiteside (Figure 32).23/ There is no indication that there was ever a store or town at the location. The Denio post office

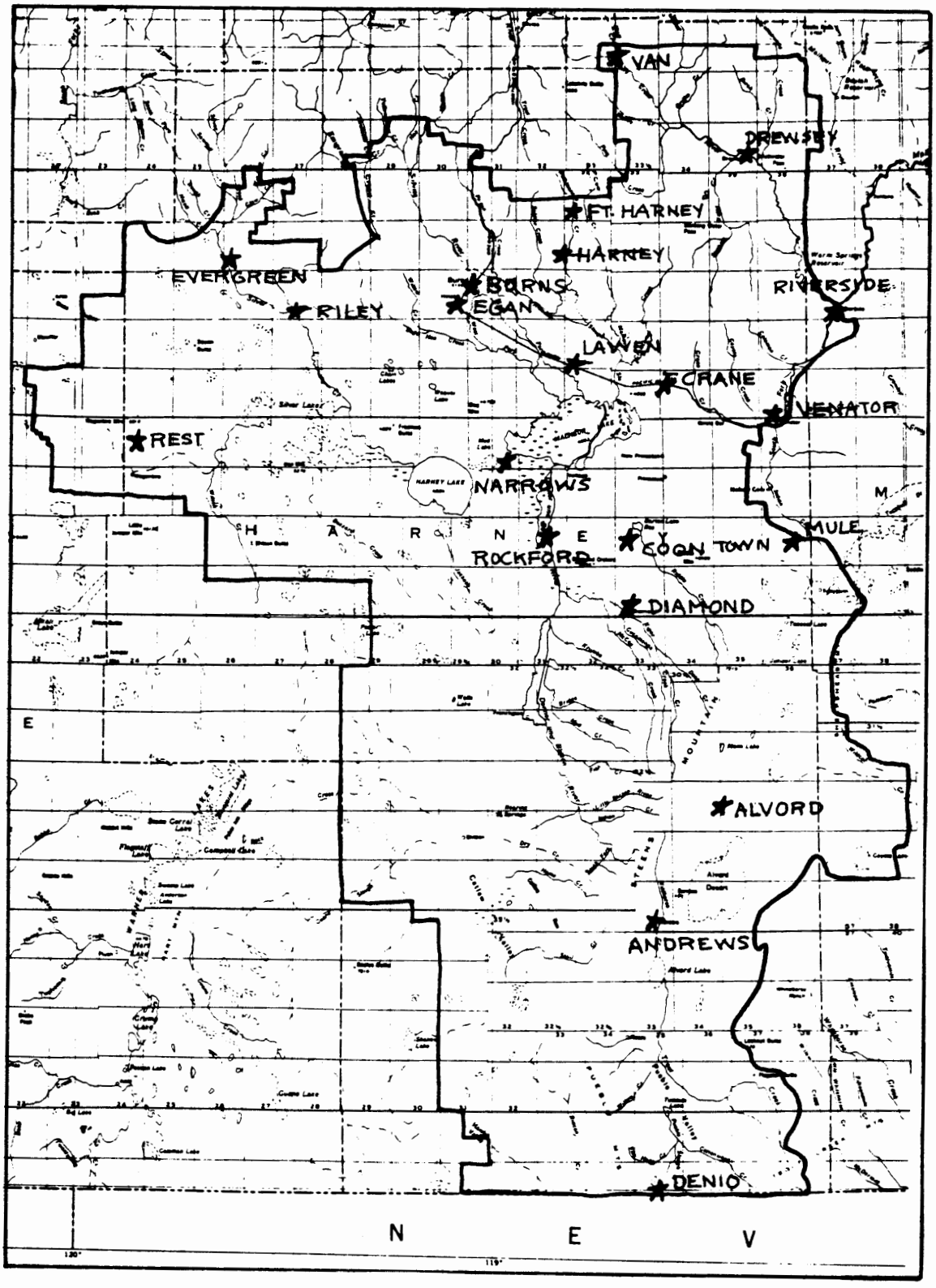


Figure 32. Harney area post offices established in the 19th century.

was established in 1888, and a small stage station was developed about the same time.[24] Denio eventually grew into a small town. The Andrews post office began in 1890. The first businesses opened in Andrews in 1897 when[25] John and George Smyth moved from Diamond to open a saloon and a hotel.[26] They later established a store, as well. It appears that Andrews was the principal town in the south end for a number of years. At its zenith, it had approximately 20 permanent residents.

A number of towns developed in the north end of the county during the 1880's and 1890's. It was here that most of the small ranchers and prospective farmers were located. By 1900 eighteen post offices had been established around the Harney Basin, in Drewsey and in Blitzen, Diamond, and Happy Valleys. The earliest post office was established in 1874 at Fort Harney. The other post offices eatablished were: Egan (1880), in present Hines; Evergreen (1882), in Silver Creek Valley; Drewsey (1883); Burns (1884); Harney City (1885); Diamond (1887); Rock Ford (1888), in the Blitzen Valley; Riverside (1889); Riley (1890); Rest (1890), in the vicinity of Wagontire; Lawen (1891); Van (1891); Narrows (1892); Mule (1895), in Anderson Valley; Venator (1895); Coon Town (1895), in Happy Valley; and Crane (1895).[27]

Five of these locations (Evergreen, Rock Ford, Rest, Mule, and Van) never amounted to anything more than a post office. Egan was never more than a store and saloon, as was Coon Town. Venator lacked a saloon but had a school and church. Riverside never amounted to much until 1914, when the railroad depoted

there. Riley was the social center for Silver Creek residents. It was never very big. The town contained a large general merchandising store with an upstairs dance floor for community parties. Across the road the Oakerman Ranch maintained a stage hotel.28/

Diamond developed into a sizeable town. Located in Diamond Valley, it served homesteaders and ranch hands from Diamond and Happy Valleys as well as those from the Blitzen Valley. At its height it contained a stage building, a hotel, a school, a saloon, and two general merchandising stores. Approximately fifty people resided in the town.29/

Drewsey became a substantial town, eventually including several general stores, a saloon, a livery stable, two hotels, a grist mill, a school, a city hall, a barber shop, a fire house, a jail, a meat market, a drug store, a church, and a rodeo arena. Originally called "Gouge Eye", the town outgrew its lowly beginnings as nothing but a saloon. At its zenith it contained 150 permanent residents. It served the whole Drewsey section of about sixty families in 1886.30/

The five remaining towns were all located around Malheur Lake, where homesteaders had always concentrated. Narrows was on the southwest side of the lake. In the early 1900's it became a sizeable town, containing two hotels, a large general store, a school, a dance hall, four saloons, a restaurant, two livery stables, numerous residences, and corrals for the freight teams.31/

Crane was located on the northeast side of the lake. Prior to the arrival of the railroad in 1916, it amounted to little more than a store and post office. After the arrival of the railroad, it grew to be the principal town and commercial center of the Harney Area.32/

Lawen was located due north of Malheur Lake. It was located in an area that had been settled early. It began as a store and post office at the end of the century and grew to a peak population of about one hundred people.33/

Harney City and Burns were the largest towns of the Harney Area in the late 1800's. Harney City developed directly out of Fort Harney. When the soldiers left, the buildings at the Fort were moved 1½ miles south to be closer to the main road. The first business was established at the site in 1885.34/ Burns began somewhat earlier than Harney City. In 1878 it boasted a single business, little more than a shack. Jim and Joe Fitzgerald had opened a saloon and store with two barrels of whiskey and a few staple goods. In 1883 George McGowan had set up a general store in the area, forming a partnership with Peter Stenger. When the post office burned in Egan, a new store and post office building was raised near the Stenger home. McGowan, who had made a lifelong study of the poetry of Robert Burns, named the new town.35/ In 1890 Burns was the largest town in the Harney Area, with a population of 264. Harney City was its equal with 240 residents.36/

Transportation in the late 1800's was unmechanized. People traveled by

horse, wagon, or stage, and on the primitive roads of the Harney Area it was time-consuming and uncomfortable. Stages ran long distances and stage stations were few and inadequate at best. Many of the stations had no facilities for passengers, but were simply a barn where a change of horses was made. Supplies were brought in on freight wagons. The large cattle companies maintained their own freight lines, often hauling a larger and more varied store of supplies than the small towns. Some of the companies would sell merchandise to a few of the nearby small ranchers. Freight lines were the main contact with the "outside world", bringing not only supplies, but mail and news, as well.

During this period the Harney Area was still part of Grant County. The County Seat, Courts, and Government offices were all located in Canyon City. A business trip from Burns to Canyon City required traveling two days over rough roads, and crossing the Strawberry Mountains, which even today are icy and treacherous in winter. In 1889 the new Harney County was created out of the southern part of Grant County, and Harney City was designated the temporary county seat. In the drawing up of sides over the county seat selection, Harney City advocates had gained the support of the big cattle companies. The rivalry between Burns and Harney City, only eleven miles distant, brought into focus a long-simmering dispute between the cattle barons and the settlers.37/

Basically, the conflict was one of economic interests. The cattle barons opposed any move to develop the country. Promotions of new roads and railroad

connections had drawn their protest. The cattle barons could better afford the inconvenience of poor transportation than the flood of settlers that would follow the railroad. Settlers meant more land claim disputes and less free reign on the public range. The settlers, on the other hand, were eager for the improvement of transportation, as it would improve their access to markets and supply centers. Furthermore, increased settlement meant more potential for developing local markets. The conflict had been aggravated over the years by an increasingly unequal distribution of land. The conflict erupted into violence when a number of settlers secretly formed the 101 Society. In the winter of 1889 several haystacks and meadowlands of the cattle barons were burned.38/

The election was in June 1890. Voter turn-out was extremely high and Burns won by a narrow margin. Harney City contested the outcome due to some questionable votes. Harney City officials refused to surrender the official records to Burns. Not easily discouraged, Burns partisans moved secretly into Harney City under the cover of night and stole the records. An appeal was filed and the courts finally decided in favor of Burns in 1892.39/

In the meantime, the Harney Area was hit by a three-year period of droughts followed by severe dry winters. By 1889 the situation was approaching disaster. The ranges were depleted and hay prices in the region rose as high as $40 a ton by the end of winter. Only Pete French, with his lush

Blitzen Valley, had sufficient hay. He had an excess of 300 tons by the end of March.40/ The cattle barons with property outside the drought area and ready capitol were able to transport their starving animals to healthier ranges. French unloaded his cattle in Montana. Riley and Hardin, and Pacific Land and Livestock moved thousands of cows to California and Idaho.

The small owners were the greatest losers. During January it was estimated that the death rate of cattle around Harney Lake was 100 per day.41/ This was the second period in the history of the Harney Area that homestead sales were high. Again, land was consolidated in the hands of the cattle barons, but not all sales went to them. Many properties went to small ranchers, as well.

John Devine was the only cattle baron in the area to face disaster during this drought. Devine had built up his empire with lavish care. The Alvord Ranch was a showplace, with a fenced private preserve for a herd of elk. A large barn stabled racehorses capable of winning anywhere. But Devine was land-hungry and over-extended himself. Much of his property was purchased fraudulently under the Swampland Act. When many of his patents were declared illegal by the State, Devine had to rebuy them from speculators. The series of droughts and hard winters caught Devine over-extended. It is said he lost three-fourths of his livestock. Devine was forced into bankruptcy. When his holdings were put up for sale, Henry Miller of Pacific Land and Livestock was the only bidder.42/ In 1889 Miller purchased Whitehorse Ranch, Alvord Ranch,

Mann Lake Ranch, Island Ranch, and the Anderson Valley properties for a reputed one million dollars.[43/]

The unequal distribution of land and cattle was extreme by 1900. The three big cattle companies owned 64.3 percent of all the cattle in the county.[44/] They also had amassed huge acreages. French-Glenn paid taxes on 105,831 acres that year. Pacific Land and Livestock had 82,689 acres, and Riley and Hardin had 8,621 acres.[45/] All three companies had California financial backing. Only five owners, exclusive of the big three, controlled over one thousand head of cattle. Three of these - Shirk Brothers, George Shelly and Hanley Brothers - had built up their companies without the aid of outside backing. Of the small ranches, only four owners had between 500 and 1,000 head of cattle. Seventeen owners controlled between 200 and 500 head. Owners with herds of less than 200 head possessed the remaining 11,018 head in the county.[46/]

The conflict between settler and cattle baron was focused in a single event. On December 26, 1897, a disgruntled homesteader named Ed Oliver shot and killed cattle king Pete French in cold blood. The dispute between French and Oliver was based on a road case pending in circuit court. Ed Oliver's homestead was completely surrounded by French's land, and he had petitioned the courts for a road easement. In the meantime, Oliver habitually rode across one of French's fields. French, who wanted to force Oliver out, had warned him to stay off his land. They day of the murder, French caught Oliver on his land and, while exchanging heated words, lashed Oliver across the face with a

willow stick. Oliver shot French through the temple and fled. During the manslaughter trial Oliver pleaded self-defense and the jury acquitted him. Local oral history claims that shortly after the trial Oliver deserted his wife and children for a woman of low character.47/ Another version claims he was secretly murdered by French's faithful cowboys and buried out in the desert.

A unique event in the history of the Harney Area occurred at the end of the century. In 1897 two Central Pacific Railroad employees, Charles Taylor and John Fulton, heard about extensive borax deposits in the Alvord Valley. They were, at the time, operating a small borax mine in the Black Rock Desert of Nevada. Taylor, after investigating, purchased Hot Lake with 3,000 acres of surrounding alkali deposits and springs from a local rancher, Robert Doan, for a reputed $7,000. By 1898 they had completed facilities and begun operations at the site. The works began producing under the name of "Wenty-Mule Team Borax Company," but the partners failed to copyright the name. A California company registered the same name, and the Oregon company lost the case to retain it. The company was renamed the Rose Valley Borax Company.48/

During the early years the daily production of refined borax was as much as 10,000 pounds. The annual gross revenue, based on the average selling price at the time of seven cents per pound, equaled roughly a quarter of a million dollars. The laborers were all Chinese, provided by a Carson City, Nevada, Chinese-employment agency. Initially, there were 25 to 30 laborers. They were paid $1.50 per day and lived in sod houses provided by the company.

In 1902 Christian Ollgard, the company chemist, purchased the operation. Within five years' time, the deposits became so inferior that they could not be profitably refined and shipped 150 miles to the railhead at Winnemucca. Ollgard did reasonably well, although he was too late to reap the high profits of the early days. He closed the plant in 1907. The Rose Valley Borax Company was the only continuous borax operation to have existed in Oregon.49/

During the last decade of the 19th century, the Harney Area began to be drawn out of isolation. Eastern markets, which had been avoided as risky, offered substantially higher prices. In Kansas City western beef sold for 5½ cents per pound live weight, while San Francisco paid only 5 cents per pound dressed. It became profitable to ship cattle east in spite of the fact that they might lose as much as 45 pounds per head during the long trip. In addition, eastern buyers began to enter Harney County to purchase beef, thereby providing an alternative market to small ranchers.50/ Other changes in the cattle industry were becoming apparent in the Harney Area. Reliance on the open range was lessening. A trend towards investing in both land and cattle instead of only cattle was beginning. Ranchers began to realize that a stock-farming operation was inevitable if the dangers of drought and hard winters were to be avoided. Finally, improved breeding practices gained wider acceptance.51/ While these changes had been under way during the previous decade, they did not become prevalent until the nineties. The turn of the century marked the beginning of a new era in the livestock industry.

FOOTNOTES

1. Peter K. Simpson, A Social History of the Cattle Industry in Southeastern Oregon, 1973, p. 77.
2. Ibid., p. 78.
3. Ibid., p. 80.
4. Linley Lutz, Oregon Railroads, 1924.
5. Simpson, Op. cit., p. 63.
6. J. O. Oliphant, On the Cattle Ranges of the Oregon Country, 1968, p. 190.
7. Bureau of Land Management brochure, Historical Highlights, n.d.
8. Paul Gates, History of Public Land Law Development, 1968, p. 400.
9. Bureau of Land Management brochure, Op. cit.
10. Ibid.
11. M. J. LoPiccolo, Some Aspects of the Range Cattle Industry of Harney County, Oregon, 1870-1900, 1962, p. 66.
12. Simpson, Op. cit., p. 125.
13. Ibid., p. 61.
14. LoPiccolo, Op. cit., p. 63.
15. George F. Brimlow, Harney County and Its Rangeland, 1951, p. 174.
16. Simpson, Op. cit., p. 153.
17. David Lavender, Land of Giants: The Drive to the Pacific Northwest 1750-1950, 1958, p. 398.
18. Simpson, Op. cit., p. 67.
19. Ibid., p. 74.
20. Ibid., p. 84.

21. Ibid., p. 74

22. Ibid.

23. General Services Administration, National Archives and Records Service of the United States, personal correspondence.

24. Ibid.

25. Ibid.

26. Royal Jackson and Jennifer Lee, Harney County: An Historical Inventory, 1978, p. 46.

27. General Services Administration, Op. cit.

28. Jesse Williams, personal interview.

29. Jackson & Lee, Op. cit., p. 59.

30. Brimlow, Op. cit., p. 162-163.

31. Marcus Haines, personal interview.

32. Ibid.

33. Jackson & Lee, Op. cit.

34. Ibid., p. 111.

35. Lewis McArthur, Oregon Geographic Names, 1974, p. 79.

36. Simpson, Op. cit., p. 186.

37. Ibid., p. 150-152.

38. Ibid., p. 153.

39. Brimlow, Op. cit., p. 111.

40. LoPiccolo, Op. cit., p. 111.

41. Ibid.

42. Brimlow, Op. cit., p. 176.

43. Simpson, Op. cit., p. 62.

44. LoPiccolo, Op. cit., p. 119.

45. Ibid., p. 68.

46. Ibid., p. 120.

47. Ibid., p. 46.

48. Leslie Shaffer and Richard Baxter, "Oregon Borax: Twenty-Mule Team Rose Valley History", Oregon Historical Quarterly, September 1972.

49. Ibid.

50. LoPiccolo, Op. cit., p. 95.

51. Simpson, Op. cit., p.116.

THE END OF ISOLATION
1900-1920

The twentieth century began with some major land sales in the Harney Area. In 1903 Riley and Hardin, owners of the big Double O Ranch, sold out to Bill Hanley.[1] Hanley had started in the Harney Area in 1898 by buying his brother's claim north of Malheur Lake.[2] This property became the Bell-A Ranch. With the addition of the Double O property, Hanley became a major cattle baron. Unlike the previous owners, Hanley was not a Californian and lacked the financial backing of a big investor.

After the death of Pete French, the Glenn family hired Bill Hanley to manage the big Blitzen Valley spread. French had encumbered the property with mortgages and debts. Consolidated in a new mortgage, they represented an indebtedness of $275,000. Failure to meet the note forced the sale, in 1907, of the largest single ranch in the United States. It was sold to Henry Ladd Corbett of Portland.[3] Hanley continued to manage the property, but it lost money steadily. Corbett, in partnership with Louis Swift, organized the Eastern Oregon Livestock Company in 1916 and in 1928 Swift bought out Corbett.[4]

A third cattle baron of the area, John Devine, had sold out to Pacific Land and Livestock at the turn of the century. An interesting detail of this transaction was that Henry Miller retained Devine as manager of the Alvord Ranch

but when Devine started to run the property into debt again he was forced to resign. In an uncommon act of generosity, probably motivated by his respect for the early-day cattleman, Miller deeded the Alvord Ranch to Devine. He gave him a lifetime, non-transferrable ownership of the ranch and livestock with which to operate it. In 1901 Devine died and the property reverted to the Pacific Livestock Company.5/

Within the first decade of the twentieth century, three of the four big cattle barons in the Harney Area had sold their properties. Only one of the big California capitalists, Henry Miller of Pacific Land and Livestock remained. Two of the properties had come into the hands of Oregonians, Hanley and Corbett.

