Cultural Resource Overview of the BLM Lakeview District, South-Central Oregon: Archaeology, Ethnography, History

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UNIVERSITY OF OREGON ANTHROPOLOGICAL PAPERS NO. 16 1979
CULTURAL RESOURCE OVERVIEW

OF THE BLM LAKEVIEW DISTRICT, SOUTH-CENTRAL OREGON:

ARCHAEOLOGY, ETHNOGRAPHY, HISTORY

BY

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ABSTRACT

This document represents a Cultural Resource Overview for the Bureau of Land Management's Lakeview District in south-central Oregon. Its primary purpose is to provide a framework for the interpretation of cultural resources found in the district, and to serve as a guide for the evaluation of their scientific and community significance. The document consists of several parts.

An environmental overview provides background information on the setting in which the cultural developments in prehistoric and historic times have taken place. Included are brief sections on the climate, physiography, geology, vegetation, and fauna of south-central Oregon.

An archaeological overview summarizes prehistoric cultural developments in south-central Oregon and surrounding areas. Archaeological evidence indicates that prehistoric people were inhabiting the area as early as 11,000 to 13,000 years ago, and that their lifeways were closely adapted to the natural environment as it changed over the last several thousand years.

An ethnographic overview presents a summary of the information available on the aboriginal peoples who inhabited south-central Oregon and surrounding areas at the beginning of the historic era. Included are sections describing the cultures of the Northern Paiute, Klamath-Modoc, Molala, Takelma, Shasta, and Achumawi peoples.

An historical overview summarizes the events and activities that have taken place in south-central Oregon since the arrival of Euro-Americans in the nineteenth century. Although some parts of south-central Oregon have only a limited history, other portions of the area have experienced a substantial sequence of historical developments, including many of the familiar elements or themes in American history.

The text of the document concludes with a synthesis of the information available on the human occupation and use of south-central Oregon, and recommendations for the management of the cultural resources found in the area. An extensive bibliography of the sources used in the preparation of this overview is appended.
This document represents the more general portion of a Class I Cultural Resources Existing Data Inventory for the Bureau of Land Management's Lakeview District. Preparation of this document was carried out under the terms of Contract No. YA-512-RFP8-34, between the United States Department of the Interior, Bureau of Land Management, and the Department of Anthropology, University of Oregon.

The portion of this document describing the history of the area in which the Lakeview District is situated is the work of Dr. Stephen Dow Beckham, of the Department of History, Lewis and Clark College. Dr. Beckham's research consisted of the collection of data from historical records in both published and manuscript forms. His work included one trip to Lakeview in August, 1978, to consult material at the Schminck Museum, the Lake County Planning Office, and the Bureau of Land Management District Office. He also reviewed all of the Government Land Office original survey maps for lands encompassed within the Lakeview District on file at the Bureau of Land Management Office in Portland, examined the records of the State Historic Preservation Office for information on historic sites, and carried out research in the map and book collections at the Oregon Historical Society Library, Portland, Oregon. In all, Dr. Beckham spent approximately twenty-five days on the project.

The sections of this document describing the environment of south-central Oregon, the area in which the Lakeview District is located, and and the ethnography of the area's aboriginal inhabitants were prepared by Kathryn A. Toepel, a doctoral student in the Department of Anthropology, University of Oregon. The section dealing with the archaeology of south-central Oregon was prepared by Rick Minor, also a doctoral student in the Department of Anthropology, University of Oregon. Research for the environment, ethnography, and archaeology sections of this document was concentrated in the library of the University of Oregon and in the files of the Oregon State Museum of Anthropology. Portions of the ethnography and archaeology sections of this document were abstracted from a cultural resource overview previously prepared for the Brothers Area of the Upper Prineville BLM District by Kathryn A. Toepel and Stephen Dow Beckham (Toepel and Beckham 1978). Material was also solicited from the BLM Lakeview District Office, and from various archaeologists who have recently been active in south-central Oregon. One trip was made to Lakeview in October, 1978, to consult with William J. Cannon, District Archaeologist, and to inspect collections of aboriginal artifacts in local museums. Between May 1978 and April 1979 Toepel and Minor each spent more than 400 hours on the project, in conducting research and in the preparation of this document.
The section of this overview proposing recommendations for the future management of the cultural resources within the Lakeview District was jointly prepared by all three authors, in consultation with Dr. Don Dumond, Professor of Anthropology, University of Oregon. Final responsibility for editing, collating, and submission of this document was assumed by Dumond, who was the Principal Investigator for this project.

Earlier drafts of this document were reviewed by William J. Cannon, Lakeview District Archaeologist, as well as other employees of the Bureau of Land Management. Dr. Theodore Stern, Professor of Anthropology, University of Oregon, kindly provided documents from his personal library and also critically reviewed the ethnography section of this overview. Dr. C. Melvin Aikens, Professor of Anthropology, University of Oregon, critically reviewed the archaeology section of this overview; permission to cite from his unpublished manuscript on the prehistory of the northern Great Basin (Aikens n.d.) is gratefully acknowledged. The authors would like to express their appreciation to these individuals and to the many others listed below who graciously gave of their time and knowledge during the preparation of this document.

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The permission of Richard A. Gerity, District Manager, Lakeview District BLM, to publish this report is gratefully acknowledged. The authors also thank Allen B. Cox, who drafted the figures used in the text.

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INTRODUCTION

This volume presents a descriptive overview of the cultural resources of the Bureau of Land Management's holdings in the Lakeview District of south-central Oregon. Cultural resources are those fragile and non-renewable remains of human activity, occupation, and endeavor as reflected in districts, sites, structures, artifacts, objects, ruins, works of art, architecture, and natural features that were of importance in human events, both historic and prehistoric. The value of cultural resources lies in their potential for providing information about former ways of life and in their historical significance to the community in which they now exist.

The Bureau of Land Management is required by federal law to identify and evaluate cultural resources on public lands under its jurisdiction, and to insure that Bureau-initiated or Bureau-authorized actions do not inadvertently harm or destroy cultural resources. These requirements are mandated by a number of federal laws and regulations, including the Antiquities Act of 1906, the National Historic Preservation Act of 1966, as amended; the National Environmental Policy Act of 1969; and Executive Order 11593 (1971). The present cultural resource overview represents a major step by the Lakeview District of the Bureau of Land Management in the implementation of these directives.

As specified in the agreement under which this project was conducted, the research reported in this cultural resource overview consisted primarily of a search of existing documentary and archival records. Preparation of this overview is intended to meet the following objectives:

1. Provide guidance for the interpretation of cultural resources found during on-the-ground surveys within the Lakeview District;
2. Provide a framework to assist in assessing the significance of cultural resources found within the Lakeview District;
3. Serve as a source of background data necessary for Environmental Analysis Records, Environmental Statements, Unit Resource Analysis (URA), Management Framework Plans (MFP), and other government project documents.
4. Acquaint Bureau of Land Management employees with the presence and value of cultural resources found in the Lakeview District; and
5. Help to inform the general public about the cultural heritage of south-central Oregon, and foster a sense of respect and care for the significance of cultural resources.

The bulk of this volume discusses the past settlement and use of the lands administered by the Bureau of Land Management's Lakeview District. Included are sections describing the area's environment, prehistory, ethnography, and history. A companion volume (Beckham et al. 1979) of limited distribution, prepared for administrative use, provides more detailed information on the specific cultural resources identified within the Lakeview District. Finally, the last section of this overview makes
general recommendations for the future management of the Lakeview District's cultural resources. A comprehensive bibliography of sources consulted during the preparation of this document constitutes the final part of the overview, and should prove useful to those who wish to pursue various topics here discussed.

**THE AREA**

The Lakeview District of the Bureau of Land Management is located in south-central Oregon (Figure 1). The boundaries of the Lakeview District encompass an area of more than 8,600,000 acres of land, of which approximately 3,400,000 (40%) are actually under the jurisdiction of the Bureau of Land Management. Of these 3,400,000 acres, 2,500,000 acres (72%) are located in Lake County, 787,000 acres (23%) are located in western Harney County, and 165,000 acres (5%) are located in Klamath County.

**THE AREA IN PREVIOUS RESEARCH**

As will be discussed in the archaeology section of this overview, the Lakeview District in south-central Oregon has been the scene of some of the most important archaeological research in the entire Great Basin region of North America, beginning with the pioneering work of Luther S. Cressman of the University of Oregon in the 1930s and 1940s. Cressman is noted for involving scholars from other disciplines—biologists, geologists, and geographers—as part of a multidisciplinary research team in order to formulate well-documented statements about the relationship of prehistoric peoples and past environments. His work, notably at Fort Rock Cave, provided some of the first valid evidence that prehistoric peoples had been present in the northern Great Basin at a very early time. The hypotheses about prehistoric lifeways developed by Cressman as a result of his work in the northern Great Basin are very much relevant and are still being critically examined by archaeologists working in the Great Basin today.

There was a hiatus in research by professional archaeologists in the northern Great Basin which lasted from Cressman's last work in the 1940s until the late 1960s, when he returned to the area to renew investigations at Fort Rock Cave. Shortly thereafter, archaeological fieldwork was conducted by Margaret Weide, from the University of California at Los Angeles, and by John L. Fagan, of the University of Oregon, at other localities in south-central Oregon.

In the 1970s, the focus of interest among professional archaeologists changed somewhat from pure research conducted by various universities to the location and evaluation of archaeological sites to provide information used in Land Use Planning by Federal and State agencies, and by private parties, as required by Federal legislation of the 1960s and 1970s.
Figure 1. Location of the Bureau of Land Management's Lakeview District in South-Central Oregon.
Ethnographic studies indicate that the Lakeview District in south-central Oregon was occupied by Northern Paiute, Klamath-Modoc, and possibly Molala peoples at the time of historic contact. Ethnographic research has been primarily restricted to Indian reservations, to which most of the aboriginal peoples were removed in the late 1880s. Several such studies were conducted on the Klamath Reservation, which was located in the western portion of the Lakeview District until it was terminated in 1954. Additional information about the lifeways of aboriginal peoples who formerly occupied the Lakeview District has been gathered at the Warm Springs Reservation in north-central Oregon and at other Indian communities outside the state of Oregon.

Very little research into the history of south-central Oregon has been conducted by professional historians. At this time the most important work, especially from the perspective of cultural resource management, is *The Statewide Inventory of Historic Sites and Buildings* compiled by Stephen Dow Beckham in 1976. A similar study, entitled *Harney County: An Historical Inventory*, by Royal Jackson and Jennifer Lee, was published in 1978. This latter study was based on oral interviews as well as documentary sources, and contains historical information relevant to the history of the Lakeview District.

**SOME RESEARCH SOURCES: MUSEUMS AND LIBRARIES**

Specific documentation for all materials used in the preparation of this cultural resource overview is contained in the separate sections of this document, with relevant sources listed in the bibliography. Here are listed the most important museums and archival collections which contain materials of relevance to the prehistory, ethnography, or history of the Lakeview District:

**Bowman Memorial Museum**, North Main and Third Streets, Prineville, Oregon 97754. This county-funded museum holds approximately 3,500 photographs, 81 books and scrapbooks, miscellaneous maps, and 2,000 artifacts from the prehistoric and historic periods in Crook County. The museum maintains an inventory of historic sites and buildings, a project which commenced in 1976. One of the special strengths of the museum is the excellent collection of items associated with the range industries and agriculture in central Oregon. The museum is operated by the Crook County Historical Society.

**Collier State Park Logging Museum**, U.S. Highway 97, three miles north of Chiloquin, Oregon. Founded in 1946, the park contains approximately 275 pieces of logging equipment and is an excellent resource for the visual and physical information about past eras of logging technology and practice in the Klamath Basin. The park holds a small collection of logging photographs and material on logging history. The McLeod collection, which consists of prehistoric
artifacts from Clear Lake, Lower Klamath Lake, Tule Lake, Silver Lake, Thorn Lake, and Warner Valley is stored at this museum. A thesis has been prepared describing part of this collection (Trygg 1971).

_Crook County Library_, 200 East 2nd Street, Prineville, Oregon 97754. This library was founded in 1931 and has a collection of 13,630 books. Its holdings include numerous publications on the history of Central Oregon.

_Deschutes County Historical Museum_, N.W. Harrison and N.W. Greenwood, Bend, Oregon 97701. Operated by the Deschutes County Historical Society, this museum houses a general collection of objects and artifacts associated with the history and culture of Central Oregon. The historical society has published the annual Deschutes Pioneers' Gazette since 1943. This publication contains considerable information on the region's local history.

_Deschutes County Library_, 507 N.W. Wall Street, Bend, Oregon 97701. This library was founded in 1920 and contains some 42,000 volumes. Its book collection includes many holdings on Oregon history and the vertical files contain clippings on the history of Central Oregon. The library operates two branches.

_Fawell Museum_, 125 West Main Street, Klamath Falls, Oregon 97601. Founded in the 1960s, this private museum is open to the public on a fee basis. The collections concentrate on Indian artifacts and art and western history subjects. Many of the artifacts have come from archaeological sites in Klamath and Lake Counties. The collection reported by Cowles (1960) from Cougar Mountain Cave in the Fort Rock Valley of Lake County is housed here.

_Harney County Historical Museum_, Burns, Oregon. The museum has materials on the history and prehistory of southeastern Oregon. It maintains a library, photographic archive, and an active acquisitions program of material artifacts. The collections are especially good for the range industries in the region. The historical society helped fund a county-wide inventory of historic sites and buildings in 1976 and plans to publish the compilation in the near future.

_Klamath County Library_, 126 South Third Street, Klamath Falls, Oregon 97601. Founded in 1913, the library currently holds 114,051 volumes of which 67,529 are books. The collections include special emphasis on Oregon history and the history of the Klamath Basin. The library has seven branches in Klamath County.

_Klamath County Museum and Library_, 1451 Main Street, Klamath Falls, Oregon 97601. The museum opened in 1955 and its holdings include objects, furnishings, and artifacts associated with Indian life, the fur trade, overland migration, sheep and range cattle industries, logging, family life, lumbering, and businesses. The artifacts from Massacre Lake Cave in northwestern Nevada (Heizer 1942), and part of the collection from Nightfire Island in northern California are stored here.
The library contains approximately 7,200 books, 58 reels of microfilm, and a large collection of photographs, negatives, glass plates, and miscellaneous visual materials. The museum has since 1964 published the annual Klamath Echoes which has featured many articles and photographs about life in the county.

Lakeview County Library, 513 Center Street, Lakeview, Oregon 97630. This library was founded in 1948 and has 20,466 books. The collections have some concentration in American and Oregon history. The library is a partial depository for Oregon documents.

Modoc County Museum, Alturas, California. The museum has a general collection of objects and artifacts from the prehistoric and historic periods in Modoc County. These include a large number of baskets made by Indians of the region. The museum holds a small collection of photographs and materials on local history.

Oregon Historical Society Library and Museum, 1230 S.W. Park, Portland, Oregon 97205. This collection is one of the finest regional historical libraries in the Pacific Northwest. The holdings include 50,000 published volumes, 12,000 reels of microfilm, 6,700 microfiche cards, and in excess of 200,000 photographs and negatives. The library has extensive scrapbook collections which are indexed, biographical card files, materials on family history, holdings of Oregon census records, and maps. The Oregon Historical Society also operates the state's largest historical museum and holds thousands of artifacts and objects associated with the state's history.

Oregon Institute of Technology Library, Klamath Falls, Oregon 97601. Founded in 1950, the library currently holds 43,266 volumes and contains a specialized collection on engineering and technology. The library is a partial depository for Oregon documents.

Oregon State Library, Summer and Court Streets, Salem, Oregon, 97310. The State Library possesses an extensive collection of regional historical and folklore materials, including the unpublished files of the Oregon Folklore Project operated by the W. P. A. in the 1930s. It has 329,974 titles, extensive vertical files of clippings, well-maintained card indexes to Oregon biography and history, and additional materials on microfilm. Several newspapers once published in the state are held as bound volumes or microfilms by this library.

Oregon State Museum of Anthropology, Eugene, Oregon 97403. The Oregon State Museum of Anthropology, located on the campus of the University of Oregon, is designated by Oregon state law as the official depository for all antiquities found on federal and state lands in Oregon, and is the seat of the Oregon Archaeological Survey. In addition to the anthropological collections, other museums at the University of Oregon--the Condon Museum of Geology and the University Herbarium--maintain collections in the fields of geology, vertebrate and invertebrate paleontology, malacology, mammalogy, ornithology, paleobotany, and palynology.
At least two important collections of prehistoric artifacts from the Lakeview District donated by private collectors are stored at the Museum of Anthropology. The R.A. Long collection and the Marshall-Seaman collection are both from Fort Rock Valley. Specimens from these collections were included by Bedwell (1970) in his analysis of the artifacts from Fort Rock Cave and the Conley Caves; the Marshall-Seaman collection also has been analyzed by Colvin (1970).

Schminck Memorial Museum, 128 South E St., Lakeview, Oregon 97630. Maintained by the Daughters of the American Revolution, this museum holds a general collection of dishes, furniture, tools and artifacts associated with the history and development of Lake County. A collection of some 80 Indian baskets--mostly Klamath, Modoc and Paiute--as well as other artifacts donated by collectors are contained in the museum. Its collections were reorganized in 1977-78 and are displayed on a thematic basis. The museum has a large collection of scrapbooks of clippings, photographs, and negatives.

University of Oregon Library, Eugene, Oregon 97403. Founded in 1881, the library is the largest in the state with 1,308,375 bound volumes and 535,241 items in microfilm. The library is especially strong in regional history with holdings of almost all extant back files of every newspaper published in Oregon, thousands of manuscript items, and many rare books, maps, prints, and photographs which are housed in a special collections department. The library has published separate finding aids to the manuscript collections dealing with Oregon history. Additionally, the library holds extensive published materials on the region's ethnology, linguistics, and archaeology. The library is the depository for theses and dissertations written at the University in the Departments of Anthropology and History and is a full depository for state documents. The federal documents collections are extensive and include materials from the time of the establishment of Oregon Territory.
CHAPTER I

ENVIRONMENTAL OVERVIEW

The human use patterns, both historic and prehistoric, of any region can best be understood when the history of the natural environment of the area is taken into account. The nature of human occupational and use patterns within an area is directly conditioned by such environmental factors as topography, existing climate and vegetation, water sources, and industrial raw materials. A brief sketch of the environment of the Lakeview District is provided below as a context for further discussion of the historic and prehistoric lifeways within the area.

CLIMATE

The Lakeview District falls within the High Plateau climatic region as delineated by Loy (1976:138). The basically mild, dry climate found in the region is the result of the interplay between maritime and continental air masses and the position of the study area between the Cascade Mountain Range and the Rocky Mountains. The Lakeview District lies directly in the rain shadow of the Cascades which act as a buffer against the moist winds of the Pacific Ocean, and so the area is much drier than western Oregon. In addition, the Rockies block the full effect of the northeasterly winds of the continental airmasses, resulting in milder temperatures than those in the Middle West. The study area is much the same as the rest of eastern Oregon, which is characterized by light precipitation, low relative humidity, rapid evaporation, abundant sunshine, and extreme ranges in temperature. Variations in temperature and precipitation occur, of course, according to the local topography (Wells 1936).

The mean annual precipitation of much of the Lakeview District ranges from 12 to 16 inches (30 to 40 centimeters). Like much of eastern Oregon, a winter rainfall climate prevails with a normal dry period during the summer. Generally, the winter precipitation makes up 30-40% of the total annual fall, spring 25-30%, fall 20-25%, with summer receiving only 10-15% of the total annual precipitation. Precipitation is primarily the result of low pressure systems which move in from the Pacific Ocean on the dominant westerly winds (Sternes 1974:842, 860; Franklin and Dymness 1973:42).

The aridity of the area and the consequent scant vegetation contribute to the extreme nature of the temperature ranges to be found in south-central Oregon. Average annual minimum temperatures range between -8° to 20° F. (-20° to -6° C.), while maximum temperatures are generally between 55° to 71° F. (14° to 22° C.). The
diurnal temperature range is quite great and may be as much as 28° F. (15° C.) during the winter and 48° F. (25° C.) in the summer (Wells 1936:4-2; Sternes 1974; Loy 1976:132).

Several attempts at determining paleoclimatic conditions have been made which are relevant to the Lakeview District. Among the earliest was the classic attempt by Van Winkle (1914) to deduce the age of Abert and Summer lakes via an analysis of their salt content. The resulting salt chronology has since been assessed as inadequate (Broecker and Walton 1959; Feth 1959). A dendrochronology of eastern Oregon devised by Keen (1937) dates back to A.D. 1268, and provides only recent and limited climatic information.

Henry P. Hansen's palynological investigations in the Lower Klamath Basin, the Chewaucah Marsh, the Warner Valley, and other locations in the Northwest led him to propose a generalized climatic sequence for the Pacific Northwest (1942, 1947a, 1947b). His sequence supports the model derived by Ernst Antevs (1948) who used geological clues, such as varved clay counts, lake salinity, and erosion sequences, to develop his theory. The two climatic sequences (as given in Figure 2) reflect the fact that there have been several fluctuations in climate since the continental glaciers retreated at the end of the Pleistocene epoch. This time period from the end of the Pleistocene 11-12,000 years ago to the present is known as the Holocene epoch. The climatic periods as defined by Hansen and Antevs are as follows.

The first period within the Holocene following the Pleistocene glacial period is termed the Anathermal by Antevs and the Early Postglacial (Period II) by Hansen. This period lasted from 9000 to 7-8000 years ago. It was a time of transition from the cold and wet climate of glacial times to increasing warmth and dryness. Climatic conditions were probably much like those of today by the end of this period.

Antevs calls the next stage the Altithermal and sets its range as 4500 to 7000 B.P. (Before Present). Hansen's comparable period is the Middle Postglacial (Period III), which ranges from 4000 to 8000 years ago. This climatic interval accelerated the warming and drying trend begun in the previous period, so that the general climate was distinctly hotter and more arid than at present. Evidence indicates that large lakes in the area dried up and were drastically restricted or disappeared during this interval.

The most recent period, from 4500-4000 B.P. to the present day, is labeled the Medithermal by Antevs and the Late Postglacial (Period IV) by Hansen. The climate became cooler and moister, and lakes began to fill again as the climate returned to conditions which characterize the region at this time.
<table>
<thead>
<tr>
<th>Years B.P.</th>
<th>GREAT BASIN (Antevs 1955)</th>
<th>PACIFIC NORTHWEST (Hansen 1947a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present</td>
<td>LATE POSTGLACIAL (cool and moist)</td>
<td></td>
</tr>
<tr>
<td>1,000</td>
<td>MEDITHERMAL (cool and moist)</td>
<td></td>
</tr>
<tr>
<td>2,000</td>
<td>ALTITHERMAL (warm and dry)</td>
<td>MIDDLE POSTGLACIAL (warm and dry)</td>
</tr>
<tr>
<td>3,000</td>
<td>ANATHERMAL (cool and moist)</td>
<td>EARLY POSTGLACIAL (cool and moist)</td>
</tr>
<tr>
<td>4,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5,000</td>
<td></td>
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<tr>
<td>6,000</td>
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<tr>
<td>7,000</td>
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<tr>
<td>8,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 2. Post-Pleistocene Climatic Sequences in Northwestern North America.

Recent archaeological and paleofaunal studies by Aschmann (1958), Bryan and Gruhn (1964), Baumhoff and Heizer (1965), O'Connell and Hayward (1972), O'Connell and Ericson (1974), Grayson (1976), and Mehringer (1977) have led to a re-evaluation of the Antevs-Hansen scheme. Research indicates that the magnitude and rates of change during the Holocene epoch were relatively gradual. More importantly, it appears that the general climate at any one time had quite different effects depending upon the local environments. Effects are so variable in some places that the local climatic trend does not seem to follow the broad regional trend proposed above. Actually, the available data is conflicting and still too scanty to support even a moderately well-defined paleoenvironmental sequence (or sequences) for the Northern Great Basin. In the meantime, the Antevs-Hansen sequence should be understood as a very broad and generalized view of climatic processes for the last 9,000 years which are in fact quite intricate and locally influenced.
The topographic diversity of the Lakeview District is indicated by its division into two natural physiographic regions: the High Lava Plains Province and the Basin and Range Province (Franklin and Dyrness 1973:6; Baldwin 1976:5). Both regions fall within the boundaries of the Western Great Basin, a vast natural region characterized by internal drainage systems. The High Lava Plains Province marks the northernmost extension of the Great Basin, while the Basin and Range Province further south is situated well within its bounds (Figure 3).

Figure 3. Physiographic and Geological Provinces of Oregon (after Franklin and Dyrness 1973:6 and Baldwin 1976:5).
Roughly one-fourth of the study area to the north is located within the High Lava Plains Province which extends westward from the Harney Basin to the upper Deschutes River Valley. The High Lava Plains region consists of "a relatively undeformed expanse of young lava flows dotted in places by cinder cones and lava buttes" (Baldwin 1976:113). The area has only moderate relief due to the fact that no distinctive drainage pattern has yet been developed as the lava flows which form much of the terrain are rather recent (Peterson et al. 1976:4). The base elevation for most of the province is about 4000 feet (1200 meters) above sea level, with relatively little variation in elevation within that portion of the study area.

The most interesting features of the High Lava Plains are the result of volcanic activity during Pleistocene and Recent times (within the last 2-3 million years). Examples of such volcanic features within and near the district include Fort Rock, a large tuff ring formed by exploding magma from beneath the pluvial lake that occupied the Fort Rock Valley, and the large explosion crater known as Hole-in-the-Ground. Several other well-known formations, such as Lava Butte, Glass Buttes and the Newberry caldera, are outside the limits of the study area. Many smaller-scale manifestations of volcanic activity are also found within the district. The southern portion of the province east of Fort Rock is especially notable for its broad expanses of Recent lava flows (Franklin and Dyrness 1973:33).

The portion of the Lakeview District which lies within the Basin and Range Province is also characterized by many basins with internal drainage. However, instead of the recent volcanic formations which typify the High Lava Plains, the Basin and Range region is noted for its north-trending fault-block mountains which enclose the ever-present basins. The Basin and Range Province in Oregon stretches from the Cascade Range in the west to the Owyhee Uplands in the east. The region blends into the High Lava Plains in the north and continues south into the Basin area of Utah, Nevada, Arizona, New Mexico, and California.