One last big livestock owner began to make his name at this time. William Walter (Bill) Brown filed on a homestead in the Wagontire area in the last decade of the nineteenth century. He started with sheep, gradually purchasing more land in the area from his profits. Brown invested heavily in horses. Within ten to fifteen years he had 12,000 head of horses and 6,000 head of sheep. At his height he owned 22,000 sheep and 36,000 acres. Since he had secured all the water holes, this meant he controlled at least 100,000 acres of rangeland.6/

During World War I, Brown gained the title of "Horse King" because of the number of horses he sold to the military. It is said that he had more horses than anyone in Oregon. Bill Brown was an eccentric, and numerous

anecdotes about him exist. He bacame a self-made millionaire several times but lost or gave away his fortune. He was trusting, naive, and generous; one of the few livestock kings who had no enemies.7/

The conservation movement of the twentieth century represented a significant change in the national attitude and marked a turning point in public land policy.8/ From the beginning, Federal land policy encouraged the passage of public lands into private ownership quickly to dispose of the lands in order to generate revenue. President Theodore Roosevelt propelled the National Forest Reserves Act through Congress in 1897. Originally designed to completely withdraw some forested public lands for conservation, the Act was modified to allow mining and the sale of dead, matured, or lage-growth timber. Mining and timber were two of the principal industries of the west. Protestors claimed that complete withdrawal would shut down the important industries.9/

In 1903 the conservation movement received another boost when Roosevelt created the first Federal wildlife refuge in Florida. Five years later, national politics came to Harney County with the formation of a Federal Bird Sanctuary around Malheur and Harney Lakes.10/

The conservation movement was again felt in Harney County when the state of Oregon designated several game refuges in the area for deer. Deer were not common in the valleys of Harney County prior to the advent of the livestock

industry. Deer are browsers and generally do not feed on grass. Prior to livestock grazing, the valleys produced mainly wild grasses. After the drought and overgrazing of the range in the late 1890's, browse plants gained a niche and became competitive with wild grasses in the valleys. Very slowly the deer began increasing, and pressure was put on the legislature to protect them.11/

In 1913 the Oregon legislature established the Steens Mountain Game Refuge. It encompassed the east side of the Steens Mountain from the top of the rim down to the county road. The designated area ran from Fields to Follyfarm. Although the game commission was charged with administering the refuge, they were not permitted to manage it until 1940, when hunting to control the population was allowed. The refuge was abolished in 1955.12/

The last gasp of the homestead era was manifested in the passage of two final acts in the early 1900's. The Enlarged Homestead Act was passed in 1909 and the Stock-Raising Homestead Act in 1916. Both were designed for semi-arid lands and both failed to produce homesteads on the range.

In the semi-arid western states, little immigration had taken place. State governments and their colleges of agriculture, immigration bureaus, railroads, and real estate agents were looking for a way to develop these lands more intensively than had the livestock industry. A mixed farming-grazing operation was endorsed by the U.S. Department of Agriculture for

the semiarid lands.[13]

Dryland farming techniques were gaining in popularity. A form of intensive agriculture, dryland farming could produce grain, grass and other crops on land where rainfall was insufficient for normal farm crops. The soil moisture had to be preserved in fallow years by harrowing to keep down weeds and to make the top soil into a dust mulch. Deep plowing in the fall was necessary and sown seeds had to be firmly packed.[14]

In 1906 the U.S. Department of Agriculture established eleven stations in the Great Plains to study dryland farming methods and drought-resistant grasses and grains. The same year, the agency issued a warning that the recent cycle of wet years did not mean that a permanent change in climate had occurred, and that dryer years would return. They also warned that immigration to semi-arid lands by farmers familiar only with humid agriculture would undoubtedly lead to disaster.[15]

Advocates of dryland farming succeeded in obtaining passage of the Enlarged Homestead Act which provided 320 acre homesteads on non-irrigatable arid lands in Oregon, Washington, Arizona, New Mexico, Colorado, Utah, Montana, Wyoming, and Nevada. Propaganda by land locators, railroads, and real estate and development businesses publicized dryland farming successes, which were spotty. The notion that rainfall would follow the plow was coined.[16]

The "sodbuster" boom in the Harney Area began immediately after passage

of the Act in 1909 and lasted less than ten years. The first few years good rainfall was experienced and success seemed sure.17/ The land sales were largely in those areas considered marginal by established ranchers and settlers. Basically, it amounted to a remnants sale by the Federal Government. The two valleys in the Harney Area where most dryland farm claims were made were Sunset Valley, near the Narrows, and Catlow Valley. In Sunset Valley there were eventually 35 to 40 homesteads, largely due to the boom.18/ In 1914 the Sunset Valley precinct had 57 registered voters (all males, as women had yet to receive the vote). For a time it had the largest rural school district in the county.19/ A post office named Loma was established in 1911, but it closed to Burns the following year (Figure 33).20/

Catlow Valley saw the establishment of seven post offices and three towns during the sodbuster boom. The Sageview post office served the sage plains on the west side of Catlow Valley from 1916 to 1918.21/ A store and grade school were also located at the site.22/ Tiara post office was located in the north end of Catlow Valley approximately 1½ miles west of Reichen's Corner. It operated from 1916 to 1917. The Catlow post office was moved four times. It was first established in Ragtown in 1914. The following year it was moved to a location four miles east of Reichen's Corner which was often called Catlow.23/ It never was a town, but a store was located at the site where three stage lines intersected.24/ The post office was discontinued in 1923. Berdugo post office was located in Ragtown from 1915 to 1917.25/

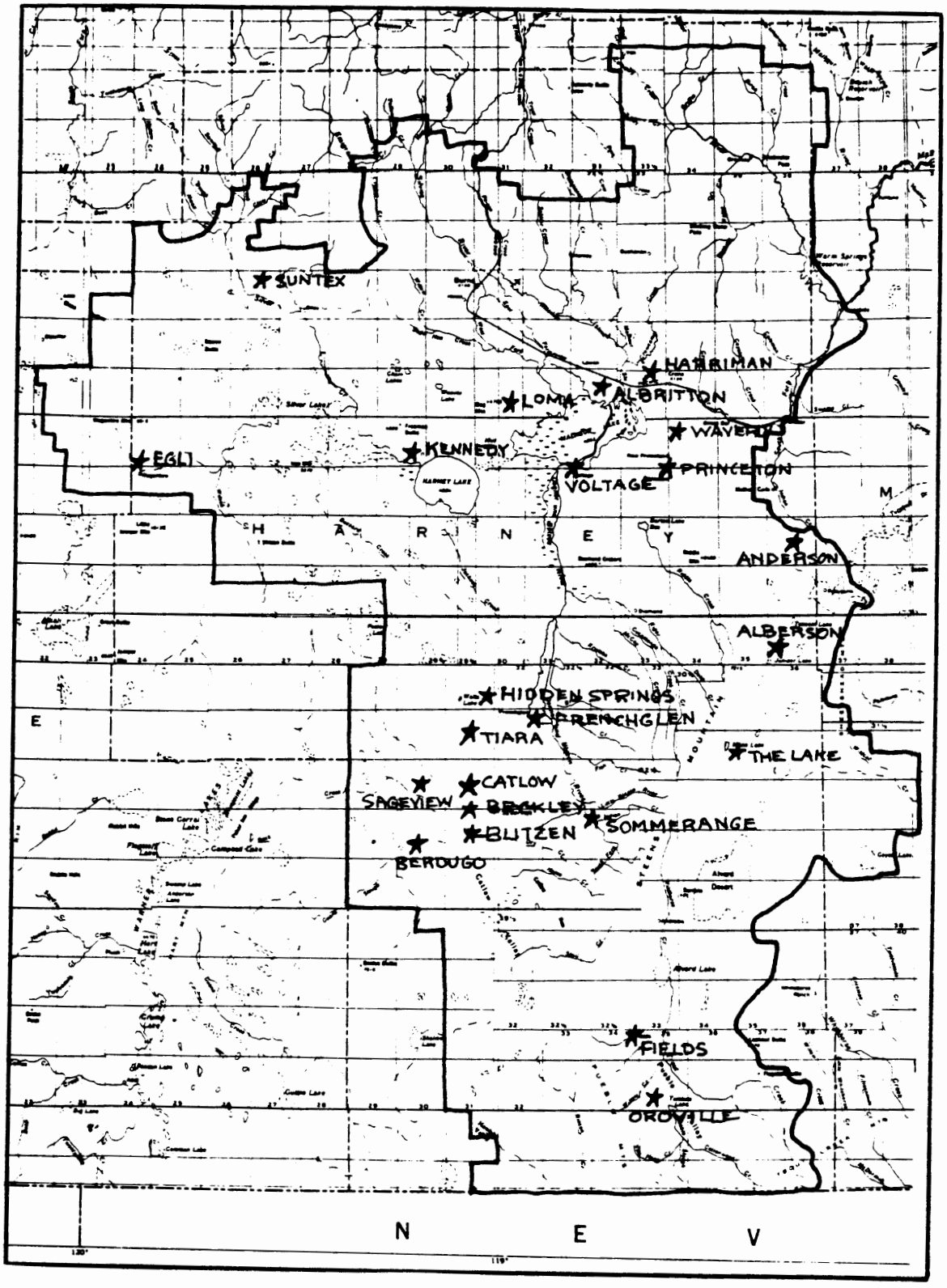


Figure 33. Harney area post offices established in the early 20th century.

The three towns in Catlow Valley were Ragtown, Beckley, and Blitzen. All three resulted from the "homestead madness" of the Enlarged Homestead Act, when hundreds of poor, would-be farmers settled in Catlow Valley to dryland farm grain. In 1911 a group of homesteaders, lacking building materials and too poor to buy them, erected tents approximately five miles south of present Rock Creek Ranch. The men dug pits seven to eight feet deep over which the tents were set. Wood-burning stoves provided heat as well as cooking facilities. Barns were built with rabbitwire, post, and sagebrush. Water had to be hauled from a well three miles away until a well could be dug in town. Appropriately, the settlement was called Ragtown. With time, rock structures replaced some of the tents.[26] The settlement was dispersed around the general area, there being no actual town with a mainstreet and boardwalks.[27] Ragtown declined as rapidly as it had developed when dryland farming failed.

The town of Beckley was located six miles due south of Catlow, or Reichen's Corner, and three miles north of Blitzen townsite.[28] Charles D. Beckley started a general store at the location in 1911. A post office was established in the store the following year.[29] A grade school taught by Gussy Nelson had about ten children enrolled. The town consisted of only a few buildings loosely clustered together.[30] In 1920 Beckley served as one of two voting precincts in the valley. Poll book records for 1920 indicate that 38 votes were cast in Beckley.[31]

Blitzen was the most substantial town in the valley. By 1915 it had a post office, two stores, a school, a saloon, and numerous residences, at least one of which was two-storied.[32] The Bradeen Brothers operated a large general store in town which lasted into the 1940's. When the county offered a 5-cent bounty on rabbits, Bradeen, adapting to local economic conditions, allowed clients to redeem their rabbit ears at the store for goods.[33]

By the 1920's most of the homesteaders had failed and abandoned their homesteads to the tax collectors. Blitzen survived the boom and bust of dryland farming, but could not compete with Burns and Lakeview once motorized transportation became common. The Bradeen Store closed in 1940 and the post office was discontinued in 1943.

Numerous other towns and post offices were established in the early twentieth century, although it is not known if they were specifically associated with the dryland farming boom. In the south end of the Harney Area were six additional post offices: The Lake was established in 1914, Hidden Springs in 1916, Anderson in 1908, Alberson in 1907, Fields in 1913, and Oroville in 1911.[34] Alberson was a stage station and both Oroville and Fields were small towns.

In the north end of the Harney Area, five additional post offices were established in the early twentieth century. These were Kennedy in 1906,

Suntex in 1916, Voltage in 1908, Princeton in 1916, and Egli in 1900.[35] Egli began as just a post office, but eventually developed into a small town called Wagontire. Princeton began as a store and post office and, although it survives today, has never developed beyond that. Voltage was a division point for the mail brought in from Crane by stage. It never amounted to more than a store, post office and school.[36] Suntex was also a small town, with a store, post office, school and grange hall.

A direct result of the dryland farming boom in the Harney Area was the establishment of Squaw Butte Agricultural Experiment Station. In 1908 Professor Scudder from Oregon Agricultural College (now Oregon State University) began some experimental work in cooperation with a homesteader in Sunset Valley. The experimental farm was located near the site of Sunset Cemetery. A variety of crops were tried, including grain, alfalfa, row crops, some horticultural crops, and even fruit trees. None of the tests were successful.[37]

By 1911 many of the dryland farms were in trouble, some of the farmers having already given up. The need for technical guidance was urgent. The Oregon legislature was appealed to for assistance. In 1911 they responded with an appropriation of $4,000 annually to "investigate and demonstrate the conditions under which useful plants may be grown on dry, arid, or non-irrigated lands of the State of Oregon, and to determine the kind of plants best adapted for growth on said lands . . ."[38] Building facilities were begun the same

year for the Harney Branch Experimental Station. The site was located just east of the present airport. Crops were planted the following year. The station tested hundreds of varieties of wheat, oats, barley, rye, flax, field peas, alfalfa, clover, sunflowers, and root crops.39/

Passage of the Taylor Grazing Act in 1934 prompted a request for research on range and livestock problems associated with management of the public domain. The Oregon Legislature provided funds for additional facilities and livestock. In 1935 the Squaw Butte Range facilities were started, using Civilian Conservation Corps labor. In 1942 the Section 5 Station was begun, and in 1955 the original Harney Branch Station was abandoned. Since 1935 the experiment work has been conducted as a mutual endeavor of the State University and the U.S. Department of Interior's Bureau of Land Management.40/

Harney County's contact with the outside world was limited well into the twentieth century by the absence of a railhead. The nearest terminal was 150 miles away at Ontario. Wagons were still the basis of transportation. Most of the commercial traffic went east to Ontario or north to Canyon City and the Dalles. Travel south to Winnemucca was mostly made by miners and cattlemen. The local traffic between towns was equally as difficult. Good roads were lacking and violent weather occasionally made them impassable. The effect of the poor transportation system was to keep the region in a frontier-like state.41/

Harney County definitely needed a railhead. Rumors circulated about the imminent arrival of the railroad. Settlers' hopes added fuel to the growing fire of anticipation. In 1901 the Union Pacific and Southern Pacific Railroads were consolidated by E. H. Harriman. An ambitious program of construction was begun. In 1905 a plan was formulated to build a railroad running east and west across the state from Natron to Ontario. Construction was begun at both ends of the proposed line.[42]

Around 1910 three towns sprung up on the east side of Malheur Lake in anticipation of the railroad. Albritton was homesteaded by T. C. Albritton and his brother. They had information from the railroad survey project that Albritton would be the site of the junction of two rail lines, one to Burns and one to the south. The town was platted and lots were sold. A 20-room hotel containing a restaurant, barber shop, and doctor's office was built in Albritton. The town also had a school and livery stable but no store.[43] It received a post office in 1916.

Waverly was homesteaded by a man named Brakeman. Located on the southwest side of Windy Point, it was hoped that the railroad would pass through or near the town. The main road from Burns south junctioned at Waverly. The town never amounted to more than a store and post office.[44] The post office was established in 1908.

The name Harriman was chosen for the third town in honor of and enticement to the railroad tycoon E. H. Harriman. It was located on the southeast

side of Warm Springs Butte northeast of Malheur Lake. It received a post office in 1907. It was thought that the railroad would pass through the town to Burns. The town boasted the Denman Hotel, a post office, and a few other buildings. When the line was finally extended from Crane to Burns in 1924, it missed Harriman by three-fourths of a mile.45/

By 1914 the new railroad was complete from Natron to Oakridge and from Ontario to Riverside. It was another two years before it was extended to Crane. In the meantime, Riverside developed into a sizeable town with a school house, a hotel, a feedstore, stockyards, and a few residences. Quantities of sheep and wool were shipped from Riverside. The sheep were trailed from winter grazing on the desert to Riverside in the early spring. They were sheared at Riverside and the wool was shipped by rail to the mills. The sheep were then moved north to the forests to graze through the summer. In the fall they were trailed back to Riverside and lambs were shipped out.46/

In 1916 the railroad brought to Harney County materials for the first large dam. The Warm Springs Dam was located just north of Riverside. Initiated by a private company, the dam project fell into financial difficulties, and the newly created Bureau of Reclamation was applied to for assistance.47/ It was agreed that half-interest in the land, water, and structure would be deeded to the Bureau and half would be retained by the private company.48/ In 1919 the dam was completed.

The railroad was extended to Crane in 1916, and there it was abandoned.

The work was discontinued as a result of uncertainty caused by the Federal Government's suit to compel separation of the Southern Pacific from the Union Pacific railroad. It was felt that the consolidation violated the principles of freedom of trade set out in the Sherman Anti-trust Act. The Supreme Court decided in favor of the Government.49/

One final homestead act, the Stock Raising Homestead Act, was enacted in 1916. Leading up to the passage of the act was a controversy over the leasing of public domain versus the homesteading of it. This issue persisted even after the Act was adopted, and was not resolved until 1934 when the Taylor Grazing Act reversed the decision.

The controversy began when two alternative bills came under consideration at the same time. In 1914 the Stock Raising Homestead Act was proposed to aid in the settlement of arid lands by offering 640-acre tracts instead of the usual 160 to 320-acre tract. At the same time a measure was introduced into Congress to authorize establishment of grazing districts on public lands. Permits were to be issued for ten-year periods with preference given to homesteaders.50/

Advocates of homesteading claimed the Act would furnish homes for the populace, help populate arid states and get the lands on the tax roles. Critics of the Act said that breaking up the range into 640-acre parcels would cause deterioration of the range and hurt the livestock industry, and that these homesteads would fail in semi-arid areas just as had previous ones.51/

Leasing was advocated as a means of conserving the range. The Forest Service had adopted such a procedure and results were positive. Furthermore, livestock owners favored it. Critics of leasing claimed it would prevent settlement of arid regions, favor large owners, and lockup the land in Federal absentee ownership.52/ Proponents claimed it would provide an incentive to stop overgrazing and remove transient use which seriously abused the range.53/

In the Harney Area public opinion was divided. The newspapers, probably reflecting the view of the town residents, favored homesteading. The big cattle companies and the well-established early-day homesteaders and ranchers favored leasing the public range. Small owners wanted some sort of Federal regulation of grazing, but disagreed as to what these measures should be.54/ The local debate became vehement and no organized front could be gathered to influence the national dispute. Homesteading won out and, as predicted, failed to significantly change the settlement pattern of the Harney Area.

In the first two decades of the twentieth century, the Harney Area changed dramatically. The frontier isolation which previously characterized the region had been breached. Through the dispute over leasing, the Harney Area was drawn into national politics. The arrival of the railroad to Riverside was the ultimate event that bound the Harney Area to the nation. It signified the conclusion of an isolated and independent lifestyle that, in spite of inequalities and hardships, is nostalgically recalled.

FOOTNOTES

1. M. J. LoPiccolo, Some Aspects of the Range Cattle Industry of Harney County, Oregon, 1870-1900, 1962, p. 23.
2. George F. Brimlow, Harney County and Its Rangeland, 1951, p. 213.
3. LoPiccolo, Op. cit., p. 50.
4. E. R. Jackman and John Scharff, Steens Mountain in Oregon's High Desert Country, 1967, p. 161.
5. Ibid., p. 157
6. Oregonian, October 23, 1932.
7. Jackman & Scharff, Op. cit., p. 149.
8. Paul Gates, History of Public Land Law Development, 1968, p. 567.
9. Ibid., p. 569-70.
10. Malheur National Wildlife Refuge, Historical Notes, n.d.
11. Ellis Mason, personal interview.
12. Workers of the Writer's Program of the Work Projects Administration in the State of Oregon, Oregon, End of the Trail, 1940.
13. Gates, Op. cit., p. 503-4.
14. Ibid.
15. Ibid.
16. Ibid.
17. Pauline Brayman, personal interview.
18. Marcus Haines, personal interview.
19. Brimlow, Op. cit., p. 223.
20. General Services Administration, National Archives and Records Service of the United States, personal correspondence.

21. Ibid.

22. John Crow, personal interview.

23. General Services Administration, Op. cit.

24. John Crow, personal interview.

25. General Services Administration, Op. cit.

26. John Crow, personal interview.

27. Ibid.

28. R. N. Preston, Historical Maps of Oregon, 1972.

29. General Services Administration, Op. cit.

30. John Crow, personal interview.

31. Marcus Haines, personal interview.

32. John Crow, personal interview.

33. Bill Bradeen, personal interview.

34. General Services Administration, Op. cit.

35. Ibid.

36. Georgia Crow, personal interview.

37. W. A. Sawyer, History of Squaw Butte Experiment Station, uplublished manuscript.

38. Ibid.

39. Ibid.

40. Ibid.

41. Peter K. Simpson, A Social History of the Cattle Industry in Southeastern Oregon, 1973, p. 195-7.

42. Linley Lutz, Oregon Railroads, 1924.

43. Tom Jenkins, personal interview.

44. Ibid.

45. Ibid.

46. Marcus Haines, personal interview.

47. Ibid.

48. Richard Miller, personal interview.

49. Lutz, Op. cit.

50. Gates, Op. cit., p. 516-17.

51. Ibid.

52. Ibid.

53. Simpson, Op. cit., p. 308-9.

54. Ibid., p. 305.

FEDERAL INTERVENTION: DEATH OF THE OLD WEST
1920-1946

The mid-twentieth century brought radical changes to the Harney Area that permanently altered the livestock industry and the social structure of the region. In the first decades of the twentieth century, the Harney Area lost its frontier isolation, but still retained much of the frontier life style. By the 1940's, however, little of the "ways of the old west" remained. Federal intervention on the range, the opening of the Hines Lumber mill, and national depression were three major factors to effect these changes.

Intervention by the Federal Government in range management was brought about by the urging of the cattlemen themselves. The condition of the range was very poor and continuing to deteriorate, due to a series of droughts and constant overgrazing. In many areas of the west, the poor condition was blamed on sheep. Conflicts between sheepmen and cattlemen erupted around the country, amounting in many areas to virtual warfare. In Harney County the conflict had a different focus, involving mainly transient sheep outfits.

Sheep were introduced into southeastern Oregon before 1875 and had been part of the local livestock industry throughout its development.[1/] For this reason, Harney County saw none of the sheep wars of the 1900's that erupted in Crook, Morrow, and Grant Counties. Friction in Harney County over the use of

the range, existed not between cattlemen and sheepmen, but among the transient sheepmen themselves. They had to compete for the few parcels of free range left because resident livestock owners had already acquired all the bedding and lambing grounds and water rights they required.[2/]

Initially, the growth in the sheep industry was a result of the arrival of the transcontinental railroad in the west.[3/] The railroads brought in many of the people who went into the sheep business. Sheep required little capital investment relative to cattle. The only capital expense was the band of sheep. No base ranch was required. Sheep were grazed on the trail year-round.[4/] Furthermore, sheep were relatively independent of the shipping lines. A short trailing distance was not important to sheepherders, as it was to cattle drovers. Cattle lost weight on long drives to the market or railhead. The objective of trailing sheep was to raise them on free grass while moving them to market.[5/]

As the sheep industry increased in southeastern Oregon, the cattle industry decreased. In 1880 there were 78,364 head of beef in Harney County and only 58,490 head of sheep. A decade later there were 54,666 head of cattle and 294,045 head of sheep.[6/] In the 11 years from 1896 to 1907, the increase in sheep was almost 1000 percent in Harney County.[7/] Contributing to this growth were population pressures in the Willamette Valley and the Columbia Basin that forced out the sheep to the less desirable ranges in southeastern Oregon.[8/]

During the early 1920's cattlemen suffered through an agricultural depression that saw cattle prices fall from $13.27 to $7.28 in three years.[9] The fall of the cattle prices were countered by a rise in sheep prices that convinced many Harney Area cattlemen to venture into sheep raising. Sheep raising was labor intensive, and the 1920's was a period of relatively cheap labor. Skilled Irish, Welsh, and Basque sheepherders could be imported to the country on a yearly contract that was ridiculously cheap by American standards. Harney Area ranchers extended their credit to buy sheep, brought in a foreign sheepherder, and joined in the new period of overgrazing the range.

Two trailing circles became established during the 1920's in the Harney Area. The western circle involved a trail basically between Warner Valley and Steens Mountain and came to be dominated by Irish herders.[10] The eastern circle alternated between Barren Valley and Steens Mountain and was dominated by the Basque.[11] Because there remained a good amount of unclaimed land on Steens Mountain that was open to the sheepmen, and because the high elevations restricted grazing to the summer season, the Mountain became a jungle of sheep, cattle, cowboys, and Basque and Irish sheepherders during the summer.[12] The range was badly crowded with more than 200,000 head of sheep on the Mountain.[13] Overgrazing of the fragile alpine and sub-alpine meadows and grasslands was inevitable.

During the roaring twenties on Steens Mountain, two historic landmarks

were established. Due to the numbers of cowboys and sheepherders on the Mountain during the symmer, some local merchants, the Bradeen Brothers, opened a supply camp there. It was located on the south fork of the Blitzen River at what became known as Bradeen Crossing, just downstream of the present Blitzen Crossing.14/ The Bradeens petitioned for a post office in the name of Steens, but the name was rejected by postal authorities. The name Somerange was suggested because this was the summer range of many stockmen. The post office was established December 19, 1923, at the Bradeen Supply Store. About 1926 the Bradeens abandoned their store, and the post office was moved off the mountain to a point a little west of the P Ranch. On October 1, 1930, the name of the office was changed to Frenchglen in reference to the French-Glenn Cattle Company.15/

The other landmark from this period on the Steens is the infamous Whorehouse Meadows. The name applies to a grove of quaking aspens in a meadow about 1½ miles from Fish Lake. There, a group of prostitutes set up operations each summer in tents. Many of the aspens today retain the carved names and dates of people who passed there.

As the crowding on the open range, particularly the summer range on the Steens, continued, resident livestock owners began to argue for Federal regulation to relieve serious overgrazing. Blame was put upon the large numbers of transient sheepmen who were viewed as exploiters since they paid no taxes. "To be a sheepman was no sin as long as one owned land, paid taxes, and otherwise identi-

fied himself with the community".16/ Federal management, while not the most desirable plan, seemed to be the only feasible alternative to most westerners. On November 26, 1934 the Taylor Grazing Act was passed. All remaining public lands, largely in ten western states, were closed to homesteading and free use. The Act authorized the classification of the public lands as to their proper use; allowed for the exchange of lands with state of private owners; authorized procedures to improve, develop, and conserve public lands; and called for the establishment of grazing districts.17/

Sensitive to earlier criticism by livestock owners of Federal regulation, the officials of the Department of the Interior set out to gain cooperation and support in the new grazing districts. To this purpose, use fees were not based on economic value, but modest fees were charged. Instead of developing a Washington-based bureaucracy, administration was to be decentralized with the selection of a local stockman as chief administrator, and the establishment of advisory boards with considerable authority to be elected by the permittees. Finally, extreme care was taken in determining grazing privileges.18/

The issuance of grazing permits was based on base property and the rancher's ability to winter his livestock. Many felt it was unfair and irrevelent whether winter feed was grown on the ranch or purchased. In any case, many charges of criminal trespass were filed against ranchers whose use of the range was cut back for lack of sufficient base property. One result of the new regulations was that many sheep bands were forced out. These outfits were mainly

the transient ones which had no base property to qualify for grazing permits.

In 1924 the citizens of Burns finally realized their long-sought dream of bringing in the railroad. Extension of the line from Crane to Burns was the direct result of rising lumber prices, which made harvest of the pine forests to the north of Burns profitable. The Fred Herrick Lumber Company, in cooperation with the Union Pacific Railroad Company, built the new line. The Herrick Company planned to construct a lumber mill near Burns to process the timber it had purchased from the Forest Service. It needed the railroad to export the finished lumber. Herrick's Company fell into financial difficulties before completing the mill.19/ In 1928 a Chicago outfit, the Edward Hines Lumber Company, assumed the project and completed the mill. It began operations January 22, 1930.20/

The stock market crash of 1928 and the subsequent national depression of the thirties contributed to the changing face of Harney County. The new Hines Mill drew those forced out of jobs in neighboring states. They were joined by the local sheepmen who had lost their herds either to bank closures or as a result of the grazing regulations. By 1933 Burns had doubled its population.21/

In the spring of 1933 Congress passed the Emergency Conservation Work Program in response to the national depression. The Civilian Conservation

Corps, known as the C.C.C. or the three C's was established June 28, 1937, to find useful work for the masses of unemployed. At its peak, 502,000 men 18 to 25 years old were enlisted to work in the public forests, parks, and rangelands.22/ In the Harney Area numerous camps were established. Some of these were Gap Ranch, Squaw Butte, the Narrows, and C.C.C. Springs in Catlow Valley;Hoghouse Canyon, Buena Vista Station, and P Ranch in the Blitzen Valley; the Refuge Headquarters, and several camps up in the forest. A few of the local residents found employment in the camps, but the majority of the men were from outside the county. They came from all over the country, and after World War II, quite a few returned to Harney County.23/

The three C's were employed mainly on forest fires and range improvement. They constructed roads, fences, bridges, reservoirs, wells, cattleguards, corrals, dams, and spring developments. They were used for weed control projects, insect control projects, and rodent control projects. Seeding of exhausted ranges was done by the men. Two major project accomplished by the three C's were the construction of Squaw Butte Experiment Station and the Malheur Wildlife Refuge Headquarters.

During the depression the Federal Government added substantially to public land reserves. In Harney County two significant purchases were made. In 1935 Louis Swift sold the P Ranch holdings of 64,717 acres in the Blitzen Valley for $675,000 to the Government.24/ The Double O Ranch holdings of 14,751 acres were purchased in 1941 for $116,143 from Clara Hanley. Both properties were included in the Malheur National Wildlife Refuge.25/

The depression caused a resurgence of quick silver (mercury) mining in the nation due to the scarcity of jobs and relatively high prices for the metal. From 1927 to 1931 a flask of mercury sold for over $100. During the early part of World War II prices again rose, a flask bringing almost $200, while production costs remained static. In 1944 the mercury market collapsed. Twenty-five prospecting claims were made in the Steens and Pueblo Mountains during the thirties and early forties (Figure 34). Only six of these ever produced any quick silver, and only two produced a significant amount. The Steens Mountain Mine produced 26 flasks of mercury during this period. The Mogol Mine produced 30 flasks. A total of 75 flasks have come from this area.26/

The extension of the railroad to Burns and the increased use of motorized transportation in the Harney area extinguished most of the small towns. Automobiles shortened the time it took to travel to Burns from outlying areas. The railroad made prices relatively cheaper in Burns. Burns came to dominate the area, not only commercially, but socially as well. Small towns could not compete economically and, one by one, they closed their businesses.

The Hines mill created a wage labor situation in the Harney Area that created many urban influences in town. Not only did the mill draw outsiders to Harney County, but the quick returns and shorter hours of wage labor attracted the young away from the ranches.

In 1946 the General Land Office, founded in 1812, and the new Grazing

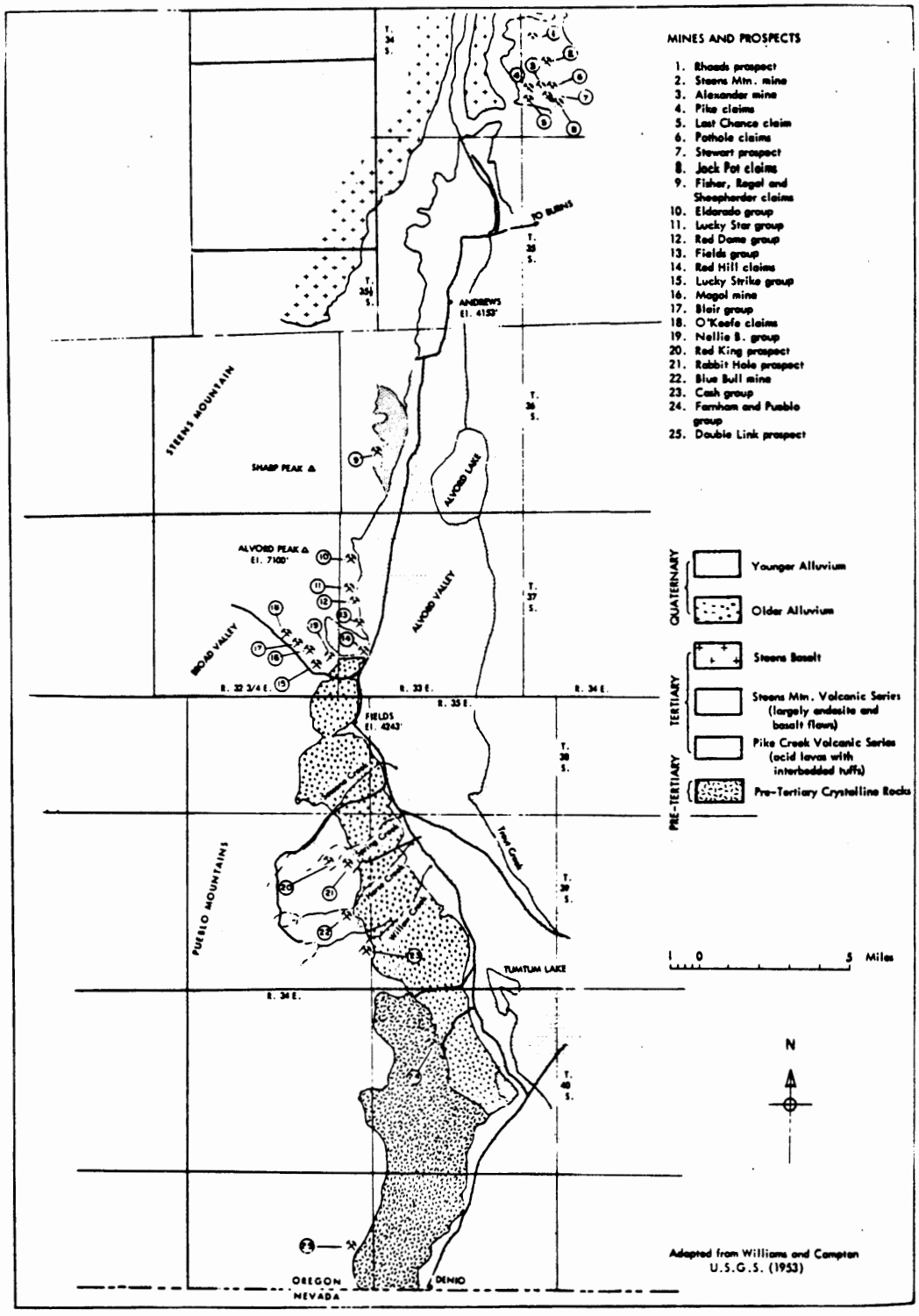


Figure 34. Quicksilver mines and propects in the Steens and Pueblo mountains.

Service, established in 1934, were combined to create the Bureau of Land Management. The Bureau conducted extensive surveys of the range to determine their carrying capacity. In 1958 use in grazing allotments in the Burns District were cut by a third.[27/] Presently the growing numbers of recreationalists, tourists, sportsmen, and refugees from crowded cities seeking the "wilderness" experience have forced the Federal Government to reassess public land policy. The notion of Multiple Use Management is slowly dawning on the Harney Area. The impact it will have on the cattle ranges of southeastern Oregon has not yet been determined.

Forces superimposed upon the cattleman's society have included urban values; political interests of the business, labor, and professional community; and Federal Multiple Use Management of the ranges. Harney County has been inextricably drawn into the national economy and society. In the context of national history, the role played by the Harney Area takes on larger dimensions. In microcosm, it reflects the growth of our nation.

FOOTNOTES

1. Peter A. Shroyer, "Oregon Sheep Wool and Woolens Industries", Oregon Historical Quarterly, June 1966, p. 126.
2. Peter K. Simpson, A Social History of the Cattle Industry in Southeastern Oregon, 1973, p. 299-300.
3. George E. Carter, "The Cattle Industry of Eastern Oregon 1880-90", Oregon Historical Quarterly, June 1966, p. 157.
4. Bill Bright and Cam Swisher, personal interview.
5. Shroyer, Op. cit., p. 130.
6. Carter, Op. cit., p. 145.
7. Simpson, Op. cit., p. 196.
8. Shroyer, Op. cit., p. 129.
9. Simpson, Op. cit., p. 347.
10. Ibid., p. 337.
11. Ibid., p. 299.
12. Ibid., p. 324.
13. Ibid., p. 300.
14. Bill Bradeen, personal interview.
15. Lewis McArthur, Oregon Georgraphic Names, 1974, p. 250.
16. Simpson, Op. cit., p. 300.
17. Bureau of Land Management brochure, Historical Highlights, n.d.
18. Paul Gates, History of Public Land Law Development, 1968, p. 614-615.
19. George F. Brimlow, Harney County and Its Rangeland, 1951, p. 238-239.
20. Ibid., p. 240-241.

21. Simpson, Op. cit., p. 350.

22. Gates, Op. cit., p. 599.

23. Wally Welcome, personal interview.

24. Brimlow, Op. cit., p. 248.

25. Ibid.

26. Howard C. Brooks, Quick silver in Oregon, Bulletin No. 55, 1963, p. 11, 13, 191-203.

27. Simpson, Op. cit., p. 352.

MANAGEMENT OPTIONS

AND RESEARCH DIRECTIONS

CURRENT MANAGEMENT PRACTICES

The cultural resources program on public lands is guided and directed by various Federal laws (see Appendix B), by the Code of Federal Regulations and by the Bureau of Land Management Manual. In the Burns District, every possible attempt has been made for full compliance of both the letter and intent of the Federal statutes. The Bureau of Land Management is a multiple-use agency. While non-renewable resources, such as cultural resources, cannot be impacted or destroyed, they are only one resource to be considered. All values, uses, and resources must be taken into consideration in management planning and practice. Such complex activity requires massive Federal funding and, similar to home economics,the budget is rarely enough. It is, therefore, necessary to set priorities.

Cultural resources only recently became a funded program in the Burns District. Like all new programs, it has a massive job to accomplish. At a minimum, it is necessary for the manager to know where the resource is located, how much he has, and the quality of these resources. The inventory of historic sites in the Harney Area is excellent. This is because there are relatively few historic sites in the area. The Harney Area was settled late and has never been densely populated. On the other hand, the Harney Area

inventory of archaeological sites is inadequate. All of Oregon has been relatively ignored by archaeologists. The unimposing sites of Oregon have not been able to attract attention like the magnificent Indian runins of the southwestern United States. Therefore, "the where, what, and how much" of archaeological resources in the Harney Area is still largely an unknown.

The management of archaeological resources in the Harney Area is, of necessity, a two-faceted program. It is important to gather as much data as possible quickly to develop the basic inventory. At the same time, it is imperative that undiscovered sites not be destroyed in the interim. This second objective is the top priority of the Burns District Cultural REsources Program. No ground disturbing jobs or projects may proceed without a culture resources clearance. Such a clearance requires an on-the-ground survey of the area to be impacted.

The current management practices can be separated into three management goals: preservation, protection, and education. Preservation of cultural resources is achieved mainly by inventorying. Four types of inventory have been done in the Harney area. As mentioned before, project clearance usually requires on-the-ground survey. This results in a very dispersed, rather haphazard kind of inventory. Such inventory lacks continuity and allows no base for conclusions. It is, therefore, very limited in what it can contribute towards understanding the area's prehistory. Nonetheless, as pointed out earlier, it is extremely important for the protection of cultural resources.

Three large scale, systematic surveys have been done in the Harney Area. Both the Alvord Desert and the Glass Buttes surveys were accomplished in 1975. The Alvord survey included an area of 114,560 acres of which 41,600 acres were intensively surveyed. The Glass Buttes survey included an area of 80,800 acres, of which 12,160 acres were intensively surveyed. The third large survey, the Steens Mountain Project, began in 1978 and is still being conducted. It includes an area of roughly 644,000 acres. Large scale, systematic surveys are the most beneficial. The unbiased sampling enables the manager to predict site density and distribution, both of which are important in determining settlement and use patterns. After analysis, much information on the nature of the sites is known. Each of these surveys has contributed greatly to understanding the prehistoric environment and culture history of the Harney Area.

In discussing large, sample-oriented surveys, it is important to mention sample size. There is no agreed upon minimum, but it should be remembered that it is unlikely any area surveyed will be resurveyed on a large scale in the foreseeable future. It is the feeling of the author that a 30 percent sample is quite accurate in the Harney Area. Anything less than a 20 percent sample, I feel, would be highly unreliable. Adequate sampling should be accomplished even if the size of the area covered has to be reduced dramatically. This provides better data than a low level study of the whole country. Furthermore, it is easier to request additional funding for another small area than it is to justify resurveying an area.

Historic sites inventory requires a different approach. In addition to locating and describing the site on the ground, data recovery must be done. Data recovery involves basic research in libraries, museums, governmental records, newspaper morgues, and similar archives to recover pertinent data about the site. Frequently, local informants can provide more information than any of the previously mentioned sources. Unfortunately, human memory is sometimes faulty or selective, so that informant data should be cross-checked when possible.

The fourth and final type of survey is an overview of the existing data. Such an inventory includes a compilation of existing cultural resource data and a synthesis of this material in narrative form. This report is the overview for the Harney Area.

Essential to the preservation of cultural resources is the keeping of accurate and current records. Five basic records are maintained by the Bureau of Land Management on the Harney Area. Initially, a site record form is completed for the site. This includes all the data obtained in the field. In addition, the historic site forms contain a narrative derived from any data recovered on the site. Selective data from these site forms is then transferred to a sites summary table. The archaeological sites summary table also records the type of site, the rating of significance, and the age of the site, if known from the analysis. The historic sites summary table also includes a rating of significance for each site, as well as listing such site attributes as the historic period and any special designations, such as being on the National or

State Register of Historic Sites.

Historic and archaeological site locations are recorded on large overlay maps. The archaeological overlays are useful in illustrating site distribution and density for understanding prehistoric settlement and use patterns. The archaeological and historic sites overlays are a basic management tool in a multiple-use agency. They facilitate planning activities.