Much of the province has a base elevation in excess of 4000 feet (1200 meters) in elevation, occasionally reaching 8000 feet and higher in the more mountainous areas. The variable landscape provides many topographic land formations. The more prominent basin and fault-block features of the study area from west to east include the edge of the Klamath Lake Basin, Goose Lake Valley, Winter Rim, Summer Lake, Chewaucan Basin, Lake Abert Basin, Abert Rim, Warner Mountain, Warner Valley, and Hart Mountain.

The westernmost fringe of the Lakeview District borders upon another region, the High Cascades of the Cascade Range. These mountainous formations are the result of relatively recent volcanic activities which occurred within the last 15 million years. Lakes now occur in the highlands where former glaciers occupied semi-circular basins, or cirques. Other lakes have been blocked by the remnant
glacial moraines or lava dams. Crater Lake, just within the
Lakeview District boundaries, is contained in a caldera, or the
collapsed top of a former volcano which erupted approximately 7,000
years ago and spewed its ash throughout eastern Oregon (Baldwin

Because of the scanty rainfall and porous lava bedrock, most
of the streams in the Lakeview District are seasonal. The area is
marked by many basins, some of which are dry and some of which are
filled occasionally by the sporadic rainfall and inflowing streams.
Several of the larger basins once contained extensive bodies of
water during the Pleistocene when the glaciers were retreating
(Figure 4).

Fossil Lake, Christmas Lake and Fort Rock Valley were once
covered by one immense lake during the Pleistocene (Allison 1966).
Silver Lake is another former Pleistocene lakebed which now contains
water intermittently. Further south, ancient Lake Chewaucan once
covered the Chewaucan Marsh and connected Summer Lake with Abert
Lake. The ancient lake beaches can still be seen today and are as
much as 350 feet higher than the present water level (Allison 1945).
It should be noted that the ancient beach marks have been affected
by geological lifting and tilting and so are not truly indicative
of Pleistocene lake depths.

Since there are no major river systems, aside from the upper
Klamath River system, within the Lakeview District, efforts have
been made in historic times to manage the available water resources
more effectively. Since 1934, the BLM has installed 37 miles of
water pipeline and 74 water tanks, constructed 1051 reservoirs,
sunk 64 wells, and developed 132 spring areas (U.S. Department of
the Interior 1977:20). Such developments are designed to provide
water for irrigation and livestock purposes.

GEOLOGY

The two geologic provinces of the Lakeview District are (1) the
southern portion of the High Plains Province and (2) the Oregon Basin
and Range Province. These two divisions correspond with the physio-
graphic regions mentioned above. Baldwin (1976) provides an indepth
review of the geology of these regions; in addition, many other
specific geological studies of the general area have been made,
including Diller (1912), Merewether (1953), Dickinson and Vigrass
(1965), and Peterson and McIntyre (1970). Figure 5 supplies a
reference to the geologic time periods referred to in the discussion
below.

The High Lava Plains, in contrast to the rest of eastern Oregon,
is a province composed of recent geological formations (Walker et al
### Generalized Geologic Time Chart for Oregon

<table>
<thead>
<tr>
<th>Era</th>
<th>Period</th>
<th>Principal Geologic Events</th>
<th>Age* (in millions of years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CENOZOIC</td>
<td>QUaternary</td>
<td><strong>Holocene</strong> Glaciers in mountains receding. Crater Lake and Newberry Crater formed by explosion and collapse of volcanic cones. Lava flows near Mt. Hood, at McKenzie Pass, and in central and southeastern Oregon.</td>
<td>0.011</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Pleistocene</strong> Active glaciers in mountains. Growth of large volcanoes along crest of Cascades and in central Oregon. Pluvial lakes in south-central part of State. Mastodons and giant beavers in Willamette Valley; canals and lakes in grasslands of central and eastern Oregon.</td>
<td>2-3</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Pliocene</strong> First eruptions of lava at crest of Cascade Range. Extensive outpouring of lava in south-central Oregon. Horses, rhinos, camels, anteaters, beavers, mastodons living in John Day country. Cascade Range high enough to form climate barrier. Drier climate west of high Cascade Range. Warm temperate climate west of Cascades initiates period of intensification.</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Oligocene</strong> Willamette Valley and parts of Coast Range covered by warm, shallow seas. Inhabited by abundant and varied mollusks. Warm temperate climate in eastern Oregon.</td>
<td>33-38</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Eocene</strong> Subtropical climate. Cool forests in coastal swamps. Palms, firs, oaks, pines, and conifers grow in central Oregon. Four-footed mammals, rhinos, tapirs, crocodiles in Columbia area. Western Oregon covered by arm of ocean, locally many mollusks. Large volcanoes are area of Cascade Range.</td>
<td>53-54</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Paleocene</strong> Not mapped separately in Oregon, but rocks of this age known in central and northeastern Oregon.</td>
<td>65</td>
</tr>
<tr>
<td>CRETACEOUS</td>
<td></td>
<td><strong>Cretaceous</strong> Most of State covered by warm seas. Ammonites, trilobites, and other mollusks abundant in Medford and Mitchell areas. Tree ferns growing near Austin in Grant County. Formation of principal metamorphic deposits in State following batholithic intrusions.</td>
<td>136</td>
</tr>
<tr>
<td>JURASSIC</td>
<td></td>
<td><strong>Jurassic</strong> Oregon largely covered by seas. Brachiopods, mollusks, and ammonites abundant. Some marine reptiles, ferns, cycads, ginkgoes, and conifers growing on land areas. Period ofsettaneous intrusion with formation of chert deposits followed by granite intrusions in Klamath Mountains, Blue Mountains, and possibly Willamette Mountains.</td>
<td>190-195</td>
</tr>
<tr>
<td>TRIASSIC</td>
<td></td>
<td><strong>Triassic</strong> Most of Oregon covered by warm seas. Sponges, corals, ammonites, gastropods, and nautiloids. Volcanoes active and widespread especially in northeastern and southwestern Oregon.</td>
<td>225</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Permian</strong> Warm seas cover much of State. Limestone reefs forming. Fossiliferous common. Volcanism in northeastern part of State. Rocks now exposed in central and eastern Oregon.</td>
<td>280</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Carboniferous</strong> Much of State covered by warm seas containing brachiosaur and corals. Ferns and calamites growing on land areas. Rocks now exposed in Suplee area of central Oregon.</td>
<td>345</td>
</tr>
<tr>
<td>DEVONIAN</td>
<td></td>
<td><strong>Devonian</strong> Seas probably covered Oregon. Small limestone outcrops in central Oregon contain Middle Devonian corals (about 370 m.y.).</td>
<td>395</td>
</tr>
<tr>
<td>PRE-DEVONIAN</td>
<td></td>
<td>&quot;Pre-Devonian&quot; includes the vast stretch of geologic time extending back to the oldest rocks found on the earth. Rocks of this age are not known in Oregon. Nearest &quot;pre-Devonian&quot; rocks (450 m.y. old gabbro) in Klamath Mountains, northern California.</td>
<td>450</td>
</tr>
</tbody>
</table>

*Adapted from U.S. Geol. Survey

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**Figure 5. Geologic Time Periods of Oregon (from Baldwin 1976:3).**
1967; Greene et al. 1972). This province has been typified by Franklin and Dyrness (1973:33) as follows:

Geologic formations in the High Lava Plains Province consist largely of Pliocene and Pleistocene lavas, tuffs, and alluvium. In many areas, Quaternary valley fill deposits overlie the older volcanic flows. These are comprised of alluvium and lake deposits plus eolian sediments, all of which were derived from the volcanic rocks of the uplands. Evidences of extensive volcanic activity during Pleistocene and Recent times are abundant...Pumice, resulting from the eruption of [Newberry Crater] about 4000 years ago, mantles an extensive area to the north and east of the crater.

Geologic activity in the area has resulted in a relatively flat land dotted with volcanic formations, few of which have been formally described and named. The recency of many of the volcanic flows is attested to by their lack of forest cover and soil development.

The Basin and Range Province contains some geological features which are somewhat older than those in the High Lava Plains. Franklin and Dyrness briefly summarize the major geologic formations to be found in the study area (1973:34):

The western Basin and Range Province is made up largely of Miocene to Recent flows of basalt, pyroclastics, and alluvial sediments. Further east, two rock assemblages are prominent: (1) Miocene flows of rhyolite, dacite, and andesite near Abert Rim and Paisley; and (2) altered basalt and andesite flows and tuffs overlain by tuffaceous sedimentary rocks in an area just east of Lakeview. Principal fault-blocks in the area (Winter Ridge, Abert Rim, and Steens Mountain) are capped with Miocene flows of basalt.

Fossil leaves and vertebrate remains, including an early Miocene rhinoceros tooth, have been found in the Tertiary sedimentary beds and give some indications of the development of life forms during that period (Baldwin 1976:124; Steere 1977).

Deposits of obsidian and crypto-crystalline silicates (such as chert and chalcedony), which are the best materials for making lithic tools, are common within the Lakeview District. The Glass Buttes area, just outside the Lakeview District, is particularly noted as a good source of obsidian (Waters 1927; Randolph 1935) and no doubt served as a major attraction for aboriginal peoples in the area. Trace element analyses have shown that Glass Buttes obsidian was an item of aboriginal trade to places as distant as British Columbia (Nelson et al. 1975).
Deposits of mercury, molybdenum, and uranium occur in the region. In addition, prospective areas for copper, lead and zinc, as well as for oil and gas, have been located, but no recent commercial production has occurred. Industrial minerals include diatomite, zeolite, pumice, cinders, perlite, sand, gravel and rock (Weissenborn 1969). Natural hot springs are also common in the area, and are manifestations of potential sources of geothermal power. As of 1977, approximately 70,000 acres of BLM lands within the Lakeview District were leased for geothermal purposes (U.S. Department of the Interior 1977:25).

VEGETATION

Four main vegetation zones of the forest and steppe provinces have been recognized by Franklin and Dyrness (1973) within the Lakeview District. These zones are as follows: (1) Pinus ponderosa zone, a lower elevation zone within the forest province; (2) Juniperus occidentalis, the transitional zone between the forested areas and the shrub-steppe; (3) the shrub-steppe region, dominated by big sagebrush (Artemesia tridentata); and (4) the desert shrub zone, containing the most drought-tolerant vegetation in Oregon. The distribution of each zone is given in Figure 6.

The Pinus ponderosa Zone is located in the higher elevations of much of the western half of the study area, along the eastern slopes of the Cascades. The elevation range of the zone is about 3000 to 5000 feet (900 to 1500 meters) above sea level to the north, with the elevation generally becoming higher to the south. At the lower limits of the zone, ponderosa pine stands merge and are often interspersed with the open juniper-sagebrush woodland. A preference for xerophytic (dry) conditions as well as a liking for coarse-textured soils distinguishes the ponderosa pine from other major floral zones.

The composition of species within the zonal community is affected by factors such as soil type, climate, geographical location, elevation, and stand disturbances (e.g., fire, logging). Tree species which occur with Pinus ponderosa within the zone in the study area include Juniperus occidentalis (western juniper) which occurs in the more xeric areas, and Populus tremuloides (quaking aspen), which is restricted to shorelines, banks, and poorly drained wet areas. The open nature of ponderosa pine stands provides abundant understory niches for a variety of plants, including many shrub-steppe species. The two most common communities within this zone in the Lakeview District include Pinus ponderosa/Purshia tridentata (bitterbrush)/Festuca idahoensis (Idaho fescue) and Pinus ponderosa/Cercocarpus ledifolius (curlyleaf mountain mahogany)/Festuca idahoensis (Dealy 1971). Other understory species which are much more restricted in distribution in this zone include bluebunch wheatgrass, ceanothus, and a variety of other grass and sedge species.
Figure 6. Vegetation Zones of South-Central Oregon (from Loy 1976:145).
The *Juniperus occidentalis* Zone is the northernmost extension of the Pinyon-Juniper Zone which characterizes so much of the Great Basin. Unlike the rest of the pinyon-juniper region, however, no pinyon pines are found in the Lakeview District. This open woodland/savannah zone is scattered throughout the district, occupying regions which are intermediate in moisture between the forest and shrub-steppe zones. The zone's elevational range is between 2500 and 4600 feet (760 to 1400 meters). The *Juniperus occidentalis* community generally thrives on more xeric conditions than *Pinus ponderosa*, and so it frequently occurs in areas where the soil is more loamy, shallower, and not as coarsely textured as that preferred by the forest zone. A general description of the species within the zone is given by Driscoll (1964:5):

*Juniperus occidentalis* is the dominant tree species of the area. An occasional *Pinus ponderosa* may be found in canyon bottoms or on north slopes where soil moisture is more effective. Natural wide spacing of individual junipers provides the aspect of a savannah. *Artemisia tridentata* [big sagebrush] is most often the dominant shrub in the understory. Occasionally it is displaced wholly or to codominance by *Purshia tridentata* [bitterbrush]. Other shrubs characteristic of the area are *Chrysothamnus nauseosus* [gray rabbitbrush], *C. viscidiflorus* [green rabbitbrush], *Tetradymia canescens* [gray horsebrush], *Leptodactylon pungens* [granite gilia], and *Artemisia arbuscula* [low sagebrush].