A photograph log is kept on both historic and archaeological sites. Since the Bureau cultural resource specialists in the Harney Area do not collect artifacts when surveying archaeological sites, photographic slides are taken of any observed artifacts. The photographs may serve a variety of purposes. Not only do they record important data, but they can be used in conjunction with lectures for public education or used to illustrate public education brochures. Finally, the photographs of historic sites may someday be important in restoring sites.

One final record is kept on archaeological sites. This is a catalogue of collected or observed artifacts. The catalogue has been updated as much as possible. Many of the sites recorded before 1975 did not specify the number or type of artifacts collected. It will be necessary in the future to visit the State repository for archaeological finds at the University of Oregon to view and record the artifacts that have been collected from these sites.

All records containing site locations are kept confidential. This is

necessary to preserve the sites from vandals.

There are three other management practices conducted in the Harney Area for the preservation of cultural resources. Compliance checks are made on antiquity permit holders to monitor their methods and to collect additional data on their research. To preserve historic sites, it is sometimes necessary to stabilize or even rehabilitate the site. This has been done to one site on public land in the Harney Area. Gap Ranch was stabilized and partially rehabilitated in 1978. Nomination of archaeological or historic sites to the National Register of Historic Sites is also considered a means of preserving sites. Such sites have additional legal protection. Registered sites may also qualify for additional funds for research, protection and rehabilitation.

The goal of protection involves a variety of management practices. Most important is the required cultural resources clearance for any planned jobs or projects. This includes not only Bureau projects but those planned by parties holding leases on public land. If cultural resources are located in the area of impact, the project is either abandoned or relocated or the specific cultural site must be salvaged. No cultural site in the Harney Area has had to be salvaged, although some jobs and projects have been abandoned or relocated.

Physical protection of cultural sites can include such things as construction of protective shelters and fences over and around historical sites, backfilling or seeding archaeological sites, or fencing archaeological sites.

Physical measures are successful in protecting cultural sites from cattle, other wild and domestic animals, and from the forces of nature, but they rarely discourage vandals. On the contrary, they seem to attract vandals.

Posting of access roads and sites used in conjunction with surveillance is likely to be the only effective method of protecting cultural sites from vandals and amateur collectors. Unfortunately, funding for additional manpower to conduct surveillance is only now becoming available. It is likely to be insufficient to meet all the requirements of an area as extensive as the Harney Area.

Public education is the management goal that has been severely neglected in the Harney Area. Virtually no attempt has been made to accomplish this objective. The rationale for educating the public as to the value and nature of cultural resources is that an informed public will be less likely to transgress the law or vandalize local national treasures. Such a program is more likely to be successful with the youth of the area. Presentations to local schools are an excellent way of reaching these individuals. Some members of the public are likely to be unaware that artifact collection on public land is illegal. News releases in local and state newspapers would inform them of this fact.

The most difficult individuals to reach are those members of the public who are aware of what they are doing, but do not feel they are being destructive. It is this segment of the public that is also most interested in cultural re-

sources. It will take the most persuasive arguements presented in brochures, displays, lectures, newspapers, radios, and on national television to educate and convince them that they should respect the antiquities laws.

Management planning implies the setting of goals and priorities. The three goals of the Harney Area cultural resources program are preservation, protection and education. Project clearance is the management practice with top priority. All other cultural resource management practices are secondary in importance. In spite of the fact that the Bureau has had only one cultural resource specialist in the Harney Area until June, 1978, the other management goals and practices have not been severely neglected with the exception of public education.

PRESENT STATUS OF CULTURAL RESOURCES IN THE HARNEY AREA

A total of 109 historic sites have been inventoried in the Harney Area. All sites were recorded irrespective of ownership in order to establish a frame of reference for determining historical significance. Sixty-eight of the sites are privately owned. Federal agencies, other than the Bureau of Land Management, own fifteen of the sites. The State of Oregon owns one historic site. The ownership of two sites is unknown. Two sites are jointly owned by the Federal or State governments and private parties. Of the remaining 21 sites, five are on land managed by the Bureau of Land Management, three are jointly owned by the Bureau and private individuals, and thirteen sites are so extensive that they involve a variety of owners.

In the managment of historic sites in the Harney Area, it is clear that the Bureau of Land Management can only passively participate in most cases. Direct action for preservation and restoration can be taken on only 21 sites. Of these 21 sites, 13 are roads and trails and five have no physical remains. The remaining three sites are: Gap Ranch, Kuney Corral, and Whorehouse Meadows. The Gap Ranch site was stabilized and partially restored by the Bureau in 1978. The only historic remains at Whorehouse Meadows are the names carved in trees. Every attempt to protect these trees is being made, but vandals have been active at the site. It has not been determined whether Kuney Corral can be restored.

There are a total of 465 archaeological sites included in the Burns District inventory. Of these, 429 are on land managed by the Bureau of Land Management. An additional five sites are partially on Bureau land. Nineteen sites are on private land and a few sites are located on the Malheur National Wildlife Refuge. Three sites cannot be precisely located and, therefore, the land ownership is unknown. The inventory of the Malheur National Wildlife Refuge cited in investigation report #7 is not included in the inventory, as these sites have not yet been officially numbered.

The Burns B.L.M. District encompasses almost the whole of Harney County. It overlaps slightly into Malheur and Lake Counties. Of the archaeological sites inventoried, 436 are located in Harney County. The inventory also includes 14 sites for Malheur County and 15 for Lake County. It is clear that

the Bureau of Land Management is in a position to take a major, if not leading role, in the management of archaeological sites in Harney County.

The Burns B.L.M. District distinguishes four types of archaeological sites. Burial sites are Type I. Type II sites are a variety of edifaces and structures. Included are pictographs, petroglyphs, stone rings, house pits, game traps, stone walls, stone monuments, mounds, hunting blinds, and talus depressions. Most of these sites lack vertical depth. Closed sites are Type III. These are caves and rockshelters. They are defined by obvious natural boundaries, usually have vertical depth, and are often stratified. The last category (Type IV) is open sites. Included are quarries, kill or butcher sites, campsites, villages, knapping or chipping stations, manufacturing sites, and sites associated with springs, streams, dunes, hillocks, terraces or strands, valleys, uplands, marshes, lakes, and playas. They have vague, natural boundaries and may or may not have vertical depth.

No burial sites are recorded on the Burns B.L.M. District inventory. Twenty-five edifaces and structures (Type II) and 10 closed sites (Type III) are recorded. The remaining 430 sites are all open sites (Type IV). About one-third of the open sites are lithic scatter, containing no intentionally shaped artifacts. Open sites constitute the greater part of the archaeological resource base. Furthermore, a significant share of the open sites are lithic scatters.

Several conclusions can be drawn from the above discussion. First of all, because site types I, II, and III are relatively rare in the Harney Area, they are fairly significant. There are only ten recorded caves or rockshelters, yet it is from this type of site that the most important archaeological data has been recovered in the past. These ten sites are, therefore, highly significant.

The wealth of archaeological data will have to be retrieved from open sites (Type IV). In the past, these sites have been less rigorously dealt with because of the greater difficulty in extracting data from them. In the future, research should concentrate on determining the relative importance of open sites. Emphasis should be put on using or developing new or uncommon analyses of these sites. Lithic scatters cannot be ignored in the management and research of the archaeological resources of the Harney Area. Few studies have examined this kind of site. An investigation should be conducted to determine what data these sites can contribute to the prehistory of the Harney Area.

Finally, since the bulk of the archaeological resources in the Harney Area are open sites, the major effort in protection will have to be surveillance and public education. Surveillance must be accompanied by a full-scale program of signing, as the general public is frequently unaware that artifact collecting is illegal on public land. News releases should also be helpful in gaining some support for the program, as well as, information on the

illegality aspect.

An attempt has been made to date 271 sites. Approximately three-fourths of these were found undatable, usually for lack of dignostic artifacts. No attempt has been made to date the remaining 194 sites. Even with typological cross-dating, it appears that most archaeological sites cannot be dated by present methods. Those sites that can be dated are, therefore, very significant.

All sites in the inventory have been rated for their significance. A high level of significance (S1) was assigned to those sites that were dated. All pictographs, petroglyphs, stone circles, house depressions, and rock shelters in good condition were also rated S1. A total of 83 sites were included in this rating.

Sites which were identified by the surveyor as important or having good potential for yielding data were assigned a medium significance level (S2). When the surveyor recommended testing the site it was rated as S2. Quarrys, hunting blinds, talus depressions, rockshelters of questionable occupation, or that have been more than half destroyed, were included in this rating. Sites which had intentionally shaped artifacts and/or projectile points present were rated medium. Eighty-four sites received an S2 rating.

Sites which lacked intentionally shaped artifacts and had proved undatable were assigned a low level of significance (S3). These sites are largely flake scatters or chipping stations. They are important in understanding patterns of settlement and use over a large area. In conjunction with obsidian source

analysis, flake scatters can be used to determine the diffusion of raw materials from a particular source. In some circumstances, this will reveal band territory. Two hundred and eighty-five sites were designated S3.

Three sites that have been totally destroyed were rated S4 (data property). Ten sites cannot be classified for lack of data and were temporarily classified S0.

Management for preservation must be applied universally, irrespective of site significance. No site may be salvaged or impacted without consultation with the State Historic Preservation Office. The function of significance ratings is to prioritize the inventory for management purposes. Sites of higher significance should receive initial attention for protective surveillance and research.

RESEARCH GOALS, DATA GAPS, AND SOME MANAGEMENT RECOMMENDATIONS

There are four main research goals in the study of Harney Area archaeology. They are the determination of: 1) culture area; 2) cultural sequence; 3) past environmental conditions; and 4) subsystems of culture pattern.

The culture area is the territory used by the prehistoric band. Determination of the culture area involves discovering and explaining the distribution of sites. Where were the people and why were they there? Explanations are derived from such site characteristics as elevation, size, proximity of natural resources, artifact types present, seasonality of natural resources,

and distinctive features of the site. Distribution patterns only become apparent with large, systematic or intensive surveys. Reliability of culture area mapping depends upon the inventory sample of the whole area. Presently, the sample of the Harney Area is insufficient. As can be seen from Figure 18, previous research in the Harney Area has been quite dispersed. Unfortunately, only four of these studies involved large, systematic or intensive surveys. Most of the Harney Area is still unknown.

Sample-oriented inventories should be made in all previously non-sampled localities in the Harney Area. These surveys should be based on a research design and should sample all environments found in the Harney Area. They should be conducted first in those areas most subject to amateur collecting.

To determine the cultural sequence, the prehistoric culture or cultures must be placed in a time frame. Culture patterns often change through time. These pattern changes are the key to developing a culture sequence. They must be dated and arranged in a sequencial order. The absolute age of a cultural deposit, in terms of measured years, can be derived only by radio-carbon dating organic materials. Such materials survive only in very dry caves and buried deposits. Stratified deposits can be dated relatively, each successive layer being younger than that which it overlays. When stratified deposits contain organics the whole sequence can be dated absolutely. Unfortunately, such finds are rare.

In the Great Basin the method most frequently used for determining

cultural sequence is typological cross-dating of projectile points. Differences in projectile point forms are used to distinguish occupation of different time periods. The ages of the projectile points have been obtained from stratified, dated deposits. These ages are then applied to projectile points found in undatable circumstances. Typological cross-dating relies on extrapolation from absolute dates The reliability of the method depends upon the availability of radio-carbon dates for the region of study.

In the Harney Area, every attempt should be made to typologically cross-date discovered sites. A point type chronology should be agreed upon, and used consistently by all cultural resource specialists until revision is found necessary. Without such consistency, synthesis and later revisions will be complicated and all previous efforts to develop a cultural sequence may be negated.

The typological cross-dating method is fraught with uncertainty, since it has been found that point types do not occur in all regions at the same time. It is important that projectile point ages be extrapolated from stratified deposits within the same region. Few archaeological excavations have been done in the Harney Area, and the most comprehensive of these were done before radio-carbon dating was developed. In the future, if a stratified deposit is discovered in the Harney Area, the Bureau of Land Management should insist upon, and insure, that rigorous excavation procedures are used. As much data as possible should be gathered from such an excavation. Radio-carbon dates

should be made if organic materials are found.

Past environmental conditions need to be determined to understand the relationship between prehistoric man and his environment. How did man adapt behaviorally and through his institutions and cultural devices to exploit his environment? What effect did the environment have on the society of man? This knowledge is important to understanding the nature of man and society.

Past environmental conditions are determined through a variety of scientific means. From buried deposits soil samples can be taken to determine prehistoric soils, vegetation, hydrology, climate and such natural disasters as flooding, volcanic erruptions, and drought. The types and relative numbers of animal bones present in stratified deposits indicate not only what animals were present, and possibly exploited, by prehistoric man but also much about the environment and climate of that particular period. Changing environmental conditions must be correlated with cultural data to be meaningful to the understanding of prehistory.

While no research has been completed on the past environmental conditions of the Harney Area, work is in progress. The Steens Mountain Prehistory Project includes considerable research on the prehistoric environment. While this research will reveal much about past environments, it is likely that it will also pose new questions. Future research on this aspect will have to be considered in light of the results of the Steens Mountain Prehistory Project.

Subsystems of the culture pattern are the many systems that combine to

form the prehistoric society. Included are such things as marriage customs, rules of residence, subsistance strategies and political organization I si difficult and sometimes impossible to determine the subsystems of the culture pattern archaeologically. Nonetheless, much can be learned about a prehistoric society from the material culture that survives. To determine the culture pattern subsystems, archaeological sites must be investigated in detail and frequently the researcher has to depend upon ethnographic analogy, inference, and interpretation. Data may be drawn from the internal organization of a site as well as the relationship of sites to each other. Sometimes, the absence of certain features will reveal more than their presence. It is important to utilize every piece of data and general knowledge about man and society in this kind of research.

One of the most hotly debated and interesting problems of culture pattern subsystems research is the issue of the subsistence strategy of Early Man in the Great Basin. Different lines of data and interpretation have led archaeologists to propose that Early Man in the Great Basin was primarily a hunter of big game and, conversely, to insist that he has always been a gatherer of plants and only secondarily a hunter. The issue is unresolved.

There has been no research on culture pattern subsystems in the Harney area. What little is known has been extrapolated from knowledge of the Great Basin at large.

Some work has been conducted in the Harney Area on three of the four main research goals. Since the regional data base is extremely small, de-

scription of Harney Area culture history requires using data on prehistoric sites located outside the area. As the archaeological inventory in the Harney Area accumulates, it will be possible to synthesize the data within a regional framework and write a more accurate culture history.

The Bureau of Land Management is not a research agency but, rather, a management agency. In cultural resources, the Bureau is mandated to inventory and protect cultural properties on public lands. None-the-less, both inventory and protection can and should be done with the research goals in mind. All research, whether conducted by the Bureau or some other agency, should be weighed against the damage it will cause to the archaeological record. Damage may outweigh scientific gain, especially when the research is poorly planned. In such cases, the research should be prohibited.

Much research can be accomplished without additional expense. Most relevant to the Harney Area cultural resources program would be a field study involving small projects. An example would be the testing of an hypothesis on a number of springs. The development of springs for watering livestock and wildlife is a common practice in the Harney Area. Since all such projects must first be checked by the District Archaeologist, such research would not require any additional expense.

The Harney Area is extremely large and the Burns District usually employs only one archaeologist. Checking all jobs and projects planned during the field season consumes the greater share of the archaeologist's time. However,

it should be possible to do a number of small archaeological research investigations in conjunction with the project clearance work. These research investigations could be done together or successively over a long period of time, examining the same problem in similar circumstances and thereby treating them, analytically, as a single large-scale project. The difficulty is how to design research for small projects so that they can contribute, with some sort of cumulative effective, to yield meaningful research results.

Another task which could yield research results, at little additional cost to the Bureau, would be research on existing collections. Most of these collections are housed at the Museum of Natural History in Eugene. Many of the collections are unstudied and uncatalogued. Simply cataloguing these artifacts would yield meaningful data. The testing of a simple hypotesis, in conjunction with the cataloguing, might yield tangible results. Once the cataloguing was completed, the District Archaeologist could return to the Burns District. The catalogue could be used, together with the Burns District Archaeological site reports, to discover if any pattern exists in the geographic and temporal differneces of artifacts from the Harney Area.

One study which would be very useful in the management of archaeological sites in the Harney Area would be a study of lithic scatters. While this study could involve additional cost to the Bureau, its utility to management could justify the cost. Lithic scatters form the most common type of site in the area. The purpose of such a study would be to determine whether or not there

are significant differences between such sites within any given locality and between such sites in different localities. Detailed study of lithic scatters should lead to a considerable refinement in their classification. Presently, all lithic scatters are assumed to be similar and, as such, are difficult to evaluate. Site evaluation will become increasingly important in the future when an attempt is made to preserve a representative sample of each type of site, understanding that a segment of the sample may be sacrificed to other priorities.

The goals for historical research in the Harney Area are quite different due to the fact that the inventory is nearly complete and few sites occur on public land. Some data recovery, in terms of long-term research, remains to be done. The exact routes of the roads and trails that cross public land are not known in some areas. Stablization and restoration has been accomplished at Gap Ranch. The only other site on public land that might be restored is Kuney Corral. It is not known if this site can be restored.

A few sites require interpretation. Gap Ranch is frequently visited. An interpretive sign should be installed at the site. It would be an excellent location to interpret the complete culture history of the Harney Area beginning with the area's prehistory. It is possible that the highway department might arrange for some turn-outs along Oregon Highway 20 and 205 where interpretive signs could be installed. The Willamette Valley-Cascade Mountain Military Road follows a section of Highway 20 near the town of Riley. Both the Meeks and

Elliot wagontrains followed part of Highway 20 in the vicinity of Buchanan and Harney Townsite. In Catlow Valley, both the Southern Oregon Wagon Road and the Oregon Central Military Wagon Road cross Highway 205.

There are a few historic sites on private land that warrant special attention, if the opportunity to acquire them by trade or relocation arises. Dog Mountain Castle is extremely interesting and not too far away from a main route of tourist travel. It should be stabilized, restored, and interpreted. The ghost town of Blitzen is rapidly deteriorating. It is one of the most interesting and locally significant sites in the Harney Area. If it could be acquired by trade, it would require immediate attention for both stabilization and restoration. Finally, the historic saloon at Andrews, in Alvord Valley, is small enough that if it could not be acquired by trade it might be possible to have it donated to the public and moved to a site on public land where it could be restored and interpreted.

BIBLIOGRAPHY

ENVIRONMENTAL BACKGROUND

Antevs, Ernst, 1948. Climatic changes and pre-white man. Bulletin of the University of Utah 38.

Avent, Jon Carlton, 1965. Cenozoic stratigraphy and structure of Pueblo Mountains region, Oregon-Nevada. Unpublished Ph.D., Washington State University.

Baldwin, Ewart M., 1964. Geology of Oregon, Kendall/Hunt Publishing Co.

Beaulieu, John D., 1972. Geologic formations of eastern Oregon, DOGAMI, Bulletin No. 73.

Bentley, Elton Bruce, 1970. The glacial geomorphology of Steens Mountain, Oregon. Unpublished Masters Thesis, University of Oregon.

Bureau of Land Management, U.R.A. physical profile step II Riley Planning Unit. Burns District.

Bureau of Land Management, U.R.A. physical profile step II Drewsey Planning Unit. Burns District.

Bureau of Land Management, U.R.A. physical profile step II Andrews Planning Unit. Burns District.

Corcoran, J., 1969. Mineral and water resources of Oregon. DOGAMI, Bulletin No. 64.

Genthier, J. B., C. A. Collins, and D. B. Anderson, 1977. Groundwater data for the Drewsey Resource Area, Harney and Malheur Counties, Oregon. U.S.G.S. Open-file Report, p. 77-741.

Grayson, Donald K., 1975. Nightfire Island Avifauna and the Altithermal. Nevada Archaeological Survey Research Papers 6.

_____, 1977. Paleoclimatic implications of the Dirty Shame Rockshelter Mammalian Fauna. Tebiwa No. 9.

Green, Robert C., George W. Walker and Raymond E. Corcoran, 1972. Geologic map of the Burns Quadrangle, Oregon. U.S.G.S. Misc. Geologic Investigations Map I-680.

Leonard, A. R., 1970. Ground-water resources in Harney Valley, Harney County, Oregon. State of Oregon Ground Water Report No. 6.

Libbey, F. W., 1960. Boron in Alvord Valley, Harney County, Oregon. The ORE BIN, Vol. 22, No. 10.

Lund, Ernst H. and Ellen Bentley, 1976. Steens Mountain, Oregon. The ORE BIN.

O'Connell, James and W. Ericson, 1975. Surprise Valley Research. Nevada Archaeological Survey Research Paper.

O'Connell, James and P. S. Hayward, 1972. Altithermal and Medithermal Human Adaptations in Surprise Valley, Northeast California. In Great Basin Cultural Ecology: A Symposium. D. Fowler, ed. Desert Research Institute Publications in the Social Sciences No. 8.

Piper, A. M., T. W. Robinson, and C. F. Park, Jr., 1939. Geology and ground-water resources of Harney Basin, Oregon. U.S.G.S. Water Supply Paper No. 841.

Raisz, Erwin, 1941. Landform map of Oregon. U.S.G.S.

Rowe, Winthrop Allen, 1970. Geology of the south-central Pueblo Mountains, Oregon-Nevada. Unpublished Masters Thesis, Oregon State University.

Russell, Isreal C., 1903a. Preliminary report on artesian basins in southwestern Idaho and southeastern Oregon. U.S.G.S. Water Supply Paper, No. 78.

_____, 1903b. Notes on the geology of southwestern Idaho and southeastern Oregon. U.S.G.S. Bulletin No. 217.

_____, 1905. Preliminary report on the ecology and water resources of central Oregon. U.S.G.S. Bulletin No. 252.

Snyder, C. T., George Hardman and F. F. Zdenek, 1964. Pleistocene lakes in the Great Basin. U.S.G.S.

Steward, Julian H., 1938. Basin-Plateau aboriginal groups. B.A.E. Bulletin #120 Smithsonian Institute.

Thoms, Richard E. and H. C. Smith, 1973. Fossil bighorn sheep from Lake County, Oregon. The ORE BIN, Vol. 35, No. 8.

Walker, George, 1969. Possible fissure vent for a Pliocene ash flow tuff, Buzzard Creek Area, Harney County, Oregon. Geologic Research Paper No. 650C.

_____, 1974. Some implications of late Cenozoic volcanism to geothermal potential in the High Lava Plains of south-central Oregon. The ORE BIN, Vol. 36, No. 10.

Walker, George, Norm Peterson and R. C. Green, 1967. U.S.G.S. Misc. Geologic Investigations Map I-493.

Walker, George W. and Charles A. Repenning, 1965. Reconnaissance geologic map of the Adel Quadrangle, Lake, Harney and Malheur Counties, Oregon. U.S.G.S. Misc. Geologic Investigations Map I-446.

PREHISTORY

Adorasio, J. M., R. Andrews, and R. Carlisle, 1977. Perishable industries from Dirty Shame Rockshelter. Tebiwa, No. 7.

Aikens, C. Melvin, 1970. Hogup Cave. University of Utah Anthropological Paper No. 93.

_____, 1978a. Archaeology of the Great Basin. Annual Review of Anthropology.

_____, 1978b. The far west. In Ancient Native Americans, ed. Jennings.

Aikens, C. Melvin, David L. Cole and Robert Stuckenrath, 1977. Excavations at Dirty Shame Rockshelter, southeastern Oregon. Tebiwa No. 4.

Aikens, C. Melvin, Donald Grayson, and Peter Mehringer, 1978a. Malheur Basin-Steens Mountain prehistory project. National Science Foundation grant proposal manuscript. Copy on file, University of Washington Anthropology Department, Seattle.

_____, 1978b. Preliminary report on the Steens Mountain project to the U. S. Bureau of Land Management, Burns District. Copy on file, U.S. B.L.M., Burns District.

Aikens, C. Melvin and Rick Minor, 1977. The archaeology of Coffeepot Flat, south-central Oregon. University of Oregon Anthropological Papers No. 11.

Anters, Ernst, 1948. Climatic changes and pre-white man. Bulletin of the University of Utah 38.

Atherton, John H., 1966. Prehistoric manufacturing sites at North American stone quarries. Masters Thesis, University of Oregon, Department of Anthropology, Eugene.

Bedwell, Stephen F., 1970. Prehistory and environment of the Pluvial Fort Rock Lake area of south-central Oregon. Ph.D. dissertation, University of Oregon, Department of Anthropology, Eugene.

_____, 1973. Fort Rock Basin Prehistory and Environment. University of Oregon Books, Eugene.

Bernal, I., 1964. Concluding remarks. In Prehistoric Man in the New World, ed. Jennings and Norbeck. University of Chicago Press.

Bunten, Hugh, Jr., 1977. Cultural resource inventory report on the proposed Sycan March land exchange. Report to the Fremont National Forest, Lakeview, Oregon. Copy on file, F.N.F., Lakeview.

Butler, B. Robert, 1970. A surface collection from Coyote Flat, southeastern Oregon. Tebiwa, Vol. 13, No. 1.

_____, 1978. A Guide to Understanding Idaho Archaeology (3rd ed.): The Upper Snake and Salmon River Country. Idaho Museum of Natural History, Pocatello.

Cannon, William J., 1977. Cultural resources survey of the west shore of Lake Abert. Report on file, U.S. Bureau of Land Management, Lakeview District.

Clewlow, C. William, 1968. Surface archaeology in the Black Rock Desert, Nevada. Report of the University of California Archaeological Survey No. 73.

Cole, David L., 1961. Survey of the Bully Creek Reservoir October 31 - November 1, 1961. Report to the National Park Service. Copy on file, Museum of Natural History, Eugene.

_____, 1975a. Survey for archaeological sites in the Fort Rock Valley. Report to the Bureau of Land Management, Lakeview District. Copy on file, Lakeview.

_____, 1975b. Survey of the Hogback Summit-Pikes Ranch section of the Lakeview-Burns highway for historical, archaeological and prehistorical sites. Report to the Highway Division, Oregon State Department of Transportation. Copy on file, Museum of Natural History, Eugene.

Cole, David L. and Richard M. Pettigrew, 1976. An archaeological survey of the proposed improvement of the Pikes Ranch-Valley Falls section, North Unit, of the Lakeview-Burns highway, Lake County, Oregon. Report to the Highway Division, Oregon State Department of Transportation. Copy on file, Museum of Natural History, Eugene.

Cressman, Luther S., 1936. Archaeological survey of the Guano Valley region in southeastern Oregon. University of Oregon Monographs, Studies in Anthropology No. 1.

_____, 1937. Petroglyphs of Oregon. University of Oregon, Studies in Anthropology No. 2.

_____, 1942. Archaeological researches in the northern Great Basin. Carnegie Institution of Washington, Publication 538.

_____, 1943. Results of recent archaeological research in the northern Great Basin region of south-central Oregon. Proceedings of the American Philosophical Society, Vol. 86, No. 2.

_____, 1944. New information on south-central Oregon atlas. Southwest Museum Masterkey 18 (6).

_____, 1951. Western prehistory in the light of carbon-14 dating. Southwestern Journal of Anthropology No. 7.

_____, 1966. Man in association with extinct fauna in the Great Basin. American Antiquity 31.

_____, 1973. An Approach to the study of far western North American prehistory: early man. University of Oregon Museum of Natural History Bulletin No. 20.

Cressman, Luther S., Howel Williams, and Alex D. Krieger, 1940. Early man in Oregon. University of Oregon Monographs, Studies in Anthropology No. 3.

Davis, Wilbur A., 1966. Theoretical problems in western prehsitory. In The Current Status of Anthropological Research in the Great Basin, eds. d'Azevedo, Davis, Fowler, and Suttles. Desert Research Institute Publications in the Social Sciences No. 1.

Eggan, Fred and Warren L. d'Azevedo, 1966. Introduction. In The Current Status of Anthropological Research in the Great Basin, eds. d'Azevedo, Davis, Fowler, and Suttles. Desert Research Institute Publications in the Social Sciences No. 1.

Fagan, John L., 1974. Altithermal occupation of spring sites in the northern Great Basin. University of Oregon Anthropological Papers No. 6.

Fagan, John L. and Garry L. Sage, 1974. New Windust sites in Oregon. Tebiwa, Vol. 16, No. 2.

Fowler, Catherine S., 1972. Some ecological clues to Proto-Numic homelands. In Great Basin Cultural Ecology: A Symposium, ed., Don Fowler. Desert Research Institute Publications in the Social Sciences No. 8.

Gehr, Keith D. and Thomas M. Newman, 1978. Preliminary note on the late Pleistocene geomorphology and archaeology of the Harney Basin, Oregon. The ORE BIN, Vol. 40, No. 10.

Gibson, Eric C. and Lee Spencer, 1977. Fossil Lake archaeological survey, Fossil Lake ORV temporary closure area. Report to the Bureau of Land Management, Lakeview, ORegon. Copy on file, Lakeview.

Grayson, Donald K., 1977. Paleoclimatic implications of the Dirty Shame Rockshelter mammalian fauna. Tebiwa No. 9.

Hall, H. J., 1977. A paleoscatological study of diet and disease at Dirty Shame Rockshelter, southeastern Oregon. Tebiwa No. 8.

Hanes, Richard C., 1977. Lithic tools of the Dirty Shame Rockshelter: typology and distribution. Tebiwa No. 6.

Harman, L. and A. Nielson, 1977. Archaeological Reconnaissance Report, August 10, 1977. Report to the U.S. Bureau of Land Management, Burns District, Copy on file, Burns.

Hauck, F. R. and L. Harman, 1976. Archaeological Reconnaissance Report, June 28, 1976. Report to the U.S. Bureau of Land Management, Burns District. Copy on file, Burns.

Hauck, F. R. and D. G. Weder, 1978. Archaeological reconnaissance in the May Lake locality of Lake County, Oregon. Report to the U.S. Bureau of Land Management, Lakeview District. Copy on file, Lakeview.

Heizer, Robert F., 1942. Massacre Lake cave, Tule Lake cave and shore sites. Carnegie Institute of Washington, Publication 538.

Heizer, Robert F. and Martin A. Baumhoff, 1970. Big game hunters in the Great Basin: a critical review of the evidence. Contributions of the University of California Archaeological Research Facility No. 7.

Hester, Thomas Roy, 1973. Chronological orderings of Great Basin prehistory. Contributions of the University of California Archaeological Research Facility No. 17.

Hubbard, Richard P., 1967. Preliminary report on the archaeological survey of the Owyhee uplands in Idaho and Oregon, 1965, 1967. On file, Department of Anthropology, Oregon State University, Corvallis.

Jennings, Jesse D., 1968. Prehistory of North America. McGraw-Hill Publishing Co., San Francisco.

Lamb, Sydney M., 1958. Linguistic prehistory in the Great Basin. International Journal of American Linguistics No. 24.

Layton, Thomas Nutter, 1970. High Rock archaeology: An interpretation of the prehistory of the northwestern Great Basin. Ph.D. dissertation, Harvard University, Cambridge.

_____, 1972. Lithic chronology in the Fort Rock Valley, Oregon. Tebiwa 15 (2).

_____, 1973. The Nevada-High Rock ecological project Last Supper Cave expedition. Preliminary Report of the 1973 Season submitted to the Nevada State Museum, Carson City.

Long, Edward T. (ed.), 1974. The Moore Ranch Dig: A Preliminary Report. Treasure Valley Community College Press, Ontario.

Mack, Joanne M., 1975a. Cultural resources inventory of the potential Glass Buttes geothermal lease area, Lake, Harney, and Deschutes Counties, Oregon. Final report to the U.S. Bureau of Land Management. Copy on file, University of Oregon.

_____, 1975b. Cultural resources survey in the southern Warner Valley, Oregon. Report to the U.S. Bureau of Land Management. Copy on file, University of Oregon.

_____, 1975c. Cultural resources survey of the Vale K.G.R.A., Malheur County, Oregon. Report to the U.S. Bureau of Land Management. Copy on file, University of Oregon.

Madsen, David B., 1975. Dating Paiute-Shoshoni expansion in the Great Basin. American Antiquity 40 (1).

Martin, Paul S., 1976. Pleistocene overkill. Natural History.

Mehringer, Peter, 1977. Great Basin late quarternary environments and chronology. In Models and Great Basin Prehistory: A Symposium, Desert Research Institute Publications in the Social Sciences No. 12.

Meighan, Clement W., 1959. Varieties of prehistoric culture in the Great Basin region. Masterkey 33.

Minor, Rick and Lee Spencer, 1977. Site of a probable camelid kill at Fossil Lake, Oregon. Final report to the U.S. Bureau of Land Management. Copy on file, Lakeview, Oregon.

Newman, Thomas M., 1964. Excavations in the Bully Creek Reservoir area near Vale, Oregon. Report to the National Park Service. Copy on file, Portland State University.

Newman, Thomas M., Robert Bogue, William Cannon, Ruth McGilvra and Roger Wiggin, 1974. Alvord Desert potential geothermal resources area cultural resource survey. Report to the U.S. Bureau of Land Management. Copy on file, Burns District.

Newman, Thomas M., Robert Bogue, Caroline Carley, Ruth McGilvra and Donald Moretty, 1974. Archaeological reconnaissance of the Malheur National Wildlife Refuge, Harney County, Oregon. Report to the U.S. Department of Fish and Wildlife. Copy on file, M.N.W. Refuge.

O'Connell, James, 1971. The archaeology and cultural ecology of Surprise Valley, northeast California. In Great Basin Cultural Ecology: A Symposium, ed. Don Fowler. Desert Research Institute Publications in the Social Sciences No. 8.

Osborne, Douglas, 1948. Appraisal of the archaeological resources of Mason Reservoir, Baker County, Ryan Creek Reservoir, Umatilla County, and Bully Creek Reservoir, Malheur County, Oregon. Smithsonian Institution River Basin Surveys, Columbia Basin Project Appraisal. On file, Museum of Natural History, Eugene.

Pettigrew, Richard M., 1975. Cultural resources survey in the Alvord Basin southeastern Oregon. Final report to the U.S. Bureau of Land Management. Copy on file, Burns District.

_____, 1979. Archaeological investigations at Stinkingwater Pass, Harney County, Oregon. University of Oregon Anthropological Papers No. 15.

Pettigrew, Richard M. and David L. Cole, 1977a. Archaeological survey of the Abert Lake rock production project, Lakeview-Burns highway, Lake County, Oregon. Report to the Highway Division, Oregon State Department of Transportation. Copy on file, Museum of Natural History, Eugene.

_____, 1977b. Archaeological survey of the proposed improvement of the Peterson RAnch-Lake County line section of the Lakeview-Burns Highway, Harney County, Oregon. Report to the Highway Division, Oregon State Department of Transportation. Copy on file, Oregon Museum of Natural History, Eugene.

Ploew, Mark G., 1976. An archaeological inventory survey of the Camas Creek drainage basin, Owyhee County, Idaho. Report to the U.S. Bureau of Land Management. Copy on file, Boise State University.

Pullen, Reg, 1976. Archaeological survey of the Owyhee River canyon. Report to the U.S. Bureau of Land Managment. Copy on file, Vale District.

Ruebelmann, George N., 1975. Archaeological assessment of the Vale K.G.R.A. supplement. Report to the U.S. Bureau of Land Management. Copy on file, Lakeview.

Schoenberg, Kenneth M., 1976. Phase I: Survey of the Bonneville Power Administration Celilo-Sylmar transmission line right-of-way for non-renewable resources. Report to the Bonneville Power Administration. Copy on file, University of Oregon, Department of Anthropology.

Snyder, C. T., George Harman, and F. F. Zdenek, 1964. Pleistocene lakes in the Great Basin. U.S.G.S.

Southard, Michael, 1969. Coyote Lake survey. Report to the U.S. Bureau of Land Management. Copy on file, Burns District.

_____, 1975. Cultural resources survey of Al-Aquitaine test well locations in the Alvord Desert geothermal project area, southeastern Oregon. Report to the U.S. Bureau of Land Management. Copy on file, Burns District.

Stephenson, Robert L. and Kent Wilkinson, 1969. Archaeological reconnaissance of the Winnemucca Battle Mountain area of Nevada. Nevada Archaeological Survey Research Papers No. 1.

Strong, Emory, 1969. Stone Age in the Great Basin. Binfords and Mort, Portland.

Swanson, Earl H., 1966. The geographic foundations of the desert culture. In The Current Status of Anthropological Research in the Great Basin, eds. d'Azevedo, Davis, Fowler, and Suttles. Desert Research Institute Publications in the Social Sciences No. 1.

Tadlock, W. Louis, 1966. Certain crecentic stone objects as a time marker in the western United States. American Antiquity 31 (5).

Tuohy, Donald, 1974. A comparative study of late paleo-Indian manifestations in the western Great Basin. Nevada Archaeological Survey Research Paper No. 6.

Weide, Margaret L., 1968. Cultural ecology of lakeside adaptation in the western Great Basin. Ph.D. dissertation, University of California, Los Angeles.

_____, 1974. North Warner subsistence network: A prehistoric band territory. Nevada Archaeological Survey Research Paper No. 5.

Wells, John E., 1959. The archaeology of Juntura Cave, Site ML-2. Masters Thesis, University of Oregon, Eugene.

Wilke, Philip, Thomas King, and Robert Bettinger, 1974. Ancient hunters of the far west. Nevada Archaeological Survey Research Paper No. 5.

ETHNOGRAPHY

Couture, Marilyn, 1978. Recent and contemporary foraging practices of the Harney Valley Paiute. Masters Thesis, Portland State University, Portland, Oregon.

Curtis, Edward, 1926. The North American Indians, Vol. 15.

Driver, Harold E., 1961. Indians of North America. University of Chicago Press.

Fowler, Don, 1966. Great Basin social organization. In The Current Status of Anthropological Research in the Great Basin: 1964. Desert Research Institute Publications in the Social Sciences No. 1.

Kelly, Isabel T., 1932. Ethnography of the Surprise Valley Paiute. University of California Publications in American Archaeology and Ethnography, Vol. 31.

Lamb, Sydney M., 1958. Linguistic prehistory in the Great Basin. International Journal of American Linguistics, Vol. 29.

Madsen, David B., 1975. Dating Paiute-Shoshoni expansion in the Great Basin. American Antiquity, Vol. 40, (1).

Minor, Rick and Audrey Recor, 1977. Cultural resource overview of the Willamette National Forest, western Oregon. University of Oregon Anthropological Papers, No. 12.

Park, Willard Z., 1934. Paviotso shamanism. American Anthropologist 36.

Ray, Verne, *et. al.*, 1938. Tribal distributions in eastern Oregon and adjacent regions. American Anthropologist 40.

Riddell, Francis A., 1960. Honey Lake Paiute ethnography. Nevada State Museum Anthropolgoical Papers No. 4.

Steward, Julian H., 1938. Basin-Plateau aboriginal sociopolitical groups. Smithsonian Institute Bulletin No. 120.

Stewart, Omer C., 1939. The Northern Paiute bands. University of California Anthropological Records 2:3. Berkeley.

Suphan, Robert J., n.d. Ethnological report on the Umatilla, Walla Walla, and Cayuse Indians relative to socio-political organization and land use. The Confederate Tribes of the Umatilla Reservation of Oregon v. The United States of America. Indian Claims Commission, Docet No. 264 adn No. 198, Def. Ex. #18.

Wheat, Margaret, 1967. Survival Arts of the Primitive Paiute. University of Nevada Press, Reno, Nevada.

Whiting, Beatrice, 1950. Paiute sorcery. Viking Fund Publications in Anthropology No. 15.

HISTORY

Adams, G. V. and L. Leslie, 1975. Harney County, Oregon Cemetery Records. Dana Press.

Athearn, Frederic J., 1976. An isolated empire: A History of Northwest Colorado. Bureau of Land Management Cultural Resources Series No. 2, Denver.

Braymen, Pauline, 1968a. Camp Wright established in fall of 1865. The Burns Times Herald, May 9, 1968, Burns, Oregon.

_____, 1968b. Indian attack preceeds establishment of Camp Wright. The Burns Times Herald, May 16, 1968, Burns, Oregon.

_____, 1968c. A lone grave marks location of Camp Wright. The Burns Times Herald, May 23, 1968, Burns, Oregon.

Brimlow, George Francis, 1938. The Bannock Indian War of 1878. Caxton Printers Ltd., Caldwell.

_____, 1951. Harney County and its Rangeland. Binfords & Mort, Portland, Oregon.

Brogan, Phil F., 1964. East of the Cascades, Binfords & Mort, Portland, Oregon.

Brooks, Howard C., 1963. Quicksilver in Oregon. Oregon State Department of Geology and Mineral Industries Bulletin No. 55.

Brooks, Howard C. and Len Ramp, 1968. Gold and silver in Oregon. Oregon State Department of Geology and Mineral Industries Bulletin No. 61.

Bruce, Henrietta Steinke, 1936. A history of the Oregon Central Military Wagon Road Company with reference to the histories of four other land grant companies in the state of Oregon. Masters Thesis, University of Oregon.

Bureau of Land Management (n.d.). Historical highlights: Some historical dates. B.L.M. Brochure.

_____, (n.d.). The Oregon Trail. Migrating west one step at a time. B.L.M. Brochure.

Carey, Charles H., 1971. General History of Oregon. Binfords & Mort, Portland, Oregon.