Bluebunch wheatgrass and Idaho fescue, as well as bluegrass and needlegrass, are characteristic grasses of the *Juniperus occidentalis* understory.

The third vegetation zone constitutes almost one-half of the Lakeview District, occupying the arid areas of the lower elevations in the eastern portion of the study area. The shrub-steppe zone is dominated by conspicuous shrub layers, particularly sagebrush species, with an understory of grasses.

Shrubs which sometimes occur in association with sagebrush include *Chrysothamnus* (rabbitbrush), *Ribes cereum* (wax currant), and *Symphoricarpos rotundifolius* (round-leaved snowberry). *Juniperus occidentalis* occurs on rimrock habitats, intermittent drainages, and the moister northerly slopes. The grass most commonly associated with this zone in the Lakeview District is *Poa Sandbergii* (Sandberg's bluegrass); other associated grasses include *Agropyron spicatum* (bluebunch wheat grass), *Festuca idahoensis* (Idaho fescue), and *Elymus cinereus* (giant wildrye). A variety of perennial and annual herbs also occur in this zone.
The final vegetation zone, the desert shrub zone, is scattered throughout the eastern and southern portions of the district. This most drought-tolerant vegetation is found on the highly alkaline and saline soils of playa or playa margins. Franklin and Dyreness provide the following description of the zone's composition (1973:245):

Important shrubs in these communities can include Grayia sponosa [spiny hopsage], Atriplex confertifolia [shadscale], A. nuttallii [Nuttall's saltbush], Eurotia lanata [winterfat], Artemisia spiniscens [bud sagebrush], and Sarcobatus vermiculatus [black greasewood]. Grasses sometimes associated with these shrubs include Elymus cinereus [giant wildrye], E. triticoides [creeping wildrye] (which may dominate on ancient lakebeds), and Distichlis stricta [alkali saltgrass]. The desert shrub communities are much better developed to the south and east where they dominate extensive areas.

In addition to the four main vegetation zones, the westernmost edge of the Lakeview District in the High Cascades region is characterized by the grand fir or Abies grandis community which grades into the Pacific silver fir or Abies amabilis zone in the higher elevations.

The paleoenvironmental research which has been done within the boundaries of the study area (refer to pages 9-10) has enabled researchers to surmise general changes in vegetation since the Pleistocene epoch. Due to the moister climate prior to the early postglacial times, the vegetation would have been lusher and better able to support browsing and grazing animals than the grasslands present today (McCormack 1920:18). Pollen studies at Klamath Marsh, Chewaucan Marsh, and Warner Marsh within the Lakeview District, and at Tumalo Lake near Bend to the north of the study area, indicate that the forests extended lower in elevation than at present, due to the cooler and moister climate (Hansen 1947a:115; 1947b). As the climate gradually became warmer and drier, the forests receded and the meadows became grasslands. During the drier times of the Middle Postglacial, the grasslands probably expanded in area for a time, only to return to their present distribution with the cooler and wetter Late Postglacial climate (Detling 1968).

Before the arrival of white settlers and livestock, the effects of fire and grazing on shrub-steppe vegetation were apparently quite limited. Within the last century, however, range fires and particularly overgrazing by cattle and sheep have had an acute effect on the shrub-steppe region. The status of sagebrush, most species of which do not regenerate after burning, and the native perennial grasses, which were heavily affected by overgrazing, has been altered, and non-native species have moved in to establish themselves. Many
studies of the ecological aspects of shrub-steppe vegetation have been made (refer to Franklin and Durness 1973:210-211; also Young et al. 1976).

FAUNA

Prior to 8-10,000 years ago, during the latter part of the Pleistocene epoch, eastern Oregon was inhabited by several animal species which no longer occupy the area today. Most of these animals were large browsers and grazers, such as bison (Bison antiquus, B. bison), camels (Camelops), native horse (Equus), and ground sloth (Mylodon) (Hester 1960; Martin 1967). Late-Pleistocene faunal remains have been discovered within the study area at Fossil Lake in Lake County (Howard 1946; Allison 1966; Minor and Spencer 1977). With the climatic changes which marked the end of the Pleistocene, these animals were replaced by more modern species. It has been proposed that the climatic shift at the end of the Pleistocene and/or human hunters served as agents for the extinction of these megafaunal species (Martin and Wright 1967).

A wide variety of animal species presently inhabit south-central Oregon within the study area. The following descriptions are derived primarily from Bailey (1936) and Loy (1976), both of which give extensive reviews of wildlife to be found within the area.

Mammals of the region include a multitude of rodent species ranging from squirrels, pocket gophers, voles, mice and rats to muskrat, beaver and porcupine species. Carnivorous mammals include the coyote and red fox. The gray wolf was hunted out by 1950. The grizzly bear was also exterminated by 1931, but the black bear is still inhabiting the area. Raccoons, skunks, and badgers are present, along with fur-bearing carnivores such as ermine, mink, long-tailed weasel, and marten. Cats found in the region are bobcat and mountain lion. Game animals, such as mule deer, pronghorn antelope and an occasional mountain sheep, are present in the area. Bat and myotis species, as well as a variety of hare and rabbit species, are also abundant.

Amphibians include frogs and toads. Reptiles of the area consist of several lizard species and an assortment of snakes, such as the racer, garter snake, rubber boa, gopher snake, and Great Basin rattlesnake.

The fish species in Oregon which are solely limited to fresh water are suckers and dace. Other species are either derived from salt-water ancestors or else are anadromous and migrate between fresh and salt water. These include lampreys, salmon, trout, chub, sculpin, bullhead catfish, crappie, and black bass which are found in the rivers and streams of the Lakeview District.
An excess of 150 species of birds breed in various portions of the Lakeview District. Included are marsh birds, such as herons, ducks, pelicans, and egrets, game birds like quail and pheasant, and numerous other species such as hawks, eagles, owls, swallows, wrens, bluebirds, sparrows, and blackbirds.

Four federal wildlife refuges, two state wildlife management areas, and one state fish hatchery exist within or on the outskirts of the Lakeview District. The largest of these preserves is the Hart Mountain Antelope Refuge, established in 1936, which is managed for bighorn sheep as well as pronghorn. Although the remaining preserves are oriented to game-bird management, all refuges support a variety of species.

In addition to wildlife, the district also provides grazing lands for domesticated livestock. In 1976, over 3,375,000 acres of BLM managed land were used for grazing cattle, horses, sheep, and goats (U.S. Department of the Interior 1977:16).

**SUMMARY**

The Lakeview District consists of an assortment of private lands and lands administered by the Bureau of Land Management and the National Forest Service. It is located east of the Cascade Range and includes Lake, Klamath, and parts of Harney counties. The study area forms a part of the Great Basin area and marks its northernmost extension.

The climate of the area is characterized by light precipitation, abundant sunshine, and extreme temperature ranges. A majority of the area has variable relief and generally lies between elevations of 4000 and 8000 feet above sea level.

On the basis of physiography and geologic characteristics, the Lakeview District can be divided into two major regions. Roughly one-fourth of the study area to the north is located within the High Lava Plains Province which extends westward from the Harney Basin to the upper Deschutes River valley. This province is covered with recent lava flows with no definitive drainage pattern, creating a rather flat terrain interrupted by scattered lava buttes and cinder cones. The remainder of the Lakeview District falls within the Basin and Range Province, a geologically older region with north-trending fault-block mountains and many basins of internal drainage.

Four major vegetation zones are found in the Lakeview District. The zoning of vegetation is a reflection of different factors, such as soil, climate, elevation and physiography. The *Pinus ponderosa* Zone is located in the higher elevations of much of the western half
of the study area, along the eastern slopes of the Cascades. Ponderosa pine occurs with western juniper, bitterbrush, Idaho fescue, and other grasses and sedges within this zone. The *Juniperus occidentalis* Zone is the transitional zone between the pine forests and the grasslands. This zone, which occupies scattered regions throughout the district, includes western juniper, sagebrush, rabbitbrush, bitterbrush, and assorted grasses. The third zone, the shrub-steppe, is a grassland primarily composed of sagebrush, rabbitbrush, and a variety of perennial and annual grasses and herbs. This zone covers the lower elevations in the eastern portion of the study area. The final zone, the desert shrub zone, includes the most drought-tolerant vegetation of the region which is found on the saline soils of playas and their margins. Small shrubs and grasses constitute these communities which are found in the southern and eastern portions of the Lakeview District.

Wildlife in the area includes a wide variety of large and small mammals (both game and non-game species), amphibians, and reptiles. Many fish species are found in the waters of the region, and more than 150 species of birds occupy various portions of the Lakeview District.

Paleoecological studies indicate that there was a climatic change at the end of the Pleistocene with the glacial recession. The climate began a trend from a moist cool climate to warmer and dryer conditions after 8-10,000 years ago. The vegetation adjusted from the lush meadows of a moister environment to the less rich grasslands of a more arid and hotter climate. Many animal species, including large browsers and grazers such as bison, camels, and horse were unable to survive and became extinct. Subsequent climatic fluctuations were not major, but these later changes also affected the distribution of plant and animal species.

Archaeological evidence indicates that eastern Oregon has been occupied by humans for at least 13,000 years. During this time, people have had to adjust to climatic changes, shifts in vegetation and game, and geologic occurrences such as volcanic activity. The patterns of human use in the area, past and present, must be seen in the context of the land's formation and the distribution, abundance, and exploitability of its resources. The various ways in which the Euroamerican and Native American cultures utilized the same environment, at different times and for different purposes, will be examined in the following sections of this overview.
CHAPTER II

ARCHAEOLOGICAL OVERVIEW

The Lakeview District of the Bureau of Land Management is situated within the northernmost extension of the Great Basin physiographic province of North America, which in addition to southeastern Oregon includes all of Nevada and portions of California, Idaho, Arizona, and Utah. The Great Basin can be characterized as a region of interior drainage, containing generally north-south trending fault-block mountain ranges separated by broad deserts. The Klamath Basin of south-central Oregon, the westernmost fault-block valley within the Northern Great Basin system is atypical in this respect, in that the rivers flowing through it drain into the ocean, and the general environment is actually transitional between the deserts of the Great Basin and the forested slopes of the Cascade Range. Many of the valleys between the mountain ranges in the Great Basin were covered by sizeable lakes in Pleistocene times (Figure 4), and today the region is dotted with intermittent lakes and dry lake beds.

The aboriginal cultures of the Great Basin encountered in historic times followed a way of life closely adapted to the sparsity of subsistence resources in the desert environment. As a result of the research of ethnographers and archaeologists, many aspects of the aboriginal lifeways have been revealed, and the basic culture pattern is known to extend back in time to the closing stages of the Pleistocene around 11,000 years ago. The excellent preservation of normally perishable materials in the many caves of the region makes the archaeological record of the Great Basin rich in details concerning the culture of the prehistoric inhabitants. Although areal coverage is still spotty and uneven, enough information has been recovered from at least a few places in the Great Basin to permit well-supported inferences to be made concerning the adaptive responses of prehistoric peoples to the natural environment as it changed over the last several thousand years.

THE DESERT CULTURE CONCEPT

The point of departure for interpretation of Great Basin prehistory is the ethnographic model presented by Julian H. Steward in his classic monograph Basin-Plateau Aboriginal Sociocultural Groups (Steward 1938). According to Steward, aboriginal cultures in the Great Basin practiced a lifeway of "seasonal transhumance" in which movement of aboriginal peoples over the landscape was timed to coincide with the seasonality, distribution, and abundance of subsistence resources in the desert environment (also see Davis 1963). In Steward's view, the sparsity and irregular distribution of subsistence resources in the Great Basin required that aboriginal groups be small and mobile, a situation which forced Great Basin peoples to remain at an elementary level of sociocultural integration.
Steward's conception of aboriginal life in the Great Basin was adopted by Jesse D. Jennings as a basis for interpreting the cultural remains from Danger Cave in northwestern Utah (Jennings 1957). This use of Steward's ethnographic model for interpreting the archaeological record resulted in formal recognition of the concept of a Desert Culture, characterized by a modest core of shared artifacts (notably milling stones and basketry) representing a technology geared to the special environment of the western deserts of North America. Implied in the concept was a long period of cultural stability beginning around 9500 to 9000 years ago and continuing up to historic times in some parts of the Great Basin. In more recent years, Jennings has modified his views somewhat, linking the Desert Culture with the continent-wide "Archaic" culture stage (Jennings and Norbeck 1964; Jennings 1973, 1974). The Archaic stage refers to a lifeway of migratory hunting, gathering, and fishing characterized by broad-spectrum exploitation of available plant and animal resources. This way of life is reflected in the archaeological record by an increased range of special tools and utensils geared to the local subsistence resources of each specific region (see Willey and Phillips 1958).

Over the years the validity of the Desert Culture concept has been the subject of considerable debate (for a concise review of this controversy, see Jennings 1973). Many archaeologists found the concept useful in helping to organize their data, or in establishing the broader framework in which their findings had relevance (for example, Cressman 1956; Swanson 1962; and Aikens 1970). One of the most important effects of the Desert Culture concept derived from its challenging of the importance (or even the existence) of the Altithermal climatic stage. The Altithermal was the middle period of the three-stage Neothermal climatic sequence developed by Ernst Antevs (1948, 1955). According to Antevs, the time of the Altithermal from 7000 to 4500 BP was a period of heat and drought so severe that human occupation of the Great Basin would probably be discontinued. However, the idea of a Desert Culture persisting for roughly 10,000 years with little or no fundamental change, as proposed by Jennings, directly contradicted the picture of aboriginal cultures adjusting their lifeways to drastic changes in climate as implied by the Antevs' model.

On the other hand, some archaeologists rejected the Desert Culture concept entirely, contending that it stressed the desert way of life above all, and failed to recognize the importance of other environments in the lifeways of the Great Basin's aboriginal inhabitants (for example, Baumhoff and Heizer 1965; Warren and Ranere 1968; and Butler 1978). In particular, the importance of the lakeshore environment for aboriginal subsistence has been stressed by Heizer and Krieger (1956) and Heizer and Napton (1970). Indeed, in more recent years the term "Great Basin Archaic," encompassing both desert and lacustrine orientations, has been proposed (Hester 1973:127).
The Desert Culture or Desert Archaic concept is best viewed as an abstract characterization of the general way of life practiced by the prehistoric inhabitants of the Great Basin. The concept was most useful in the early years of archaeology in the Great Basin when there was a need for a unifying theme with which to relate the evidence from archaeological sites scattered over the entire intermontane west. With the increase in the amount of archaeology conducted in the Great Basin in recent years, however, the usefulness of the concept has declined. The trend in archaeological research has shifted to more of an emphasis on the elucidation of cultural developments in localized areas. This research has increasingly demonstrated the great variety of environments occurring in the Great Basin, and has resulted in an increased awareness that there were, in fact, multiple desert cultures.

**CLIMATE AND CULTURE IN THE GREAT BASIN**

The nature of the relationships between climate, environment, and prehistoric cultures is a subject that has been of concern to Great Basin archaeologists for decades. Until recent years, these relationships were discussed primarily in the context of the model of climatic change proposed by Ernst Antevs (1948, 1955). In brief, the Antevs model postulated that the Neothermal climatic sequence—beginning at the end of the Pleistocene and continuing to the present—consisted of three stages, each of which was characterized by somewhat different temperature-moisture conditions (Figure 2). The earliest stage from 9000 to 7000 BP was termed the Anathermal, with a climate which was cooler and moister, but otherwise similar to that of today. The second stage, the Altithermal, lasted from 7000 to 45000 BP; this period was much warmer than the climate at present and was the most arid of the three stages. The most recent stage, lasting from 4500 BP to the present, was termed the Medithermal, during which time a more moderate climate than that of the Altithermal stage prevailed, with warm and semiarid conditions.

The general assumption drawn from the Antevs model by most archaeologists was that shifts from relatively cool-moist (Anathermal) to warm-dry (Altithermal) to modern climates (Medithermal) affected the distributions and availability of plant and animal resources. In turn, the relative availability of resources was believed to have influenced the demographic distributions of aboriginal peoples and to have led to changes in material culture as adaptations to the presumed ecologic changes. Some archaeologists have even taken the extreme view that a hot and dry Altithermal period rendered the Great Basin largely unfit for human occupation (for example, Baumhoff and Heizer 1965, Clewlow 1967, and Heizer et al. 1968). There are, in fact, a number of localities in the Great Basin where there is a hiatus in occupation which can be correlated with the Altithermal time span. Included among these sites are Fort Rock Cave and the Connley Caves (Bedwell 1970, 1973) and Dirty Shame Rockshelter (Aikens et al. 1977) in southeastern Oregon.
On the other hand, there is also evidence to suggest that the degree of climatic change during the Altithermal was not as severe in some areas as in others. For many years Danger Cave in northwestern Utah (Jennings 1957) was the only site known to have been continuously occupied throughout the Altithermal time span. More recent archaeological research has indicated that other localities in the northern Great Basin—notably Hogup Cave in northwestern Utah (Aikens 1970) and Surprise Valley in northeastern California (O'Connell 1971, 1975)—were also occupied throughout this period.

Three important studies of the effects of the Altithermal on the aboriginal inhabitants of the Northern Great Basin have been conducted. The first study, undertaken by Fagan (1973, 1974), was a test of Bedwell's (1970:217) hypothesis that during the Altithermal period, when the bed of pluvial Fort Rock Lake was apparently abandoned as a human habitat, the adjacent areas of higher elevation would have provided a favorable environment for the continuance of aboriginal occupation. Eleven spring sites and one lakeshore site located in different areas of southeastern Oregon were excavated. The results of the excavations suggested that ten of the twelve sites were very probably occupied during the Altithermal interval, and the principal conclusion of the study was that human populations did not completely abandon southeastern Oregon at this time.

A second study of relevance to the controversy over the effects of the Altithermal was conducted in Warner Valley in south-central Oregon by geologist David L. Weide (1976). Weide notes that postglacial water resources in the Great Basin were of two kinds: (1) extensive networks of pluvial lakes, created by surface runoff and stream discharge in excess of the amounts observed today; and (2) widespread networks of smaller hydrologic systems such as marshes, small streams, and perennial springs. Weide observes that the pluvial lakes, once formed, must have fluctuated widely in areal extent due to high precipitation/evaporation ratios; many pluvial lakes in the Great Basin disappeared around 8000 years ago. It is this form of evidence that led Antevs and others to speculate about the effects of climatic change on the Great Basin's aboriginal inhabitants. On the other hand, the smaller hydrologic systems respond much less directly to changes in temperature-moisture conditions; most marshes, streams, and springs continue to produce water even in relatively dry years. Weide concludes that even during the Altithermal interval numerous smaller hydrologic systems still would have provided sufficient water for aboriginal peoples. These water sources may have been located away from previously occupied caves and rockshelters, however, necessitating a move by aboriginal peoples to new occupation sites. This conclusion seems to be supported by the results of Fagan's (1973, 1974) investigation of spring sites in the Northern Great Basin.

The third study of relevance to the Altithermal controversy involved analysis of the faunal remains from Nightfire island, an open midden located on the southeastern edge of Lower Klamath Lake. Analysis of over 7000 identifiable bones of birds and mammals from the site by Grayson (1973, 1976) indicated that exploitation of the animal resources of the
lake and marsh did not vary significantly throughout the 6,000 years of the Nightfire Island occupation. Through this time a strong cultural preference for birds which fed by diving in relatively deep water was indicated, despite the fact that in modern censuses non-diving birds outnumber divers by over 20 to 1 in the Lower Klamath Basin. The strong cultural preference of the inhabitants of Nightfire Island for waterfowl which feed by diving in relatively deep water provided the basis for making inferences about fluctuations in the level of Lower Klamath Lake over the last 6000 years. These birds were the dominant form of waterfowl in the faunal collections of every cultural phase represented at the site, but were most abundant between 6000 and 4200 BP. This situation was interpreted by Grayson as indicating that deep-water habitat in the vicinity of Nightfire Island was more extensive before 4200 BP than it was afterwards. This period of apparent high water appears to be contemporaneous with the Altithermal time span as defined by Antevs (1948, 1955), and contradicts earlier interpretations by Cressman (1942, 1956) which suggested dessication of the area, and perhaps the complete drying of Lower Klamath Lake, during that time.

As Fowler (1976:2) points out, the central problem in the debate over the effects of the Altithermal can be viewed as one of scale. The application of a model of the Altithermal and its influence upon aboriginal cultures is too general to be of real use in understanding the complex inter-relationships between climate, environment, and culture. This fact was recognized quite early by Aschmann (1958) and by Bryan and Gruhn (1964), who argued that climatic change during the Altithermal must have had locally variable effects. Most recently, Mehringer (1977) has reviewed the geological and biological evidence concerning climatic change in the Great Basin and concluded that the fluctuations in climate during the last 10,000 years were no more dramatic than those observed by Great Basin inhabitants within a single year. Mehringer (1977:149) suggests that the influence of climatic change in the Great Basin is best examined in terms of evidence for its effects on the natural resources used by aboriginal peoples within a localized area.

The conclusion to be drawn from this discussion is that the Antevs' model of postglacial climatic history was greatly oversimplified. Detailed paleoclimatic sequences for each local area will have to be obtained before archaeologists will be able to meaningfully relate changes in the lifeways of prehistoric cultures with changes in the natural environment.

**PALEOINDIAN OCCUPATION IN THE GREAT BASIN**

The PaleoIndian occupation of the Great Basin generally encompasses archaeological manifestations dating earlier than approximately 8000 years ago. The evidence for the presence of prehistoric peoples in the Great Basin at this early time may be divided into three main categories:
(1) anomalous early finds, which probably predate 10,000 to 12,000 years ago; (2) the Fluted Point Horizon, equitable with the Clovis and Folsom complexes which have been assigned a time range from 11,500 to 10,000 BP on the Great Plains and in the Southwest; and (3) slightly younger culture complexes, dating from 11,000 to 8000 BP, which can be subsumed within the concept of a San Dieguito-Windust-Milliken Horizon (Aikens n.d.). A list of finds attributable to the period prior to 8000 BP within the state of Oregon is presented in Table 1; the locations of these manifestations are shown in Figure 7.

Anomalous Early Finds

In the Great Basin, as in other parts of the New World, objects believed by some archaeologists to be of great antiquity have occasionally been found. In most cases these "ancient" finds are represented by very simple lithic forms modified as a result of stone-on-stone percussion. The majority of the specimens are large and crude, consisting of primary flakes struck from the unprepared surfaces of cobbles. Choppers, scraper planes, and ovate bifaces are sometimes found in association with these materials. When these assemblages occur without projectile points in association, they are sometimes assigned to a hypothetical Pre-projectile Point (Krieger 1964) or Chopper-Scraper Horizon (Jennings 1974). In other words, these assemblages are thought to be related to a very ancient cultural substratum, dating from sometime before the development of specialized projectile points, which would be considered ancestral to all later technological developments in the New World.

The validity of the Pre-projectile Point Horizon concept has been a matter of debate among archaeologists for many years. Because many of the finds of allegedly ancient assemblages consist of very simple lithic forms, there is often some doubt as to whether they were actually made by aboriginal peoples; localities where such questionable finds occur are often referred to as "naturefact" sites. Another problem is that these simple lithic specimens are so basic to the chipped stone technology of aboriginal peoples that their form gives no clue to their age. On the one hand, such artifact forms were widely distributed in the Old World long before aboriginal peoples arrived in the New World. On the other, such simple tool types continued to be made and used by the aboriginal inhabitants of the New World up to historic times. Further complicating the matter is the fact that most of the allegedly ancient assemblages attributed to the Pre-projectile Point Horizon occur only as surfact finds, and not in contexts such as buried archaeological deposits in which their age can be accurately determined. In short, while the possibility exists that archaeological cultures predating the established period of human occupation in the New World have been found, at this time no well-supported evidence for the presence of aboriginal peoples earlier than terminal Pleistocene times has yet been established in the Great Basin (Aikens 1978:146).
TABLE 1.
PALEOINDIAN FINDS IN OREGON

<table>
<thead>
<tr>
<th>No.</th>
<th>Location</th>
<th>Period of Occupation</th>
<th>Literature Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Alvord Desert</td>
<td>F S</td>
<td>Fagan and Sage 1974</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pettigrew 1975</td>
</tr>
<tr>
<td>2.</td>
<td>Blalock</td>
<td>F</td>
<td>Strong 1969</td>
</tr>
<tr>
<td>3.</td>
<td>Coyote Flat</td>
<td>F S</td>
<td>Butler 1970</td>
</tr>
<tr>
<td>5.</td>
<td>Deschutes River</td>
<td>S</td>
<td>Fagan and Sage 1974</td>
</tr>
<tr>
<td>6.</td>
<td>Eastern Oregon Area</td>
<td>F</td>
<td>Osborne 1956</td>
</tr>
<tr>
<td>7.</td>
<td>Eugene Area</td>
<td>F</td>
<td>Strong 1969</td>
</tr>
<tr>
<td>8.</td>
<td>Five-Mile Rapids</td>
<td>S</td>
<td>Cressman et al. 1960</td>
</tr>
<tr>
<td>10.</td>
<td>Fossil Lake</td>
<td>?</td>
<td>Minor and Spencer 197//</td>
</tr>
<tr>
<td>11.</td>
<td>Glass Buttes</td>
<td>F</td>
<td>Mack 1975a</td>
</tr>
<tr>
<td>12.</td>
<td>Guano Valley (Big</td>
<td>F S</td>
<td>Cressman 1936</td>
</tr>
<tr>
<td></td>
<td>Springs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Lower Klamath Lake</td>
<td>?</td>
<td>Cressman 1943</td>
</tr>
<tr>
<td>15.</td>
<td>Malheur Lake</td>
<td>F S</td>
<td>Strong 1969</td>
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<td></td>
<td></td>
<td></td>
<td>Fagan and Sage 1974</td>
</tr>
<tr>
<td>16.</td>
<td>Mohawk River</td>
<td>F</td>
<td>Alleley 1975</td>
</tr>
<tr>
<td>17.</td>
<td>Summer Lake</td>
<td>?</td>
<td>Cressman et al. 1940; Cressman 1942</td>
</tr>
<tr>
<td>18.</td>
<td>Wildcat Canyon</td>
<td>S</td>
<td>Cole 1968a, 1968b</td>
</tr>
</tbody>
</table>

? = Early finds of unknown affiliation
F = Fluted points (Clovis-Folsom)
S = San Dieguito-Windust-Milliken Horizon finds
Another argument sometimes advanced in favor of a great antiquity for
the presence of aboriginal peoples in the Great Basin is the apparent
association of human cultural remains with the bones of now-extinct
Pleistocene megafauna at a few localities. A review of the published
radiocarbon dates obtained from contexts where extinct Pleistocene
megafauna were found led Martin (1967) to conclude that most of these
big game animals became extinct in North America by around 11,000
years ago.