Carter, George E., 1966. The cattle industry of eastern Oregon 1880-1890. Oregon historical Quarterly (June).

Clark, K. and L. Tiller, 1966. The Terrible Trail: The Meek Cutoff, 1845. Caxton Printers Ltd., Caldwell.

Cline, Gloria Griffin, 1974. Peter Skene Ogden and the Hudson's Bay Company. University of Oklahoma Press.

Corning, Howard McKinley (ed.), 1956. Dictionary of Oregon History. Binfords & Mort, Portland, Oregon.

Crow, Rankin, 1970. Rankin Crow and the Oregon Country. Ironsides, Oregon.

Dangerfield, George, 1956. Mr. Madison's War. *In* The American Story, E. S. Miers. Channel Press, N. M.

Davies, K. G., ed., 1961. Peter Skene Ogden's Snake Country Journal 1826-1829. The Hudson's Bay Record Society, London.

Donegan, James J., 1937. Historical sketch of Harney County, Oregon. Unpublished manuscript. Copy on file, Harney County Library.

Fleming, James, 1976. Harney historical society hosts Deschutes group for tour of pioneer town and ranch sites. Central Oregon Rancher (July).

Gates, Paul W., 1968. History of Public Land Law Development. Public Land Law Review Commission, Washington, D.C.

General Services Administration. National archives and records service of the United States, Washington, D.C. Personal correspondence of Harney County post offices.

Gilcrest, Evelyn, 1962. Alvord Ranch interlude. Oregon Historical Quarterly (Dec.).

Haines, Francis D., ed., 1971. The Snake Country Expedition of 1830-1831. John Work's Field Journal. University of Oklahoma Press.

Harney County Historical Society, 1973. Tour of the Malheur National ildlife Refuge Historical Places. Copy on file, H.C.H.S.

_____, 1976. Spring Tour. Copy on file, H.C.H.S.

_____, 1977. Harney Historical Highlights (March). Copy on file, H.C.H.S.

Jackman, E. R. and John Scharff, 1967. Steens Mountain in Oregon's High Desert Country. Caxton Printers, Ltd., Caldwell.

Jackson, Royal and Jennifer Lee, 1978. Harney County: An Historical Inventory. Harney County Historical Society.

Lavender, David, 1958. Land of Giants: The Drive to the Pacific Northwest 1750-1950. Doubleday and Co., Inc., New York.

LoPiccolo, Margaret Justine, 1962. Some aspect of the range cattle industry of Harney County, Oregon, 1870-1900. Ph.D. Thesis, University of Oregon, Eugene.

Lutz, Linley H., 1924. Oregon railroads. Unpublished thesis, University of Oregon, School of Business Administration, Eugene.

Malheur National Wildlife Refuge (n.d.). Historical notes brochure. Malheur National Wildlife Refuge, Burns, Oregon.

McArthur, Lewis, 1931. Early scenes in Harney Valley. Oregon Historical Quarterly (32).

_____, 1974. Oregon Geographic Names. Oregon Historical Society, Portland, Oregon.

Menefee, Leah Collins and Lowell Tiller, 1976. Cutoff fever. Oregon Historical Quarterly (Dec.).

_____, 1977a. Cutoff fever II. Oregon Historical Quarterly (March).

_____, 1977b. Cutoff fever III. Oregon Historical Quarterly (June).

_____, 1977c. Cutoff fever IV. Oregon Historical Quarterly (Sept.).

_____, 1977d. Cutoff fever V. Oregon Historical Quarterly (Dec.).

Merk, Frederick, 1934. Snake Country expedition 1824-1825. Oregon Historical Quarterly, Vol. 35, No. 2.

Merriam, L. C., Jr., 1959. The First Oregon Cavalry and the Oregon Central Military Road survey of 1865. Oregon Historical Quarterly (60).

Monroe, A. A., 1930. Feelin' Fine. Doubleday, Doran and Co., Inc.

Oliphant, J. Orin, 1968. On the Cattle Ranges of the Oregon Country. University of Washington Press.

Payette, B. C., 1964. The Northwest. Columbia River Maritime Museum, Astoria, Oregon.

Peterson, Pete, 1975. Our Wagon Train is Lost. New American Gothic, Eugene, Oregon.

Potter, Miles F. and Harold McCall, 1978. The golden years of eastern Oregon. The ORE BIN, Vol. 40, No. 4.

Preston, R. N., 1972. Historical Maps of Oregon. Western Guide Publ.

Rich, E. M., ed., 1950. Peter Skene Ogden's Snake Country Journals, 1824-1826. The Hudson's Bay Record Society, London.

Sawyer, W. A. (n.d.). History of Squaw Butte Experiment Stateion. Unpublished manuscript.

Scharff, John, 1969. Correspondence between John Scharff and Arthur King in April. Unpublished letter.

Schmitt, Martin F., ed., 1956. The Cattle Drives of David Shirk. Champoeg Press, Portland, Oregon.

Shaffer, Leslie and Richard Baxter, 1972. Oregon borax: Twenty-Mule Team, Rose Valley History. Oregon Historical Quarterly (Sept.).

Shane, Ralph M., 1950. Early explorations through Warm Springs Reservation area. Oregon Historical Quarterly (Dec.).

Shroyer, Peter A., 1966. Oregon sheep, wool, and woolens industries. Oregon Historical Quarterly (June).

Simpson, Peter Kooi, 1973. A social history of the cattle industry in southeastern Oregon. Ph.D. dissertation, University of Oregon, Eugene.

Talbot, Caryn, 1975. Sod House Ranch: preservation and interpretive development. Unpublished manuscript, Malheur National Wildlife Refuge, Burns, Oregon.

Treadwell, Edward F., 1931. The Cattle King: Henry Miller. Valley Publishing, Fresno, California.

United States of America (n.d.). Original survey notes of the United States 1873-1913. Bureau of Land Management, Burns, Oregon.

Unknown, 1902. An Illustrated History of Baker, Grant, Malheur, and Harney Counties. Western Publishing Co., Portland, Oregon.

Whistler, John T. and Hohn H. Lewis, 1916. Harney and Silver Creek Projects, Irrigation, and Drainage. U. S. Reclamation Service (Feb.).

Williams, Glyndur, ed., 1971. Peter Skene Ogden's Snake Country Journals 1827-1828 and 1828-1829. The Hudson's Bay Record Society, London.

Work Projects Administration, Writers Program, Oregon State, 1940. Oregon, End of the Trail. Binfords & Mort, Portland, Oregon.

INTERVIEWS - HISTORY

Bill Bradeen, Burns
Pauline Braymen, Burns
Wilbert Bright, B.L.M., Burns
Stella Calderwood, Fields
Mrs. Carson, Lawen
John and Georgia Cros, Burns
Lelanie Davis, Fields
Richard Gritman, Malheur National Wildlife Refuge, Burns
Marcus Haines, Burns
Lucy Heinz (formerly Hall)
Dennis Hill, B.L.M., Lakeview
Tom Jenkins, Burns
Ed Koeneman, tape by Marcus Haines, Burns
Ellis Mason, Burns
Mildred Mayo, B.L.M., Burns
Blanche McWilliams, Diamond
Richard Miller, B.L.M., Burns
Homer Otley, Burns
Willard Phillips, B.L.M., Burns
Bill Renwick, Jr., Burns
Judge George Renwick, Burns
W. A. Sawyer, Squaw Butte Experiment Station, Burns
John Scharff, Burns

Cam Swisher, B.L.M., Burns
Hank Voegler, Burns
Wally Welcome, Burns
Jesse Williams, Burns

APPENDIX A

CULTURAL RESOURCE INVESTIGATION AND RESEARCH BACKGROUND

CULTURAL RESOURCE INVESTIGATION AND RESEARCH BACKGROUND

INTRODUCTION

The purpose of this section is to present a general discussion of the pertinent past and current archaeological/anthropological and historical investigations of the Harney Area. The format consists of three sections.

The first section, A Summary of Past and Current Work, consists of brief summaries of each pertinent research and/or investigation project which has contributed to the knowledge of the cultural resources of the Harney Area.

Section Two, Collections, constitutes a brief discussion of the cultural resource collections from the Harney Area.

Section three, Present Research Orientations, is a brief discussion of present cultural resource research orientations and problems within the Harney Area.

SUMMARY OF PAST AND CURRENT WORK

Archaeological investigation in the Harney Area was rather limited until the 1970's. Luther S. Cressman, in the 1930's and early 1940's, pioneered archaeological study in the area. His excavations of Roaring Springs Cave and Catlow Cave were major discoveries. Today they remain the only published professional excavations within the area on cave sites. The data base these two sites represent is crucial to the understanding of the area's prehistory.

Following Cressman's work the Harney Area was essentially neglected by professionals for twenty-five years. In the mid-sixties, interest in the area revived and occasional surveys were conducted. Results were reported on Oregon Archaeological Survey forms. In 1965 John Atherton conducted research on an obsidian quarry in the area. In 1968 Robert Butler analyzed the large surface collection of artifacts from Coyote Flat. Neither of these studies dealt with major archaeological problems.

John Fagan began field work in 1970 in the Harney Area. The objective of his research was to test the hypothesis advanced by Stephen Bedwell that the southeastern Oregon region was not entirely abandoned as a human habitat during the altithermal climatic period. Results of his research supported the hypothesis.

Subsequently archaeological study of the Harney Area boomed due to governmental involvement. Federal laws were enacted requiring this involvement. The archaeological work took the form of protective inventory and occasionally salvage of discovered antiquities. The first of these projects was actually the idea of the researcher, Thomas M. Newman, who proposed to survey intensively the Malheur National Wildlife Refuge, an area of 181,000 acres. Partially supported by the Refuge but largely the result of the labors of the Portland State University Archaeological Field School, the project was ambitious and hugely successful. Approximately 150 site areas were located. This count could be extended considerably if broken down to individual sites.

The Bureau of Land Management became involved in archaeological study of the Harney Area in 1974. A preliminary survey was conducted on the Alvord Desert Geothermal Area by contract to Portland State University. The area was found to be rich in antiquities and a more thorough inventory was required. The following year the University of Oregon was contracted for the study which resulted in the discovery of 224 archaeological sites. A similar inventory of the Glass Buttes Geothermal Area contracted to the University of Oregon in 1975 resulted in discovery of 131 archaeological sites, 39 of which are located in the Harney Area.

The Oregon Department of Highways has also become involved in archaeological study. Two highway projects have involved lands in the Harney Area. In 1975 the Oregon Museum of Natural History discovered thirteen archaeological sites along the Buchanan-Stinkingwater Pass Highway Right-of-Way. The following year eight sites were discovered along the Lakeview-Burns Highway Right-of-Way. Some of these sites have been salvaged to avoid destruction by highway relocation projects.

Additional inventory work is continuing with the Burns District Bureau of Land Management. This work is essentially protection oriented. Ground disturbing projects require prior clearance by the District Archaeologist. Impact to these sites has been avoided by relocating or redesigning the project or simple cancellation of the project.

The inventory of archaeological sites in Harney County now stands at over 400 sites. Three fourths of these have been discovered as a result of governmental involvement. Unfortunately the government is mandated to inventory and protect archaeological values, but research into archaeological problems is rarely involved.

Research into major archaeological issues and problems has been conducted in the Northern Great Basin and is relevant to Harney Area prehistory. Research specific to the Harney Area is lacking. An ambitious research study just beginning in the Harney Area is likely to resolve many unanswered questions. A two-year National Science Foundation grant to C. Melvin Aikens, of the University of Oregon; Donald Grayson, of the University of Washington; and Peter Mehringer, of Washington State University, will inventory and analyze archaeological and paleoenvironmental data from Steens Mountain and vicinity.

Ethnographic investigation in the Harney Area is basically nonexistent. Reference to the Malheur Paiute is made in Whiting's Paiute Sorcery and Steward's The Northern Paiute Bands. Most ethnographic work on North American Indians was done in the 1930's and 1940's. Many groups were simply not studied. Knowledge of the Harney Area Paiute is basically extrapolated from accounts on other Paiute groups. One study that deals specifically with the Harney Area Paiute has recently been completed. Marilyn Couture researched the Recent and Contemporary Foraging Practices of the Harney Valley Paiute intermittantly in 1975, 1976, and 1977. Although limited in scope, due to the dying out of traditional ways, the data this study presents is extremely important to understanding the Harney Area Paiute.

Historical investigations in the Harney Area are numerous. Many articles have been published in the Oregon Historical Quarterly journal. Referenced

in the bibliography, they are not summarized here as they are sufficiently narrow in scope as to be summarized by their title. Also not summarized in this section are the three references to Harney County Historical Society tours in 1973, 1976, and 1977. Tapes of these tours are on file at the Harney County Historical Society. One final reference specific to the Harney Area is not summarized. In 1937 J. J. Donegan made some notes on the history of the area that are typed and on file at the Harney County Library. The notes are not formalized into a coherant narrative. Much historical information relevant to the Harney Area is contained in general studies on Oregon history or histories on eastern Oregon. These references are cited in the bibliography.

Nine historical references are summarized in this section. Three of them LoPiccolo, Simpson, and Brimlow (1951) - are major historical studies specifically on the Harney Area. Three references - Sawyer, Brimlow (1938), and Talbot - deal with specific events or sites in depth. The final three references are unique. Braymen's oral histories contain a miscellany of reminiscences and historical facts. Jackman and Scharff's book contains short narratives on a variety of subjects. Jackson and Lee's publication is a preliminary historical site inventory of Harney County. Containing much data, it lacks a historical narrative.

Unlike the archaeological research on the Harney Area, the history of the area has been well synthesized at least three times. Each one of these studies has its own perspective and, taken together, they cover the subject thoroughly.

COLLECTIONS

A brief discussion of the major cultural resources artifact and archival collections of the Harney Area follows:

The Oregon Historical Society Museum in Portland, Oregon, has the largest collection of historical artifacts in Oregon. The collection is extremely well cataloged and very accessible. The Museum also contains a large cartographic and photographic collection. The Museum maintains a large library of books, periodicals, microfilmed newspapers, journals, manuscripts, and various public documents and records.

The Harney County Historical Museum in Burns, Oregon, has both prehistoric and historic artifacts, but most of the former are poorly documented. The Museum also has a small library and a photographic collection to which additions are constantly being made. The Museum has a particularly good collection of farming/ranching machinery, much of which is presently housed at Sod House Ranch.

The Harney County Library in Burns, Oregon, has a small library of major historical references for the area and a good collection of Oregon Historical Quarterly journals. The Jackson and Lee historical inventory slide presentation is maintained at the library. Pauline Braymen's oral history transcripts are also maintained at the library.

The Oregon State Museum of Anthropology at Eugene, Oregon, (formerly the University of Oregon Museum of Natural History) is the official repository in Oregon for the Smithsonian. It contains most of the important collections of archaeological materials from Oregon. The Glass Buttes, Alvord Desert, Cressman and highway survey materials are housed there. The artifacts collected in the current Steens Mountain-Alvord Desert project will eventually be stored at the Museum.

The Portland State University Archaeology Laboratory in Portland, Oregon, has two relevant archaeological collections. The materials from the Malheur National Wildlife Refuge and the preliminary survey of the Alvord Desert are temporarily maintained there while undergoing analysis. Eventually they will be housed at the Oregon State Museum of Anthropology.

The Bureau of Land Management Office in Burns, Oregon, maintains no collections of artifacts. It does have some of the major historical references and a substantial library on Great Basin prehistory and cultural resource management.

microfilm of the original survey notes of the United States for the Burns District are stored at the office. Copies of all Oregon Archaeological Survey site reports for public lands in the Burns District are maintained at the office. The Burns District has a photographic slide record of some of the archaeological sites and many of the historic sites in the District.

Marilyn Couture of Portland, Oregon, has a private collection of photographs and films of the Burns Paiute. She also has a small herbarium of ethnographically important plants.

Marcus Haines of Burns, Oregon, has a private photographic slide collection of historic sites from the area. He has developed a slide presentation of the Paiute Indian uprising in Harney County. He also has a collection of various unpublished sources of historical importance (correspondance and miscellaneous documents).

PRESENT RESEARCH ORIENTATIONS

Archaeological research in the Harney Area is just beginning in spite of the fact that substantial investigation has been accomplished to this date. Most of the previous archaeological work in the area has been oriented to inventory. Several large inventory projects have been conducted (Newman, et. al., 1974; Newman, 1972-1974; Pettigrew, 1975; Mack, 1975). None of these studies were designed to test specific hypotheses. The objective of these and other small inventory projects has been to generally assess the nature and extent of archaeological resources in the area for management purposes. Some conclusions on regional chronology have been drawn from these projects by using typological cross-dating of projectile points.

To date four research projects have been accomplished in the Harney Area. In the 1930's Luther Cressman excavated two caves in Catlow Valley. Cressman's objective was to discover and demonstrate the presence of early man in Oregon. Both Roaring Springs Cave and Catlow Cave had rich cultural and faunal deposits in addition to some human skeletal remains. Absolute dating of the caves was not possible because carbon-14 dating had not yet been discovered. None-the-less Cressman demonstrated that early man did indeed exist in Oregon.

In 1965 John Atherton surface collected a prehistoric obsidian quarry in the Harney Area to determine whether finished artifacts were manufactured there or not. It was determined that the main products seem to have been projectile point "blanks" and that the finished tools must have been manufactured elsewhere.

In 1970 John Fagan set out to test the hypothesis advanced by Stephen Bedwell that during the altithermal climatic period the eastern Oregon region was not abandoned as a human habitat. He proposed that areas of higher elevation were utilized by man during this period. It was found that higher altitude spring sites were occupied by man during the altithermal. The basic tool for establishing temporal sequence in this research was typological cross-dating of projectile points.

The final research project in the Harney Area is current. C. Melvin Aikens, Donald Grayson, and Peter Mehringer are conducting paleoenvironmental research on Steens Mountain and in Catlow and Alvord Valleys. The subject of investigation is post glacial climatic change and its possible effects on human ecology in arid western America. The objective is to independently

establish, and then integrate, detailed cultural and paleoenvironmental sequences for the region. This project should provide a firm chronology for the Harney Area. In addition an understanding of the prehistoric environment and its effect on the human population should result from this research.

With the conclusion of the Steens research project, the prehistory of the Harney Area will have a firm foundation. This study should provide a framework not only for all future research, but for what is already known. It is hoped that existing artifact collections from the Harney Area will be reviewed within the new framework.

Historical research in the Harney Area currently has a firm foundation. The inventory done by Jackson and Lee is a comprehensive collection. Combined with the historical narrative in this overview they constitute a substantial study of the history. It is hoped that at some future date they would be presented in a single volume available to the public.

Three other major syntheses of the history of the Harney Area exist (Brimlow, 1951; LoPiccolo, 1962; Simpson, 1973). A few in-depth studies on specific subjects and events have also been done. The focus of these studies has been on the highlights of local history such as the Bannock Indian War, Pete French, and the Meeks and Elliots wagontrains. There are many subjects that need more in-depth study such as the sheep industry, the Civilian Conservation Corps in the Harney Area, the life of the early homesteaders, John Devine's life, and the dryland farming era.

RESEARCH AND INVESTIGATION PROJECT SUMMARY #1

1. Project Title: Cultural Inventory of the Potential Glass Buttes Geothermal Lease Area, Lake, Harney, and Deschutes Counties, Oregon.

2. Principal Investigator: Joanne M. Mack, University of Oregon.

3. Sponsoring Institution: Bureau of Land Management (Burns, Lakeview, and Prineville Districts).

4. Dates of Field Work: August 7 to August 23, 1975.

5. General Location of Field Work: Approximately 45 miles west of Burns in southeastern Oregon - principally on the south side of the Glass Buttes.

6. Purpose of Field Work: Assess the cultural resources values of the proposed geothermal lease area (80,800 acres).

7. Field Procedures: The survey was designed for intensive coverage of those areas considered most likely to contain archaeological sites. The criteria used in selecting sample tracts for intensive ground search were topographic features associated with known archaeological sites and occurring in the study area. Five terrain types were selected: (1) margins of playas; (2) tops of ridges, near the edge; (3) area adjacent to intermittent streams or rills; (4) areas adjacent to springs; and (5) cliff faces, where rockshelters or rock art might be located. A test of the validity of using these terrain types indicated that archaeological sites could also be found in sand dune areas not presently near a water source and areas near, though not necessarily adjacent to, the heads of intermittant streams.

8. Project Results: A total of 131 sites were located. Nineteen square miles (14%) of the 132 square miles were intensively surveyed. It is predicted that 540 archaeological sites remain undiscovered. Summary of sites: (1) 18 extensive campsites recorded on margins of playas; (2) 15 small knapping stations along edges of ridges; (3) 63 sites recorded adjacent to intermittant streams on rills; (4) 3 sites recorded near springs; (5) 1 rockshelter recorded in rimrock face; (6) small sites were found in sand dunes; (7) various sized sites found near stream heads; (8) 7 extensive quarry sites located on the slopes of Glass Buttes.