Several discoveries of the remains of extinct megafauna in
association with cultural materials have been reported in southeastern
Oregon. Excavations at Paisley Cave No. 3 in the Summer Lake Basin
produced the remains of Pleistocene horse and camel in association
with artifacts of human manufacture (Cressman et al. 1940:10; Cressman
1942:93-94; Cressman 1966). In Catlow Cave No. 1 in Catlow Valley
human skeletal remains were found in association with an Equus (horse)
bone which Cressman (1942:27-31) presumed was of Pleistocene age (cf.
Krieger 1944:354). At a locality near the Narrows of Lower Klamath
Lake an obsidian knife and a crude scraper were found in association
with bone and tusk fragments from a mastodon (Cressman 1942:99).
Unfortunately, all of these associations of extinct megafauna and
cultural materials were discovered before the invention of radiocarbon
dating, and thus their exact age remains unknown. The most recent
discovery of extinct megafauna in association with cultural materials
involved a possible camel kill site at Fossil Lake in Christmas Valley
(Minor and Spencer 1977). A single projectile point (recovered in
three fragments), a biface fragment, and an unmodified flake were
recovered in close association with the partial remains of a single
animal belonging to the genus Camelops. Collagen extracted from
fragments of the animal's bones produced a radiocarbon date of
9955 ± 165 BP (SI-3458).

Since Martin's (1967) estimate of roughly 11,000 years ago for the
extinction of the Pleistocene megafauna falls within the time span of
the known human occupation of the Great Basin, and since the material
remains of aboriginal peoples (notably Clovis and Folsom projectile
points) are found in association with extinct megafauna in other parts
of North America, it seems reasonable that some apparent associations
of artifacts with megafaunal remains in the Great Basin are valid.
These situations appear to be quite rare, however, since there are a
number of sites in the Great Basin which have been radiocarbon dated
to the period between 12,000 and 8000 BP at which the remains of
extinct megafauna are not present (Hester 1973:61).

At the present time the earliest radiocarbon dated evidence of
human occupation in the Great Basin is at Fort Rock Cave in south-
central Oregon. The cave is situated on a former terrace of
Pleistocene Fort Rock Lake and was first professionally excavated
in the late 1930s and again in 1966-1967 under the direction of Luther
S. Cressman of the University of Oregon (Cressman et al. 1940; Cressman
1942; Bedwell and Cressman 1971; Bedwell 1970, 1973). During the later
excavations a small hearth was uncovered near the bottom of the
cultural deposit in the cave. The charcoal from this hearth yielded a
radiocarbon date of 13,200 ± 720 BP (Bedwell 1973:141).
The artifact assemblage closely associated with this radiocarbon date included two projectile points, several scrapers, gravers and modified flakes, and a fragment of a hand-held grinding stone or mano. One projectile point was vaguely reminiscent of the Lake Mohave type, and the other was a small lanceolate with a concave base. It should be noted that the latter specimen was at first thought to be a fluted point (Bedwell 1973:142). A more recent examination, however, suggests that this identification was mistaken, and that the specimen is actually an unfinished projectile point or blank (Fagan 1975).

Charcoal recovered from excavations at nearby Cougar Mountain Cave No. 2 by the same University of Oregon field crew, produced a slightly later radiocarbon date of 11,950 ± 350 BP (Bedwell 1973:141). The only artifacts associated with the dated level at this site were lithic flakes exhibiting use-wear; such specimens are not diagnostic of any particular time period.

Due to the paucity of information from the earliest dated levels at these two localities, it is not possible at this time to place these two sites within existing culture-historical sequences for western North American prehistory. The radiocarbon date of 13,200 ± 720 BP from Fort Rock Cave is almost 2000 years earlier than the first well known archaeological complex in North America, the Fluted Point Horizon. A lack of detailed information on the exact manner in which the artifacts were associated with the charcoal sample has caused some archaeologists to question the validity of the early radiocarbon date from Fort Rock Cave (Haynes 1969). For the present time, then, the earliest levels at Fort Rock Cave and Cougar Mountain Cave No. 2 are considered anomalous manifestations whose exact affiliations with other early cultures are so far unknown.
The Fluted Point Horizon

Aside from the anomalous early finds previously discussed, the first widespread evidence for the presence of aboriginal peoples in the Great Basin occurs in the form of fluted projectile points. These distinctive points can be equated with the early Clovis and Folsom complexes found throughout North America. The distribution of fluted point finds in Oregon is shown in Figure 7.

Clovis projectile points are thin lanceolate blades, three to six inches in length, with short flakes or "flutes" removed from the base (Figure 8). On the Great Plains and in the Southwest, these distinctive points are often found in association with extinct Pleistocene megafauna, in most cases the remains of mammoths. Folsom projectile points are also lanceolate in form, but on these points the fluting covers a greater portion of the specimen (Figure 9). On the Great Plains and in the Southwest, Folsom projectile points are frequently found with the remains of an extinct species of bison.

For many years it was believed that fluted projectile points, relatively common in other parts of North America, were not significantly represented west of the Rocky Mountains. This notion was first dispelled by Davis and Shutler (1969) who plotted the known distribution of fluted projectile points in California and Nevada. More recently, Aikens (1978, Figure 4.2) has mapped the distribution of fluted points throughout all of the western United States. Together, these studies make it clear that the makers of fluted projectile points were widespread throughout the intermontane west as a whole.

Unfortunately, none of the fluted projectile points in the western United States have been directly dated, since they most commonly occur only as surface finds. On the Great Plains and in the Southwest, however, Clovis projectile points have been radiocarbon dated within the narrow time range from 11,500 to 11,000 BP, while Folsom projectile points generally date between 11,000 and 10,000 BP (Haynes 1971). In the absence of direct information on the age of fluted projectile points west of the Rocky Mountains, it seems reasonable to suggest a time range from 11,500 to 10,000 BP for the Fluted Point Horizon in the western United States as well.

The San Dieguito-Windust-Milliken Horizon

From a time overlapping with and subsequent to that proposed for the Fluted Point Horizon there occurs a series of intergrading lithic complexes which are widespread and have been given several names in different parts of western North America. In California and Nevada this early cultural manifestation is usually referred to as the San Dieguito Complex (Warren 1967). In the Columbia Plateau region of the Pacific Northwest this early culture complex is assigned to the Windust Phase (Rice 1972). Further north in British Columbia, a similar artifact
Figure 8. Clovis Fluted Points, Actual Size (after Jennings 1974).

Figure 9. Folsom Fluted Points, Actual Size (after Jennings 1974).
complex is referred to as the Milliken Phase (Borden 1960, 1969). Noting the similarities between these local complexes, Aikens (n.d.) has collectively termed them the San Dieguito-Windust-Milliken Horizon.

The artifact assemblages in each of these culture complexes are not identical, but they are sufficiently similar to suggest they are all related in a single widespread cultural horizon. The artifact assemblages are characterized by large shouldered and stemmed lanceolate projectile points, large leaf-shaped projectile points or knives, chipped-stone crescents, scraper planes, and flake scrapers of several kinds (Figure 10). The artifact assemblages sometimes include milling stones along with the chipped stone tools.

The San Dieguito Complex has been dated between 9000 and 10,000 BP (Warren 1967). The Windust Phase has been assigned dates ranging from 7500 to 10,500 years ago (Rice 1972). The Milliken Phase also falls within this time range, dating from 8000 to 9000 BP (Borden 1969). Based on the time ranges assigned to these separate culture complexes, then, the general chronology for this San Dietuito-Windust-Milliken Horizon falls within the period from 8000 to 10,000 years ago (Aikens n.d.).

In the northern Great Basin artifacts comparable to those of the San Dieguito Complex have been recovered from caves in the Fort Rock Valley and have been radiocarbon dated to between 11,000 and 8000 BP (Bedwell 1970, 1973). Recognizing that there are a number of similar artifact complexes in the Great Basin which are associated with the shorelines of now-dry pluvial lakes, Bedwell proposed that they be grouped together within the concept of the Western Pluvial Lakes Tradition, which refers to "a general way of life directed toward the exploitation of a lake environment" (Bedwell 1973:171). The assemblages included within this tradition are all very similar, and include large leaf-shaped and stemmed projectile points, crescents, scrapers, scraper planes, and manos and metates.

It is likely that the complexes assigned to the San Dieguito-Windust-Milliken Horizon, and also the Western Pluvial Lakes Tradition, are derived from the preceding Fluted Point Horizon (Aikens 1978:148). This relationship is suggested by general similarities in size, form, and manufacturing techniques shared between the fluted projectile points and the stemmed and shouldered lanceolate and leaf-shaped projectile points characteristic of the slightly later complexes. The exact nature of the relationship between the aboriginal peoples of the Fluted Point Horizon and those of later culture complexes in western North America is still unclear at this time.
Figure 10. Chipped Stone Crescents (top row) and Projectile Points from the San Dieguito-Windust-Milliken Horizon (after Jennings 1974).
THE LATER ARCHAEOLOGY OF THE NORTHERN GREAT BASIN

The later aboriginal cultures of the Great Basin were derivatives of the antecedent San Dieguito Complex (Warren 1967) or Western Pluvial Lakes Tradition (Bedwell 1970, 1973). But after about 8000 BP, however, the archaeological record in the Great Basin becomes more complex. Where before there were cultural horizons featuring similar artifact assemblages occurring over thousands of square miles, by 8000 years ago regional traditions began to be established as aboriginal peoples developed more specialized cultural adaptations to the locally available resources found in each area. In broader perspective, many of these localized adaptations have been grouped within the Desert Culture or Desert Archaic way of life (Jennings 1964), although the term Great Basin Archaic, encompassing both desert and lacustrine orientations, seems more appropriate (Hester 1973:127).

Some of the first archaeological studies in the Great Basin were undertaken in southeastern Oregon, when Luther S. Cressman of the University of Oregon began research in the area in the 1930s. Since that time a considerable number of archaeological survey and excavation projects have been carried out, resulting in the development of cultural sequences in several subregions of the Northern Great Basin (Figure 11). A list of the major archaeological research projects undertaken in the Northern Great Basin is presented in Table 2; their locations are shown in Figure 12.

Because of their utility as time markers in the archaeological record, projectile points are probably the single most informative class of artifacts recovered by archaeologists working in the Great Basin. A number of projectile point styles that were in use for relatively brief time spans have been recognized in the region (Hester and Heizer 1973). The estimated temporal distributions of the most common Great Basin projectile point types are listed in Table 3. The formal characteristics of these projectile point types are shown in Figure 13.

Guano Valley

Guano Valley is a northeasterly trending basin located in the southeastern corner of Lake County, Oregon. The first archaeological research in southeastern Oregon was conducted in Guano Valley and nearby areas in 1934 under the direction of Luther S. Cressman of the University of Oregon (Cressman 1936).

Excavations undertaken in Guano Lake Cave on the west side of the valley resulted in the recovery of several projectile points and bone tools, fragments of twined basketry, and pieces of cordage. Cultural materials were also collected from archaeological sites along the shorelines of Guano Lake, Desert Lake, Long Lake, and in nearby Catlow Valley.
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<td>1000 BP</td>
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<td>Bidwell</td>
<td>Last Supper</td>
<td>I</td>
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<tr>
<td>2000 BP</td>
<td>Middle</td>
<td>Alkali</td>
<td>Hanging Rock</td>
<td>II</td>
</tr>
<tr>
<td>3000 BP</td>
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<td>Emerson</td>
<td>Smoky Creek</td>
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<td>Early</td>
<td>Menlo</td>
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<td>9000 BP</td>
<td>Period 2</td>
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<td>VI</td>
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<td>13,000 BP</td>
<td>Period 4</td>
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<td>14,000 BP</td>
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**Figure 11. Cultural Chronologies in the Northern Great Basin.**
### TABLE 2.