There are no conclusions as to occupation of the area during the Altithermal period (5000 to 3000 B.C.). The area appears to have been continuously occupied from 11,000 B.P. to A.D. 1100. There is a significant absence of occupation in the area after A.D. 1100.

9. Evaluation of Project: The survey results were mostly very good. The value of the area's archaeological resources has been determined to be fairly high with an average of approximately seven sites per square mile. Since the survey was high-graded, this average would probably be the high figure. The recording of information was particularly good. The site forms were all complete and all materials collected were noted including point types. All sites were dated, if possible, and the basis for the inferred date explained in each case. A general chronology for the area was established denoting a couple specific changes in the use of the area.

   Three results of the project are especially useful for management. First is the completion of survey on 19 square miles. Those sites that should be test excavated at a minimum, were delineated; and finally an average figure on the time or man-day requirement for survey in this kind of terrain and intensity of occupation was established.

   The project is lacking in three ways. First of all, no random statistical sample work was done to determine the overall values for predictive purposes. Curiously, a prediction on how many sites remain to be discovered was made. No explanation is made of how this figure was arrived at. Another drawback of the project is that the problem of significance was never dealt with, rather all sites were designated significant. Finally, site specific photographs, though taken, were not included in the report. Before any further work can be done copies of the photographs need to be obtained.

10. Records: A report of the project was printed by the Department of Anthropology at the University of Oregon (1975). It is assumed that all photographs, notes, and collections are stored at the University.

RESEARCH AND INVESTIGATION PROJECT SUMMARY #2

1. Project Title: Cultural Resources Survey in the Alvord Basin, Southeastern Oregon.

2. Principle Investigator: Richard M. Pettigrew, University of Oregon.

3. Sponsoring Institution: Bureau of Land Management, Burns District.

4. Dates of Field Work: September 1 to September 21, 1975.

5. General Location of Field Work: The project was located in the Alvord Valley about 100 miles southeast of Burns. The project area included approximately 180 square miles of public land.

6. Purpose of Field Work: The project was designed to assess the cultural resources of the geothermal lease area, the Alvord KGRA.

7. Field Procedures and Techniques: The area was divided into seven zones based on elevation. A sample of approximately 61 square miles was randomly selected from this stratified base to be intensively surveyed. In addition, 20 man-days were reserved for surveying high probability locations outside the random sample areas.

8. Project Results: Two hundred twenty-four archaeological sites were discovered. A total of 65 square miles were intensively surveyed, amounting to about one-third of the project area. A general chronology based on diagnostic artifact types was established for the area. All sites were dated if possible. Site density was figured for each zone, and the number of predicted undiscovered sites was also figured for each zone. The frequency of diagnostic artifacts was mapped in an attempt to infer the age of ancient beach lines and describe the temporal sequence in which the Pleistocene lake receded. It was found that the lake had already dropped below 4,050 feet after the time when fluted and Haskett/Lake Mohave specimens were in use (10,000 - 6,000 B.C.). It dropped below 4,020 feet sometime between 8500 - 6000 B.C. Another interesting result was that early point types are generally absent above 4,100 feet. These higher elevations were dominated by late point types, indicating an increased use of the uplands after 1,000 B.C.

9. Evaluation of Project: The project results are very good. Basic analytic work is good. The recordation of data is good. The 33% random sample is

extremely useful and lends a high degree of confidence to predicted density figures. The mapping of sites is excellent. Photographs of a minority of the sites were taken, but unfortunately not included with the report. The quality of the artifact photographs is excellent.

10. Records: The report was printed by the Department of Anthropology at the University of Oregon in 1975. It is assumed that all notes and collections are maintained at the University.

RESEARCH AND INVESTIGATION PROJECT SUMMARY #3

1. Project Title: Archaeological Investigations at Stinkingwater Pass, Harney County, Oregon.

2. Principle Investigator: Richard M. Pettigrew, Oregon State Museum of Anthropology.

3. Sponsoring Institution: Oregon State Department of Transportation, Highway Division.

4. Dates of Field Work: May 18, 24, and 25, 1975; March 20-28 and June 14-23, 1976.

5. General Location of Field Work: The project involved approximately 11 miles of Highway 20 between milepost 155.7 and 166.4. It begins about 20 miles east of Burns near Buchanan, Oregon, and extends across the Stinking Water Mountains.

6. Purpose of Field Work: To locate any culture resources that might be impacted by widening and straightening the highway, and to salvage these sites.

7. Field Procedures and Techniques: All construction areas were surveyed on foot. A minimum six meter wide strip was checked on either side of the highway. When sites were discovered the area was checked to at least 30 meters. Ten sites were salvaged by systematic surface collection. Six of the ten sites were tested for depth and two of these were subjected to larger-scale excavations.

8. Project Results: Thirteen archaeological sites were discovered. Ten of these were salvaged to avoid destruction. Two sites were excavated. All materials were fully analyzed.

9. Evaluation of Project: Excellent. All the cultural materials were fully catalogued, mapped, and analyzed. Drawings of the artifacts recovered are provided.

10. Records: Collected materials are maintained at the Museum of Natural History, Eugene. Report published: University of Oregon Anthropological Papers No. 15, 1979.

RESEARCH AND INVESTIGATION PROJECT SUMMARY #4

1. Project Title: Alvord Desert Potential Geothermal Resource Area Cultural Resource Survey.

2. Principle Investigators: Thomas Newman, Robert Bogue, William Cannon, Ruth McGilvra, and Roger Wiggin, Portland State University.

3. Sponsoring Institution: Bureau of Land Management, Burns District.

4. Dates of Field Work: November - December, 1974.

5. General Location of Field Work: Approximately 100 miles southeast of Burns in the Alvord Valley.

6. Purpose of Field Work: The project was to conduct a preliminary archaeological reconnaissance and inventory of sites to provide data for an Environmental Analysis Report. The goal was to assess the archaeological value of the region by surveying as many potential site areas as time and weather would permit.

7. Field Procedures and Techniques: The project was undertaken as an emergency measure to fulfill the requirements of the National Environmental Policy Act of 1969. The field work was limited to those areas most likely to contain sites. Areas of top priority for examination included rockshelters, springs, streambanks, lake terraces, and fossil drainages. Sites located were mapped, recorded, and partially surface collected.

8. Project Results: Seventeen sites were recorded. One site was recommended for nomination to the National Register. It was recommended that this site be withdrawn from leasing. Intensive inventory of the area was recommended as was salvage of any values where destruction was anticipated. Projectile point types indicate the area has been occupied for the last 11,000 years. Collections suggest that the area may have been occupied more intensely in the most recent and most ancient periods.

9. Evaluation of Project: The recordation and mapping of sites was good with the exception that individual site collection photographs were not made. None of the sites were dated and in some cases the type of points collected was not recorded. Because a random sample survey was not conducted, it is difficult to make much assessment of the archaeological values.

10. Records: The report was printed by Portland State University in January, 1975. The collections are temporarily maintained at the University.

RESEARCH AND INVESTIGATION PROJECT SUMMARY # 5

1. Project Title: Altithermal Occupation of Spring Sites in the Northern Great Basin.

2. Principle Investigator: John Lee Fagan, University of Oregon.

3. Sponsoring Institution: The project was for partial fulfillment of a doctorate degree and was funded by the National Science Foundation.

4. Dates of Field Work: Fourteen weeks in the summer of 1970.

5. General Location of Field Work: Various locations in Harney, Malheur, and Lake Counties, Oregon.

6. Purpose of Field Work: The purpose was to test the hypothesis advanced by Stephen Bedwell (1970:217) that during the Altithermal period, when the bed of Pluvial Fort Rock Lake was abandoned as a human habitat,the region was not abandoned, but rather, adjacent areas of higher elevation provided a favorable environment for the continuance of human occupation.

7. Field Procedures and Techniques: Thirty-four sites in southeastern Oregon were initially surface collected. Twelve of these sites were chosen for test excavation. All except one were spring sites. The sites were separated into two catagories based on elevation. Three lower altitude sites (4,200-4,300 feet elevation) were located in Harney (35HA8 and 35HA9) and Malheur (35ML30) Counties. Nine high altitude sites were located between 5,100 to 6,000 feet above sea level. They are: in Malheur County 35ML24, 35ML25, 35ML26, and 35ML33; in Lake County 35LK63, 35LK63/1, 35LK93, and 35LK70; in Harney County 35HA25. The excavations produced 11,064 artifacts of stone and unfired clay. The artifacts were classified, and stratigraphic frequency distributions of each artifact type and variety for each site were made.

8. Project Results: Some radiocarbon and obsidian hydration methods were used, but typological cross-dating was the basic tool for establishing a chronology. Four sequential periods were established: Period I, 150 to 3,000 B.P.; Period II, 3,000 to 5,000 B.P.; Period III, 5,000 to 7,000 B.P.; and Period IV, 7,000 to 11,000 B.P.

   Ten of the 12 sites excavated continued to be occupied during the period in question. Altithermal abandonment of lower altitude Fort Rock Basin

caves correlated with simultaneous occupation of higher altitude springs refutes the contention of total regional abandonment.

The data suggests a shift in occupation patterns for the arid period. The movement from lower to higher altitudes was undoubtedly influenced by a progressive recession of favorable ecological zones uphill.

The report also concluded that early sites were predominantly hunting rather than gathering camps. They were also most frequently located at higher elevations. Late sites at lower elevations were collecting and seed processing stations, while those at higher elevations were predominately hunting camps.

9. Evaluation of Project: The project is an excellent piece of research.

10. Records: The report was published by the University of Oregon Anthropological Papers (No. 6) in 1974. It is assumed all collections are maintained at the University.

RESEARCH AND INVESTIGATION PROJECT SUMMARY #6

1. Project Title: Archaeological Survey of the Proposed Improvement of the Peterson Ranch - Lake County Line Section of the Lakeview - Burns Highway, Harney County, Oregon.

2. Principal Investigator: David Cole, Oregon Museum of Natural History.

3. Sponsoring Institution: Oregon State Highway Division.

4. Dates of Field Work: October 9-12, 1976.

5. General Location of Field Work: The project involved approximately 20 miles of U.S. Highway 395 between Riley, Oregon and Alkali Lake.

6. Purpose of Field Work: To locate any archaeological values that might be impacted by widening and straightening the highway, and to recommend mitigation for the resources.

7. Field Procedures and Techniques: The project area was examined by walking the route on both sides of the highway. Realignment portions were checked by using the construction drawings in the field. No surface collections or test excavations were made.

8. Project Results: Eight archaeological sites were discovered. Estimates of the degree of potential impact were made. It was recommended that surface collection and test excavation be undertaken to salvage existing values.

9. Evaluation of Project: The site mapping and description is very good. Recommendations for salvage are appropriate.

10. Records: A report of the survey was printed by the Museum of Natural History (#77-4), Eugene, Oregon, 1977. No collection of cultural materials was made on the survey.

RESEARCH AND INVESTIGATION PROJECT SUMMARY #7

1. Project Title: Archaeological Reconnaissance of the Malheur National Wildlife Refuge, Harney county, Oregon, 1972-1974.

2. Principle Investigator: Thomas M. Newman, Portland State University.

3. Sponsoring Institution: Lodging was made available through the courtesy of the Refuge. The majority of the field work was accomplished by the Portland State University Archaeological Field School and students working under the University's work/study program. Y.C.C. workers lent additional support in 1974.

4. Dates of Field Work: Summers of 1972, 1973, and 1974.

5. General Location of Field Work: Malheur National Wildlife Refuge, Harney County, Oregon.

6. Purpose of Field Work: To intensively survey the Refuge. Data will be used for assessment of the cultural values of the Refuge and for the development of management plans of these values.

7. Field Procedures: All land surfaces which were visible were systematically walked in search of archaeological values. An attempt, not always successful, was made to keep the transects separate by no more than 50 meters. All discovered sites were mapped, and on many, a small surface collection was made. A small number of sites were test excavated. One site, a small rockshelter was excavated completely.

8. Project Results: A total of 148 site areas were located. This count could be extended considerably if they were broken down into individual sites. Tentative conclusions on the chronology of the area are that there was apparent infrequent occupation of the area in immediately Post-Pleistocene times, substantial exploitation of the valley areas from the end of the Altithermal and continuing for an undetermined period of time, then, within the last two or three thousand years, intensive occupation of the entire Refuge. Three recommendations were made. First, that testing of selected sites be continued. Second, that all rock art be recorded and photographed since it is subject to vandalism and natural deterioration. Third, that research on climate factors and analysis of recovered surface materials be continued. Three additional papers are included in the

report. The first is a tabular form inventory of all sites. Each site is classified and rated according to its significance. Ratings of significance have been correlated with management actions. The paper is intended to assist the Refuge staff in the management plans. The second paper is an attempt to date some of the sties by the technique of seriation. Most of the discovered sites are undatable by conventional means. The third paper is an attempt to determine the function of so-called "stone rings" or "teepee rings".

9. Evaluation of Project: This study represents one of the most ambitious and complete archaeological surveys in the Northwest. Unlike much archaeological work that is conducted on an emergency and slavage basis, this study has been done to assist in the development of management plans to avoid the pitfalls of unplanned archaeological work. It is an excellent example of intensive survey.

10. Records: Recovered materials are temporarily maintained at Portland State University. The report is printed by and maintained at Portland State University.

RESEARCH AND INVESTIGATION PROJECT SUMMARY #8

1. Project Title: Malheur Basin - Steens Mountain Prehistory Project.

2. Principle Investigators: Donald Grayson, University of Washington, Peter Mehringer, Washington State University, and C. Melvin Aikens, University of Oregon.

3. Sponsoring Institution: National Science Foundation.

4. Dates of Field Work: The project is current. It will involve three field seasons, 1978, 1979, and 1980.

5. General Location of Field Work: Field work will be predominantly on Steens Mountain in Harney County. Transects will cross the valleys on each side of the Steens, Catlow Valley on the west and Alvord Valley on the east.

6. Purpose of Field Work: The project is a three-year program of archaeological paleoenvironmental research. The subject of investigation is postglacial climatic change and its possible effects on human ecology in arid western America. The objective is to independently establish, and then integrate, detailed cultural and paleoenvironmental sequences for a region large and varied enough to offer a variety of possibilities for human adaptation in the face of environmental change over time.

7. Field Procedures and Techniques: The first season of field work will involve survey and mapping. Drainages have been randomly selected and half of each drainage will be intensively surveyed. All drainages are stratified as to primary, secondary or third order drainages. All located sites will be systematically surface collected, with each artifact and flake precisely located on the site map. Paleobotanical research will involve core drilling of Fish Lake on Steens Mountain and Marr Lake in Diamond Craters. Cores taken from Wildhorse Lake in 1977 will be correlated with the new data. All volcanic ashes from the cores will be bracketed by radiocarbon dates.

   The following seasons of field work (1979 and 1980) will involve a continuation of the survey and mapping. Selected sites will be excavated and radiocarbon dates will be immediately processed for close chronological control of the excavation. Paleobotanical work will continue in the second field season and focus on development of the information from the excavated sites. Pollen studies and analysis of botanical remains will

be conducted by Mehringer. Stratigraphic and sedimentary analyses of each excavated site will be done by Dr. Laurence Kittleman. Analysis of excavated vertebrate remains will be done by Grayson. Fish remains will be analyzed by Dr. R. Casteel of Simon Fraser University. Analysis of the lithic will be accomplished by Aikens.

8. Project Results: The project is beginning this field season.

9. Evaluation of Project: The project is current and incomplete.

10. Records: The University of Oregon Museum of Natural History will be the repository for specimens and records. The University of Oregon Anthropological Papers and the University of Washington Reports in Archaeology are available for publication of project data.

RESEARCH AND INVESTIGATION PROJECT SUMMARY #9

1. Project Title: Prehistoric Manufacturing Sites at North American Stone Quarries.

2. Principle Investigator: John Harvey Atherton, University of Oregon.

3. Sponsoring Institution: The project was for partial fulfillment of a Master's Degree and was largely unfunded. Transportation was funded by the Wenner-Gren Foundation.

4. Dates of Field Work: 1965.

5. General Location of Field Work: The Riley obsidian quarry is located four and one half miles southwest of Riley, Oregon on Highway 395.

6. Purpose of Field Work: To determine the processes involved in the initial working of lithic artifacts at prehistoric quarries; specifically what processes were carried on at quarries; were finished artifacts manufactured there, and what effect, if any, did the nature of the quarry have on the manufacturing process.

7. Field Procedures: The site was divided into three areas and eight one-meter diameter circles were collected. The circles were randomly selected. No excavation was made.

8. Project Results: A total of 110 unifacially and bifacially worked pieces were examined. The great majority seem to be rejects or fragments of rejects of "blanks" for knives. The Riley site is generally similar to other North American quarries, except for the lack of campsites and hammerstones. The main products of North American quarries seem to have been "blanks". Finished tools were made and utilized at some quarries. Hammerstones, common to most quarries were lacking at the Riley Site. This suggests that they were either carried in and out or that non-stone flaking tools were used. There is no indication that finished tools were commonly manufactured at quarries.

9. Evaluation of Project: The project supports a common interpretation of quarry sites: that they were not the locus of manufacturing finished tools but rather only blanks.

10. Records: The collected materials are stored at the University of Oregon Museum of Natural History. The thesis was printed by the Department of Anthropology, University of Oregon, Eugene, Oregon, 1966.

RESEARCH AND INVESTIGATION PROJECT SUMMARY #10

1. Project Title: A surface collection from Coyote Flat, Southeastern Oregon.

2. Principle Investigator: B. Robert Butler, Idaho State University.

3. Sponsoring Institution: Idaho State University.

4. Dates of Field Work: 1968.

5. General Location of Field Work: Coyote Flat, T.34E, R.37E. and T.35S., R.37E., east of the Alvord Desert in Malheur County.

6. Purpose of Field Work: Concern was expressed that the area rich in lithic artifacts would be collected by relic hunters. Butler wanted a body of material from southeastern Oregon to compare with similar bodies of material in the northern Intermountain region. He felt regional differences could be demonstrated.

7. Field Procedures and Techniques: The site was surface collected by two amateurs who submitted the materials to Butler for analysis. There is no indication in the report that the site was collected in any regulated manner. Milling stones, cobbles and core tools were not collected.

8. Project Results: One thousand and thirty-two specimens were collected. Most were projectile points or point fragments. Almost all of the artifacts were of obsidian, though certain types (crescent, endscrapers, borers, and gravers) were predominantly of silica minerals. The points were classified into 18 different types. Two features of the collection are outstanding. First, concave or indented base projectile points are pervasive and enduring. Second, crescents are well represented (84 total) and most (73) are of silica minerals. Microscopic examination led to the conclusion that the crescents were used as scrapers, knives and gravers. Lake prehistoric and early historic artifacts are scarce in the collection.

9. Evaluation of Project: This collection represents one of the largest and most concentrated collections removed from southeastern Oregon. It is unfortunate that the materials were not collected to reflect the distribution within the site. It is also unfortunate that records of milling stones, cobbles, and cores were not made. The specific circumstances of the project are unknown, but much more in the way of field methodology,

field analysis, and field recordation should have been accomplished.

10. Records: A representative sample of the collection was donated to the Idaho State University Museum. The report was published in Tebiwa, Vol. 13, No. 1, 1970.

RESEARCH AND INVESTIGATION PROJECT SUMMARY #11

1. Project Title: Archaeological Survey of the Guano Valley Region in Southeastern Oregon.

2. Principle Investigator: Luther S. Cressman.

3. Sponsoring Institution: The survey was financed by the General Research Council of the University of Oregon and the Research Council of Stanford University.

4. Dates of Field Work: 1933 and 1934.

5. General Location of Field Work: Principally in Guano Valley, lying southwest of Beattys Butte in Lake County, but also in Catlow Valley and the Big Spring area on the Oregon-Nevada border.

6. Purpose of Field Work: The study of petroglyphs of Oregon was the object of the survey. The survey was also searching for stratified cultural deposits.

7. Field Procedures: Various locations provided by informants were searched by truck or on horseback.

8. Project Results: One site (located at the upper end of Hawk's Valley) rests in the Harney Area. The remaining survey data is located outside of the Harney Area. The survey itself provided preliminary information on the cultural resources of the area. It raised more questions than it answered, but information gathered gave some insight into the relationship of the area to others.

9. Evaluation of Project: The survey was ambitious in light of the difficulty of the terrain. Few roads existed and the maps of the area, made in the 1880's were inadequate. The survey failed to discover stratified culture deposits, but was able to discover the nature of the culture in this area.