**MAJOR ARCHAEOLOGICAL PROJECTS BY SUBREGION IN THE NORTHERN GREAT BASIN**

<table>
<thead>
<tr>
<th>Map. No.</th>
<th>Location</th>
<th>Literature References</th>
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<tbody>
<tr>
<td>1</td>
<td>Guano Valley</td>
<td>Cressman 1936, 1937&lt;br&gt; Cole 1975a, 1977</td>
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<tr>
<td>2</td>
<td>Catlow Valley</td>
<td>Cressman et al. 1940&lt;br&gt; Cressman 1942&lt;br&gt;</td>
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<td></td>
<td></td>
<td>Cannon 1978a</td>
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<td>3</td>
<td>Fort Rock Basin</td>
<td>Cressman et al. 1940&lt;br&gt; Cressman 1942&lt;br&gt;</td>
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<td></td>
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<td>Bedwell and Cressman 1971&lt;br&gt; Bedwell 1970,</td>
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<td>1973&lt;br&gt; Scheans 1956&lt;br&gt; Cowles 1960&lt;br&gt;</td>
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<td></td>
<td></td>
<td>Cole 1975b, 1975c&lt;br&gt; Schoenberg 1976&lt;br&gt;</td>
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<td>Gibson and Spencer 1977&lt;br&gt; Minor and</td>
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<td></td>
<td></td>
<td>Spencer 1977</td>
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<td>4</td>
<td>Summer Lake Basin</td>
<td>Aikens and Minor 1977&lt;br&gt; Cressman 1937&lt;br&gt;</td>
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<td></td>
<td></td>
<td>Cressman et al. 1940&lt;br&gt; Cressman 1942&lt;br&gt;</td>
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<td>Warner Valley</td>
<td>Cressman 1937, 1944&lt;br&gt; Weide 1968, 1974&lt;br&gt;</td>
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<td>6</td>
<td>Goose Lake Basin</td>
<td>Cole 1975a&lt;br&gt; Decker 1975</td>
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<td>Map. No.</td>
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<td>7</td>
<td>Klamath Basin</td>
<td>Cressman 1942, 1956</td>
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<td></td>
<td></td>
<td>Heizer 1942</td>
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<td></td>
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<td>Squire and Grosscup 1952</td>
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<td></td>
<td></td>
<td>Squire 1956</td>
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<td></td>
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<td>Newman and Cressman 1959</td>
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<td></td>
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<td>Swartz 1961, 1964</td>
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<td></td>
<td></td>
<td>Cressman and Wells 1962</td>
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<td></td>
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<td>Cressman and Olien 1963</td>
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<td></td>
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<td>8</td>
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<td>Pettigrew 1975</td>
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<td>11</td>
<td>Glass Buttes Area</td>
<td>Mack 1975b</td>
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<td>12</td>
<td>Harney-Malheur Basin</td>
<td>Newman et al. 1974</td>
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<td>13</td>
<td>Owyhee Plateau</td>
<td>Aikens et al. 1977</td>
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Figure 12. Locations of the Major Archaeological Projects Conducted in the Northern Great Basin (Key, Table 2).
Probably the most important discovery during this first season of archaeological fieldwork in southeastern Oregon was the finding of typologically early artifacts from a site near Big Spring. Included in the collection from this site were a fragment of a fluted projectile point, several large leaf-shaped projectile points, and a chipped-stone crescent. The majority of the specimens recovered from this early site are similar to artifacts characteristic of the Western Pluvial Lakes Tradition, which has been assigned a time range between 8000 and 11,000 BP (Bedwell 1973:171).

Cressman (1936) also noted the presence of petroglyphs and pictographs in the Guano Valley area. Rock art sites at Long Lake, Desert Lake, and the Pot Holes were described in his classic study Petroglyphs of Oregon (Cressman 1937). With the exception of one pictograph, the remaining designs at these sites were all petroglyphs. Cressman (1937:70-71) relates the designs at these localities to the curvilinear Great Basin petroglyph style.

To the north of Guano Valley a survey for cultural resources along the proposed route of Pacific Power and Light Company's 500 KV Transmission Line from Malin, Oregon, to Midpoint, Idaho, resulted in the recording of three extensive archaeological sites (Cole 1975a:29-31). One site featured petroglyphs, hunting blinds, and other indications of aboriginal activity. This may be one of the sites investigated by Cressman in the 1930s (Cressman 1936:32). The second locality was an extensive campsite or perhaps a seasonal village. The third site was a locality where obsidian nodules were collected as raw materials to be made into tools. A subsequent survey along rerouted sections of this transmission line recorded three additional archaeological sites in the Guano Valley area; all three were open flake scatters (Cole 1977:10-11).

Catlow Valley

Catlow Valley is located just west of Steens Mountain in the south end of Harney County, Oregon. Two major sites in Catlow Valley, Catlow Cave No. 1 and Roaring Springs Cave, were excavated under Cressman's direction in 1935, 1937, and 1938 (Cressman et al. 1940; Cressman 1942).

Catlow Cave No. 1 is located along the eastern side of the valley in one of the terraces formed as a result of the wave-cutting action of a now-dry pluvial lake. Two major occupation levels were distinguished in the cultural deposits in this cave. The upper level contained basketry and also some potsherds near the surface; the lower level did not contain either of these materials. The discovery of human skeletal remains in the gravels at the base of the cave, in a context which suggested they might date from a very early period, created a considerable controversy. Cressman (1942:27-31) argued that the human remains were associated with an Equus (horse) bone which he believed to be from an extinct Pleistocene species. The association of this bone with the human remains, as well as its identification as being from an extinct rather than modern species, were both questioned by Krieger (1944:354).
Although the material inventory from Catlow Cave No. 1 does not permit a detailed analysis of cultural change over time, it does provide insight into the lifeways and technology of the region's aboriginal inhabitants. In addition to a variety of projectile points, flaked stone artifacts included drills, scrapers, choppers, and a graver. Ground stone tools consisted of manos, metates, a pestle, and a possible ground-stone celt. Woven materials included baskets and mats of tule, grass, and sagebrush bark, sandals, cordage, and netting. Wooden atlatl dart shafts, arrowshafts, firedrills, and firedrill hearths were found throughout the cultural deposit. Faunal remains from the cave indicated that waterfowl, a variety of small mammals, and large mammals such as bison, mule deer, and mountain sheep were part of the occupants' diet.

The projectile points from Catlow Cave No. 1 were originally classified in terms of a system very different from that in use by Great Basin archaeologists today, but it is possible to recognize from descriptions and drawings the presence of Northern Side-notched, Pinto, Elko, Rose Spring and Desert Side-notched projectile points in the assemblage from Catlow Cave No. 1. Considered altogether, these projectile point types are found over the last 8000 years of the archaeological record at Dirty Shame Rockshelter (Aikens et al. 1977) to the east and the Connelly Caves (Bedwell 1970, 1973) to the west.

The sandals recovered from Catlow Cave No. 1 are of three types: Fort Rock, Spiral Weft, and Multiple Warp (Cressman 1942:57-61). Since Catlow Cave was excavated before the development of radiocarbon dating, the age of the various sandal types is not known for certain. Some idea of their age, however, can be gained by examining their distribution in Dirty Shame Rockshelter in the Owyhee Uplands to the east of Catlow Valley (Adovasio et al. 1977). At Dirty Shame, the Fort Rock and Spiral Weft types dominate in Zones VI and IV (no sandals were found in Zone V), which were radiocarbon dated to the period from 9500 to 6300 BP. Multiple Warp sandals were very rare during this time span. Conversely, in Zone III which dates from 6300 to 5900 BP Multiple Warp sandals were notably abundant, while Fort Rock and Spiral Weft types were very scarce. Multiple Warp sandals were the only type represented in Zone II, which dates from 2700 to 1100 BP (Adovasio et al. 1977:14). In general, then, the time ranges assigned to these sandal types are consistent with the known time spans of the projectile points found in the artifact assemblage at Catlow Cave.

The uppermost portions of the cultural deposit at Catlow Cave No. 1 contained materials that are fairly rare in the Northern Great Basin. Coiled basketry found in these levels apparently replaced the twined basketry recovered from the rest of the cultural deposit. Also found in the uppermost levels were eight sherds of plain grayware pottery. Coiled basketry is usually associated with the Northern Paiute who occupied the area in historic times. Pottery is rarely found in southeastern Oregon, but was made by Paiute peoples living elsewhere in the Great Basin.
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<td>Eastgate Series</td>
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<td>Desert Side-Notched Series</td>
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<td>Elko Series</td>
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<td>Lake Mohave Type</td>
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Figure 13.

Great Basin Projectile Points
(after Hester and Heizer 1973; Key, Table 3).
Roaring Springs Cave, located 30 miles to the north of Catlow Cave No. 1, is situated near a spring system which until recent times supported a vast marsh on the floor of Catlow Valley. As was the case at Catlow Cave No. 1, the cultural deposits in Roaring Springs Cave showed little stratigraphy. Only two major occupation levels could be distinguished: an upper level which contained basketry and a lower level which did not. The artifact assemblage from Roaring Springs Cave duplicates most of the features found in Catlow Cave No. 1. Sandals were predominantly of the Multiple Warp type, which came into use after about 6000 BP at Dirty Shame Rockshelter (Adovasio et al. 1977). Considering the time spans of the projectile point and sandal types represented in the artifact inventory from the site, an initial occupation date of around 6000 years ago seems reasonable for Roaring Springs Cave. The presence of four fragments of coiled basketry, and also portions of two leather moccasins, again appears to indicate a fairly recent occupation of the cave by Northern Paiute peoples.

An archaeological reconnaissance for indications of aboriginal occupations around upland depression lakes in the area to the northwest of Catlow Valley has recently been conducted by the Bureau of Land Management (Cannon 1978a). The areas around ten depression lakes were examined, resulting in the recording of five archaeological sites. The sites associated with the depression lakes appear to be small campsites or lithic workshops where stone tools were manufactured. Milling stones used in the processing of vegetal resources were not present at these sites. Projectile points observed at these localities include specimens representative of the Humboldt, Elko, Eastgate, and Desert Side-notched series, which collectively occur over the last 6000 years in the Northern Great Basin. Cannon (1978a:23) suggests that sites around these upland depression lakes were utilized by small groups, probably from Catlow and Guano valleys, which traveled into the uplands during the summer to hunt. Use of these upland areas apparently represents one aspect of the pattern of seasonal transhumance practiced by the aboriginal peoples of the area.

Fort Rock Basin

The most significant series of cave sites in the Northern Great Basin are found in south-central Oregon. These sites are located in the Fort Rock basin, which includes Fort Rock Valley, Christmas Valley, Silver Lake, and Paulina Marsh. The major sites, the Fort Rock Caves, the Cougar Mountain Caves, and the Connelly Caves, are located on the former shoreline of Pleistocene Fort Rock Lake, which covered most of this basin until around 13,000 years ago. According to radiocarbon dates from these caves, this area has been occupied by aboriginal peoples at least since that time.

The first excavations carried out in the Fort Rock basin were at Fort Rock Cave in 1938 (Cressman et al. 1940; Cressman 1942). A variety of artifacts was recovered, including the remains of 75 to 100 sagebrush
bark sandals which were found beneath an undisturbed layer of volcanic ash. Analysis of the volcanic ash indicated that it was ejected by the eruption of Mount Mazama at the present location of Crater Lake. Initially, it was estimated that this eruption took place between 4000 and 10,000 years ago (Cressman et al. 1940:76). With the development of radiocarbon dating, this geological event has now been firmly dated at 7000 years ago (Kittleman 1973).

A few years after the initial work at Fort Rock Cave, a relic collector brought in another sandal from the site to Cressman for identification. This specimen was subsequently submitted for radiocarbon analysis, and produced a date of 9053 ± 350 BP (Libby 1952). This early date supported Cressman's initial impression, previously unverified, that the aboriginal occupation of Fort Rock Cave was of considerable antiquity.

Fort Rock Cave was revisited in 1966 and 1967 for additional excavations (Bedwell 1970, 1973; Bedwell and Cressman 1971). As a result of this work, a radiocarbon date of 13,200 ± 720 BP was obtained from charcoal associated with cultural materials at the bottom of the cave's cultural deposit. But aside from containing the earliest known human occupation in the Great Basin, the remainder of the archaeological record from Fort Rock Cave is actually quite scanty, as the upper levels of the cultural deposit encompassing the last 3000 years of occupation were destroyed by relic collectors. Fortunately, information on the later periods of the aboriginal occupation of the area is available from a series of caves at the base of the Connley Hills to the south.

On the basis of the excavations at Fort Rock Cave and the Connley Caves, Bedwell (1973:157-160) developed a four-phase cultural sequence for the area (Figure 11). The earliest period of occupation is represented in the early cultural deposits at Fort Rock Cave and spans the period from roughly 14,000 to 11,000 BP. The artifact assemblage from this period includes unstemmed and unnotched projectile points, scrapers, gravers, a mano, and flakes exhibiting use-wear. An economy based on hunting and gathering with little specialization is suggested. Faunal remains indicate that large and small animals were hunted, but a lack of bones from waterfowl suggests that the aboriginal inhabitants of the area had not yet begun to exploit the lakeside environment (Bedwell 1973:157-158).

The succeeding occupation period from 11,000 to 8000 BP is again seen at Fort Rock Cave, but is best represented in the lowest levels of the Connley Caves. The projectile points are unstemmed, unnotched, and leaf-shaped in form. Knives, scrapers, mano fragments, twined basketry, and sandals also occur during this period. Chipped stone crescents, which are found over much of the Great Basin during this time span (Tadlock 1966; Clelowl 1968) are also present. The faunal remains indicate that a diversified hunting economy including the taking of large numbers of waterfowl and land birds was practiced. Manos indicate an increased utilization of plant resources as well.
The next period in the prehistory of the Fort Rock Basin, from 8000 to 7000 BP, was a time of transition. While some of the older artifact forms continued in use, many new forms began to appear. The most notable changes occurred in the projectile point styles, as shorter, thinner, triangular corner-notched and eared specimens were beginning to be made. Scrapers, gravers, and manos continued to be present, but the occurrence of a stone mortar and an antler tine indicate that new approaches to both food preparation and flaking technology had developed. The use of basalt and chert as materials for manufacturing artifacts significantly decreases, while the use of obsidian correspondingly increases. Faunal and floral remains indicate that the area was still quite marshy but becoming somewhat drier. The changes appearing in the artifact assemblages, together with the evidence for an increasingly arid environment, suggests that "this was a period of flux, possibly of instability and increasing movement throughout the region, brought about by increasing aridity and a decrease in the favorable lake and marsh environment" (Bedwell 1973:159).