10. Records: Collected artifacts are stored at the University of Oregon Museum of Natural History. The report was published by the University of Oregon in 1936.

RESEARCH AND INVESTIGATION PROJECT SUMMARY #12

1. Project Title: Archaeological Researches in the Northern Great Basin (1942) and Early Man in Oregon, Archaeological Studies in the Northern Great Basin (1940).

2. Principle Investigator: Luther S. Cressman, University of Oregon.

3. Sponsoring Institution: Carnegie Institution of Washington, General Research Council of the Oregon State System of Higher Education, Social Science Research Council, Penrose Fund of the American Philosophical Society, and the Condon Grant for Archaeological Investigations of Early Man in Oregon.

4. Dates of Field Work: 1935, 1937, and 1938.

5. General Location of Field Work: Catlow Valley in Harney County.

6. Purpose of Field Work: To discover and demonstrate the presence of early man in Oregon.

7. Field Procedures and Techniques: Excavation techniques at the time of these studies were not as sophisticated as they are today. Nonetheless, Cressman's work represents the best practices of the time. Radiocarbon dating was not developed at the time. Techniques of environmental reconstruction were not employed in archaeological excavations. Theoretical frameworks in climatology and glaciology provided the basic chronological table for archaeology. Paleontology was not very helpful as faunal sequences of the late Pleistocene and early Recent were not well worked out.

   Excavation methods involved the use of a horizontal grid system. Catlow Cave was laid out in 1.5 meter squares and Roaring Springs Cave in 2 meter squares. Vertical measurements were calculated by transit. Stratigraphic sequences, where visible, were used as levels. If the deposits were too deep to be handled as single units, 20 centimeter levels were used. Where specimens occurred in large numbers the deposit was first worked by trowel and brush and sieved.

8. Project Results: Both Roaring Springs Cave and Catlow Cave had two distinct levels, the bottom level lacking any basketry. Human skeletal

remains were found in both caves. Fragments of two individuals were found in Catlow Cave. The most reasonable conclusion was that they were deposited there by wave action. Skull fragments of three individuals were found in Roaring Springs Cave. Catlow Cave had 112 pieces of basketry and 44 pieces of coarsely woven receptacles and mats. Roaring Springs Cave had 180 pieces of baskets, of which 168 were of the twined type. There were also 116 pieces of coarsely woven receptacles and mats, of which about one-third were mats. Coiled baskets are common to the Great Basin and the Southwest, yet few were found in the Oregon Caves. Eight pieces of coiled basketry were excavated from Catlow Cave and four from Roaring Springs Cave.

Sandals were most commonly made of sagebrush bark, although other materials were sometimes employed. Thirty-one sandals were recovered from Catlow Cave. Twelve of the sandals were of the Fort Rock type, nine of the spiral weft type, and ten of the multiple warp type. Roaring Springs Cave contained 4 sandals of the spiral weft type and 14 of the multiple warp type. In addition, this cave contained two moccasins. Both caves had a wide range of bone artifacts and numerous pieces of cordage.

Catlow Cave yielded a small leather bag. Aside from the moccasins this was the only finished artifact of leather. Both caves contained quite a few pieces of rawhide, sinew, and hide.

Catlow Cave had 130 wooden artifacts. These were mostly fragments of atlatls, bows, digging sticks, fire drills, bunts, or flutes. Roaring Springs Cave had 120 wooden artifacts.

One hundred and ninety-four projectile points were retrieved from Catlow Cave. Other lithic artifacts included 70 scrapers, 3 drills, 1 graver, 58 manos, 35 metates, 2 hammer stones, 1 mortor, and 5 choppers. Roaring Springs Cave had 650 projectile points, 212 scrapers, 17 drills, 63 manos, 23 metates, 5 hammer stones, 1 mortor, and 5 choppers.

One unusual find was eight sherds of plain pottery found in Catlow Cave. Found near the surface it was concluded the fragments were intrusive.

9. Evaluation of Project: The excavation of the Catlow Caves proved that early man existed in Oregon. These excavations revealed much about the quality of prehistoric man's life in southeastern Oregon. They continue to be major and outstanding finds today.

10. Records: Excavation notes and specimens are stored at the University of Oregon Museum of Natural History. Results were published in two articles: "Early Man in Oregon, Archaeological Studies in the Northern Great Basin", University of Oregon Monographs, 1940 and "Archaeological Researches in the Northern Great Basin", Carnegie Institution of Washington, Publication 538, Washington D.C., 1942.

RESEARCH AND INVESTIGATION PROJECT SUMMARY #13

1. Project Title: Recent and Contemporary Foraging Practices of the Harney Valley Paiute.

2. Principle Investigator: Marilyn Couture, Portland State University.

3. Sponsoring Institution: The project is for partial fulfillment of a Master's Degree. Partial support was received from the Jacobs Research Fund of the Whatcom Museum Foundation.

4. Dates of Field Work: Intermittant field work in 1975, 1976, 1977, and 1978.

5. General Location of Field Work: Field work has been done at the Burns Paiute Indian Reservation and in the vicinity of Burns.

6. Purpose of Field Work: To determine those plants that have been and still are used; to collect plant samples for identification; and to record the gathering practices, processing, and utilization of the plants.

7. Field Procedures: Techniques utilized include still and moving photography, taped and written recordation, and standard ethnographic methods.

8. Project Results: Approximately 41 plants were inventoried including native, botanical and common terminology; season and location of collection; processing and use of the plant. Comparison was made to the Surprise Valley Paiute and the Owens Valley Paiute.

9. Evaluation of Project: The project is very good. As few as 10 of the older tribal women still practice the collection and use of wild plants. They are the only ones who retain the detailed knowledge of the traditional foraging practices. This work will preserve this knowledge for future generations as well as serving as a source for ethnographic and archaeological research.

10. Records: A copy of the thesis will be stored at Portland State University. Photographs and films will probably be retained privately by the author.

RESEARCH AND INVESTIGATION PROJECT SUMMARY #14

1. Project Title: Some Aspects of the Range Cattle Industry of Harney County, Oregon, 1870-1900.

2. Principle Investigator: Margaret Justine LoPiccolo, University of Oregon.

3. Sponsoring Institution: The project was for partial fulfillment of a Master's Degree and was not sponsored.

4. Dates of Field Work: The project was essentially a library study, although Burns was visited to search the files of the Burns Times Herald and Harney County official records.

5. General Location of Field Work: The study rests substantially on the Frenchglen papers in the Bancroft Library of the University of California, official records, and newspaper accounts from the Burns Times Herald and the Winnemuccas, Nevada Silver State.

6. Purpose of Field Work: The study is concerned with the role of the large cattle companies of Harney County, Oregon. This is a segment of the American cattle frontier that has been generally ignored.

7. Field Procedures: Standard library research methods.

8. Project Results: It is concluded that big business, not frontiersmen, led the movement of cattle into the norther Great Basin. The largest herds and ranches in Harney County, Oregon resulted from California capitalists expanding their operations into the area. The large companies were most able to survive the hard weather of 1889-1890 and continued to dominate the local industry for the remainder of the century.

9. Evaluation of Project: The project is an excellent study of the economic history of the period in Harney County. It is a unique, if somewhat narrow, perspective of the times. While the large cattle companies did dominate the county economically, many small ranches left an indelible mark upon the character, color, and development of the area.

10. Records: Printed by the Department of History, University of Oregon, Eugene, Oregon, 1962.

RESEARCH AND INVESTIGATION PROJECT SUMMARY #15

1. Project Title: The project is currently being researched. The subject is the oral history of Harney County.

2. Principle Investigator: Pauline Braymen.

3. Sponsoring Institution: Supplies and study space are provided by the Harney County Library. All committments of time are donated.

4. Dates of Field Work: The project is currently being conducted. Research has been intermittant for a couple of years.

5. General Location of Field Work: Field work has been conducted widely in Harney County.

6. Purpose of Field Work: To record and make a permanent record of the oral history of Harney County before it is lost or forgotten.

7. Field Procedures and Techniques: Standard oral history methods are utilized. All informant dialogues are taped and later transcribed.

8. Project Results: The project is incomplete. A substantial number of transcripts has already been complied, some of which are already the only remaining record of an individual's recollection.

9. Evaluation of Project: The project is incomplete.

10. Records: All tapes and transcripts are maintained at the Harney County Library in Burns, Oregon.

RESEARCH AND INVESTIGATION PROJECT SUMMARY #16

1. Project Title: Sod House Ranch: Preservation and Interpretive Development.

2. Principle Investigator: Caryn Talbot.

3. Sponsoring Institution: Malheur National Wildlife Refuge.

4. Dates of Field Work: 1975.

5. General Location of Field Work: Sod House Ranch and interviews with locals knowledgeable of the Ranch.

6. Purpose of Field Work: The site has been nominated to the National Register of Historic Places. The study was designed to support that nomination as well as develop a plan for restoration and interpretation.

7. Field Procedures and Techniques: Library research, interviews, and research into materials and techniques of restoration.

8. Project Results: The study was very good. Restoration is presently underway.

9. Evaluation of Project: The history of the Ranch buildings is very good as is the preservation plan.

10. Records: Report was printed and is stored at the Malheur National Wildlife Refuge, 1975.

RESEARCH AND INVESTIGATION PROJECT SUMMARY #17

1. Project Title: Steens Mountain in Oregon's High Desert Country.

2. Principle Investigators: Text by E. R. Jackman and John Scharff; Photography by Charles Conkling.

3. Sponsoring Institution: Published by the Caxton Printers, Ltd.

4. Dates of Field Work: Project is the result of many years of study and appreciation.

5. General Location of Field Work: Steens Mountain and the Malheur National Wildlife Refuge are the main subjects of study.

6. Purpose of Field Work: To record the land, man, and animals of the area for the general reader.

7. Field Procedures: Unknown.

8. Project Results: Eighteen chapters on various subjects are included. Several include, or deal exclusively with, history. The data is brief but, in many cases, not commonly known. The photography is exceptional.

9. Evaluation of Project: The project is a good pictoral overview of the area. Some of the historical data is not commonly known. The study was not intended to be thorough nor academic.

10. Records: Published by the Caxton Printers, Ltd., Caldwell, Idaho, 1973.

RESEARCH AND INVESTIGATION PROJECT SUMMARY #18

1. Project Title: A Social History of the Cattle Industry in Southeastern Oregon, 1869-1912.

2. Principle Investigator: Peter Kooi Simpson, University of Oregon.

3. Sponsoring Institution: The project was for partial fulfillment of a Doctorate Degree and was not sponsored.

4. Dates of Field Work: The project was essentially a library study although Burns was visited.

5. General Location of Field Work: Burns, Oregon.

6. Purpose of Field Work: The study is concerned with the social and economic history of the Harney Region.

7. Field Procedures: Standard library research methods.

8. Project Results: Four themes are traced in the study. First, the older families of pioneer stock have enjoyed a virtual monopoly of political power and social prestige in the community. Second, despite the overt appearances of harmony fostered by local newspapers and some community leaders throughout Harney County's history, political factionalism and social antagonism among residents of Burns and the surrounding country have been a normal, not an exceptional, part of the country's social development. Third, economic opportunity in the cattle industry, and thus vertical social mobility, have been severly limited since the turn of the century by sparsity of local resources, lack of economic diversification, and recently, tight cost-price ratios in the national markets. Fourth, population gains in Harney County have lagged much behind gains of the whole state. Consequently, Harney County society has tended to remain provincial and conservative.

9. Evaluation of Project: The project is a superior study of the social-economic history of the Harney Region. No other historical study of the area known to the author compares in depth, breadth, and professionalism.

10. Records: Printed by the Department of History, University of Oregon, Eugene, Oregon, 1973.

RESEARCH AND INVESTIGATION PROJECT SUMMARY #19

1. Project Title: Harney County: An Historical Inventory.

2. Principle Investigator: Royal Jackson and Jennifer Lee, Oregon State University.

3. Sponsoring Institution: The project was funded by a grant from the Department of Housing and Urban Development, under the provisions of Section 701 of the Housing Act of 1954. The grant was administered by the Harney County Historical Society and the Harney County Planning Commission.

4. Dates of Field Work: July-September, 1976.

5. General Location of Field Work: Field work was conducted widely in Harney County.

6. Purpose of Field Work: To conduct a preliminary historic resource inventory to begin to provide the basic information from which a comprehensive study can evolve.

7. Field Procedures: Techniques utilized include tapes, slide photography, and written notes. Field procedures involved research of records and books, informant interviews, and site visitation.

8. Project Results: One hundred and two historic sites were inventoried. Narrative reports of the property and its historical significance were completed. A dual projector slide presentation and accompanying tape was produced.

9. Evaluation of Project: The final report is of excellent quality. Report photographs are particularly good. Some of the site reports lack good legal descriptions and some data errors exist in the narratives. Reports of remaining structures are very good. The slide presentation is excellent. The project is a substantial preliminary inventory.

10. Records: The slide presentation is maintained at the Harney County Library. The final report will also be maintained at the library.

RESEARCH AND INVESTIGATION PROJECT SUMMARY #20

1. Project Title: Harney County and Its Rangeland.

2. Principle Investigator: George Francis Brimlow.

3. Sponsoring Institution: Project was not sponsored.

4. Dates of Field Work: 1951.

5. General Location of Field Work: Standard library research; although newspaper archives in Burns, Oregon were utilized.

6. Purpose of Field Work: The project was done as a basic history of Harney County.

7. Field Procedures: Standard library research methods.

8. Project Results: The history is traced from the time of the trappers to the 1950's.

9. Evaluation of Project: At the time of writing this study constituted the only major history of Harney County. It lacks detail on many aspects and events of the history, but is, none-the-less, a very good basic reference.

10. Records: Published by Binford and Mort, Portland, Oregon, 1951.

RESEARCH AND INVESTIGATION PROJECT SUMMARY #21

1. Project Title: The Bannock Indian War of 1878.
2. Principle Investigator: George Francis Brimlow.
3. Sponsoring Institution: Project was not sponsored.
4. Dates of Field Work: 1938.
5. General Location of Field Work: Standard library research.
6. Purpose of Field Work: Historical research.
7. Field Procedures: Standard library research methods.
8. Project Results: The study traces the Bannock-Indian War in depth, including the causal reasons.
9. Evaluation of Project: The study is excellent. It covers the event in detail.
10. Records: Published by Caxton Printers Ltd., Caldwell, Idaho, 1938.

RESEARCH AND INVESTIGATION PROJECT SUMMARY #22

1. Project Title: History of the Squaw Butte Agricultural Experiment Station.

2. Principle Investigator: W. Art Sawyer.

3. Sponsoring Institution: Squaw Butte Agricultural Experiment Station.

4. Dates of Field Work: Author has been employed at Squaw Butte for many years.

5. General Location of Field Work: Harney County.

6. Purpose of Field Work: Historical research.

7. Field Procedures: Recordation of individually known history.

8. Project Results: The paper records the development of Squaw Butte Agricultural Experiment Station and the research conducted there.

9. Evaluation of Project: The paper is very good. It records much history that would otherwise be lose.

10. Records: The paper is in manuscript form and stored at Squaw Butte. There are plans to publish this manuscript.

APPENDIX B

A SUMMARY OF FEDERAL LEGISLATION

SUMMARY OF FEDERAL LEGISLATION

The following federal legislation serves as the authority and guide for the Bureau of Land Management's cultural resources program. A brief summary of each Act is provided. For discussion of the legislation see: The Management of Archaeological Resources, The Airlie House Report, A Special Publication of the Society for American Archaeology, edited by Charles R. McGimsey III and Hester A. Davis, 1977.

The Antiquities Act of 1906 (P.L. 59-209; 34 Stat. 225: 16 U.S.C., 461-433). This Act provided for the protection of historic or prehistoric remains of federal lands; establishes criminal sanctions for unauthorized destruction or appropriation of antiquities; authorizes the President to declare national monuments; and authorizes scientific investigation of antiquities on federal lands, subject to permit.

The Historic Sites Act of 1935 (P.L. 74-292; 49 Stat, 666; 16 U.S.C. 461-467). The Act authorizes the programs that are known as the Historic American Buildings Survey, the Historic American Engineering Record and the National Survey of Historic Sites and Buildings. Generally, the provisions of this law are similar to the 1906 law, except that it is addressed specifically to history.

The Reservoir Salvage Act of 1960 (P.L. 86-523; 74 Stat. 220; 16 U.S.C. 469 c). This Act provides for the recovery and preservation of historical and archaeological data that might be lost or destroyed as a result of the construction of dams, reservoirs and attendant facilities and activities.

The National Historic Preservation Act of 1966 (P.L. 89-665; 80 Stat. 915; 16 U.S.C. 470). This Act declares a national policy of historic preservation (defined in the Act as "the protection, rehabilitation, restoration, and reconstruction of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology or culture".); directs the expansion of the National Register of Historic Places to include resources of state and local, as well as national significance; authorizes matching Federal Grants to the states for acquisition and rehabilitation of National Register properties; and establishes the Advisory Council on Historic Preservation. The council provided procedures (section 106) for Federal agencies to follow in dealing with National Register properties.

In 1976 the Act was significantly amended by Public Law 94-422. These ammendments claried the authorities of the Advisory Council, increased author-

ized funding for state programs, modified the Federal state ratio for matching grants to favor the funding of survey and planning, and clarified the intent of Section 106.

The purpose of Section 106 is to protect properties included in or eligible for inclusion in the National Register of Historic Places through review and comment by the Council on Federal undertakings that affect such properties. Rules and Regulations to implement Section 106 of the National Historic Preservation Act of 1966 are provided to Federal agencies under Code of Federal Regulations.

Code of Federal Regulations (36 CFR 60 and 36 CFR 800). 36 CFR 60 defines the appropriate terms and sets forth detailed procedures for nominating sites to the National Register. 36 CFR 800 sets forth procedures for reviewing projects to determine whether they affect in any way properties on or eligible for the National Register. Additional review procedures are established for those instances where an adverse effect can be established.

The Department of Transportation Act of 1966 (P.L. 89-670; 80 Stat. 574; 23 U.S.C. 1 et. q). This Act directs the Department of Transportation to spend funds for the purpose of protecting, avoiding, or studying archaeological sites to be affected by federally supported road construction.

The National Environmental Policy Act of 1969 (P.L. 91-190; 83 Stat. 852; 42 U.S.C. 4321-4327). This Act, in the section referring to culture resources, directs the Federal Government to use all practicable means and measures to improve and coordinate Federal plans, functions and programs to the end that the nation may preserve important historic, cultural and natural aspects of our heritage. Section 102 of the Act directs that all agencies of the Federal Government shall utilize a systematic, interdisciplinary approach in planning and decision making. The outgrowth of this legislation is the preparation by Federal agencies of EARs(Environmental Analysis Reports) and EISs (Environmental Impact Statements) to demonstrate compliance.

Executive Order 11593 of May 13, 1971. Protection and Enhancement of the Cultural Environment (36 FR 8921, 16 U.S.C. 470). This Order directs Federal agencies to provide leadership in the preservation and restoration of cultural resources. It directs all federal agencies to make an inventory of cultural properties under their ownership or control, nominate eligible properties to the National Register of Historic Places, and give priority in inventory to federally owned properties to be transferred and/or altered. It also directs Federal agencies to develop policies that will con-

tribute to the preservation of non-federally owned historic properties, and to exercise caution until inventories and nominations to the National Register are complete, to insure that eligible properties are not inadvertently damaged or destroyed.

The Archaeological and Historic Preservation Act of 1974 (Amendment to Reservoir Slavage Act of 1960, also known as the Moss-Bennet bill when before Congress) (P.L. 93-291; 88 Stat. 174; 116 U.S.C. 469). This Act provides a mechanism for the preservation of cultural resources. It authorizes all federal, federally-assisted, and federally-licensed agencies to expand program or project funds to evaluate, protect, and/or recover archaeological and historical data jeopardized by their projects. It establishes a legislative precedent by explicitly calling for the analysis and publication, as well as the recover, protection, and preservation of significant data. It is directed toward the protection and/or recovery of data rather than of sites. Monies are authorized to compensate those who suffer losses as a result of the Act's execution. It authorizes federal agencies to expend funds directly, or to transfer up to one percent of project budgets, to the Secretary of the Interior for the preservation of significant archaeological and historical data.

The Archaeological Resources Protection Act of 1979 (P.L. 96-95). The Act strengthens the policy of the United States to protect archaeological resources and sites on public lands by providing stiff penalties to those found guilty of excavating, removing, transporting, or selling these resources without a permit.

The Act transfers the authority to issue permits for cultural resource work on the public lands from the Departmental Consulting Archaeologist to the various agencies. The Bureau can anticipate full permitting authority within one year.

The Act does not repeal the Antiguities Act of 1906. The Act excludes arrow head collecting as a prohibited activity under the law. Such activity is still illegal under the Antiquities Act.