A hiatus occurs in the archaeological record for the Fort Rock Basin between 7,000 and 5,000 BP. This was the period immediately after the eruption of Mount Mazama, which covered the area with a blanket of volcanic ash. If humans were occupying the Fort Rock Basin, they left little evidence behind. Although little is known concerning environmental conditions during this period, it has been suggested that the Great Basin was particularly hot and dry at this time (corresponding to Antev's Altithermal period), a situation which presumably would discourage human occupation of the area.

The fourth period in Fort Rock Basin prehistory, from 5000 to 3000 BP, shows a steady development based upon the cultural pattern that predated the Mount Mazama eruption. Projectile points continued to become smaller, thinner, and more finely worked. Corner-notched and side-notched points increased in proportions as unstemmed, unnotched forms declined in occurrence. A wide variety of stone tools continued to be used. Grinding implements were significantly more numerous, suggesting a greater emphasis on seed and root foods. The use of basketry, matting, and cordage also increased during this last period.

The upper levels of Fort Rock Cave and the Connelly Caves, which should have contained information on the last 3000 years, were destroyed by relic collectors, leaving no evidence in these sites of prehistoric lifeways during this period. Evidence of more recent human occupation, however, has been found at the numerous open sites scattered throughout the Fort Rock basin. This evidence occurs largely in the form of projectile points of the Eastgate, Rose Spring, Desert Side-notched, and Gunther Barbed types, which are known to date within the last 2000 years or so at other localities in the Great Basin (Hester and Heizer 1973).

A brief report describing materials from Fort Rock Cave No. 2, a small cave on the east side of the Fort Rock caldera, was prepared by Scheans (1956). Corner-notched, side-notched, and concave-base
Projectile point types were represented; scrapers, gravers, a drill, and a mano also were found. Textiles from the cave included 19 fragments of Catlow twine basketry, at least 18 pieces of matting, 16 pieces of cordage, and several fragmentary pieces of leather. Two pieces of shell were recovered, one of which is an Olivella bead and the other a fragment of mussel shell. Fauna represented at the site include antelope, bison, marmot, gopher, jackrabbit, and brush rabbit. No radiocarbon dates are available from this cave, but the artifacts recovered from it are generally similar to those found above the Mazama ash layer in nearby Fort Rock Cave, suggesting an antiquity of less than 7000 years.

The same University of Oregon field crew that worked at Fort Rock Cave and the Connelly Caves also conducted excavations in two caves at Table Rock about 20 miles southeast of Fort Rock Cave (Bedwell 1970, 1973). Table Rock No. 1 was not a habitation site, as it contained only a burial and two apparently unrelated cache pits. The burial consisted of a single partially cremated human foetus, with elaborate accoutrements consisting of matting below the body and a deer hide blanket and more matting laid over it. The body was found on its side in a semi-flexed position and with the head toward the west (Bedwell 1973:133). One cache pit contained six items of basketry and matting and a single stone knife. A piece of basketry from this cache produced a radiocarbon date of 5220 ± 210 BP (Bedwell 1973:36). The second cache pit contained only four pieces of basketry and matting (Bedwell 1970:318).

Table Rock No. 2, on the other hand, produced extensive evidence of occupation. Corner-notched (Elko series) projectile points, scrapers, knives, manos and metates were the most numerous classes of artifacts represented at the site (Bedwell 1970:319). Charcoal from the lowest floor of this cave yielded a radiocarbon date of 3060 ± 420 BP (Bedwell 1973:37).

The Cougar Mountain Caves are located on the eastern edge of the Fort Rock Valley at the base of Cougar Mountain. Cougar Mountain Cave No. 1, an important quarry-workshop site, was excavated by a relic collector and the stratigraphic distribution of artifacts within the site are thus unknown (Cowles 1960). But a relative seriation of some of the obsidian projectile points was made through the use of obsidian hydration analysis (Layton 1972). The artifact inventory from the site suggests that the occupational sequence at Cougar Mountain Cave No. 1 was quite similar to and contemporaneous with that observed at Fort Rock Cave and the Connelly Caves.

Cougar Mountain Cave No. 2, a smaller nearby cave, was also excavated by the University of Oregon field crew working in the Fort Rock basin in the late 1960s (Bedwell 1970, 1973). As previously mentioned in the section on anomalous early finds in the Great Basin, this site contained a small collection of cultural materials associated with an early radiocarbon date of 11,950 ± 350 BP
(Bedwell 1973:36). Other than this very early assemblage, however, very few artifacts were recovered from this cave (Bedwell 1970:307), and the site adds little information to the existing archaeological record in the Fort Rock basin.

The next archaeological research in the area took place in 1975 when D.L. Cole of the University of Oregon conducted an archaeological survey in eastern Fort Rock Valley under contract with the Bureau of Land Management (Cole 1975b). The purpose of the survey was to evaluate the archaeological resources on 1000 acres being considered for land exchange. Thirty-two archaeological sites were recorded in all. Eight sites were located on sand bars, fourteen were on low mounds or dunes, and the remaining ten consisted of cultural materials resting on lake bottom deposits. The most extensive sites were those on the sand bars; these are thought to have been seasonal villages or extensive campsites that were once situated along the edge of Pleistocene Fort Rock Lake. The sites on low mounds or dunes were the next largest in the area, and the lake bottom localities were the smallest sites discovered. Cole (1975b) concludes that there is enough similarity between the artifacts observed at these open sites on the floor of Fort Rock Valley and those recovered by Bedwell (1970, 1973) from Fort Rock Cave and the Cougar Mountain Caves to suggest that the aboriginal inhabitants of both localities were of the same cultural tradition.

The same year D.L. Cole also conducted an archaeological survey in the Silver Lake area under contract with the Bureau of Land Management (Cole 1975c). The purpose of this survey was to evaluate the archaeological resources located on 880 acres being considered for land exchange. Fourteen archaeological sites were recorded; one was a rockshelter while the remainder were all open sites. Although no chronological information is available, these sites were associated with terraces formed during separate stands of Pleistocene Fort Rock Lake, and collectively their occupation probably spans a period of several thousand years.

During the summer of 1976 archaeologists from the University of Oregon, under contract with the Bonneville Power Administration, conducted an archaeological survey along the route of the Celilo-Sylmar Transmission Line (Schoenberg 1976). This survey passed through the Fort Rock-Christmas Lake Basin and recorded two sites in the Fossil Lake-Mound Springs area. Both sites were open lithic scatters. A follow-up study involving test excavations at certain sites to be impacted by construction of the transmission line was conducted by archaeologists from Oregon State University. The report on the results of these excavations has not yet been completed.

In 1977 an archaeological survey (Class II-Field Sampling Inventory) of selected areas of Christmas Valley was conducted by employees of the Bureau of Land Management (Gibson and Spencer 1977). The purpose of the survey was to identify and evaluate archaeological
sites within areas considered for closure to the public. In all, 22 sites were recorded, including large open midden, lithic workshops, and flake scatters of varying densities. A followup to this survey, in which cultural materials were recovered in association with the remains of an extinct species of camel, was conducted by archaeologists from the University of Oregon, under contract with the Bureau of Land Management (Minor and Spencer 1977). This discovery was previously described in the section of this overview entitled "Paleoindian Occupation in the Great Basin".

Additional early finds in the Christmas Valley area include Windust projectile points (Fagan and Sage 1974). This type of projectile point is most commonly found on the Columbia Plateau, where it has been assigned a time range from 7500 to 10,000 BP (Rice 1972:32). Bedwell (1973:161) also reports finding Windust points at Fort Rock Cave, in cultural deposits dated between 8000 and 11,000 BP.

**Summer Lake Basin**

Immediately south of the Fort Rock Basin lies the Summer Lake Basin, which contains Summer Lake, Chewaucan Marsh, and Lake Abert. Archaeological evidence from the many surface sites and caves suggests that human occupation of the lake, marsh, and upland environments in this area was ancient and widespread.

The first archaeological research in the Summer Lake Basin involved the recording of petroglyphs and pictographs by Cressman during his statewide study (Cressman 1937). The most important sites are located at Picture Rock Pass and along the base of the Abert Rim (Cressman 1937:26-27). Both of these localities have been placed on the National Register of Historic Places.

The first archaeological excavations in the Summer Lake basin were conducted in 1938 and 1939 in three closely adjacent caves at Paisley Five Mile Point, southeast of Summer Lake (Cressman et al. 1940; Cressman 1942). At Paisley Cave No. 1, the shallow cultural deposits consisted of two major strata. The earliest stratum, situated below a layer of volcanic ash attributed to the eruption of Mount Mazama, was clearly laid down more than 7000 years ago. This deposit contained a fragment from a large projectile point, a chipped-stone crescent, scrapers, several obsidian flakes exhibiting use-wear, a piece of a sagebrush bark mat, a basketry fragment, and a possible fragment from a sagebrush bark sandal.

Above the volcanic ash layer, artifacts found included small corner-notched projectile points, scrapers, a mano and metate, one complete and several fragmentary sandals, twined basketry fragments, a portion of a wooden firedrill and a possible wooden dart foreshaft. Since the cave was excavated before the development of radiocarbon dating, the exact age of the cultural deposits at the site is unknown. Judging from the presence of Mazama ash, as well as the
types of artifacts recovered, it is apparent that the cave was inhabited prior to 7000 years ago, and the occupation probably continued until at least 2000 BP.

The cultural deposits in Paisley Cave No. 2 were partially disturbed, but produced essentially the same stratigraphic and cultural record as Cave No. 1. Tule sandals, a bone awl, the butt end of an atlatl dart foreshaft, and some stone flakes were recovered from the site. The disturbed state of the cultural deposits and the general absence of diagnostic artifacts make it difficult to gain much insight into the lifeways of the aboriginal peoples inhabiting this cave.

Paisley Cave No. 3 contains the earliest evidence for the presence of aboriginal peoples in the Summer Lake basin. Below a layer of Mazama ash some crudely-shaped obsidian bifaces, scrapers, and flakes were found in association with extinct Pleistocene camel and horse bones (Cressman 1942:93-94, 1966; cf. Hester 1973:61). This association has not been directly dated, although some years later a radiocarbon date of 7610 ± 120 BP (Preston et al. 1955) was obtained from charcoal situated above the bones and slightly below the Mazama ash layer, indicating that the deposition of the bones at least took place prior to that time. No artifacts were recovered from above the volcanic ash layer at Paisley Cave No. 3; only charcoal lenses from temporary campfires were present as evidence that aboriginal peoples once camped there.

West of Chewaucan Marsh in an upland meadow named Coffeepot Flat, some 50 archaeological sites have been recorded (Cole 1969; Aikens and Minor 1977). Controlled surface collections were made at six sites selected from the total survey sample as representing the overall range of size and locational variability. A fairly continuous use of the area by aboriginal peoples from around 8000 years ago to historic times is suggested by the presence of Black Rock concave-base, Humboldt, Northern Side-notched, Pinto, Elko, Rose Spring, and Gunther Barbed projectile points. The close proximity of Coffeepot Flat and the Chewaucan Marsh, and the obvious complementarity of their natural resources, suggest that the aboriginal peoples of the Summer Lake basin would almost certainly have exploited both localities for hunting and gathering during favorable seasons. A pattern of seasonal desert-upland transhumance is suggested as having been practiced by the aboriginal inhabitants of the Summer Lake basin, beginning perhaps as early as 8000 BP and continuing into historic times (Aikens and Minor 1977:28).

Additional archaeological research in upland areas around the Summer Lake basin has recently been conducted by the Bureau of Land Management (Cannon 1978b). This research involved a reconnaissance for evidence of aboriginal utilization of the areas around upland depression lakes in the mountains between Christmas Valley and Summer Lake. The areas around 21 depression lakes were examined, resulting in the recording of 11 archaeological sites. As was the case with the aboriginal utilization of the upland depression lakes above Catlow and Guano valleys (Cannon 1978a), the sites associated with lakes in this
area also appear to be small campsites or lithic workshops where stone
tools were manufactured. In contrast to the situation at the upland
sites above Catlow and Guano valleys, however, ground stone artifacts
were fairly common at the sites in the mountains between Christmas
Valley and Summer Lake. Cannon (1978b:25) suggests that these uplands
were probably utilized for hunting, gathering of vegetal resources,
and acquisition of lithic materials for tool manufacture by
aboriginal groups who moved into the area during the warmer months of
the year.

Lake Abert to the southeast of the Chewaucan Marsh is now highly
alkaline and saline, but prominent beach terraces at several different
elevations along the eastern margin attest to a time when the lake
level was significantly higher, and the lake probably fresher, than
today. The uppermost beach terraces were formed during the
Pleistocene when Lake Abert was joined with Summer Lake to form pluvial
Lake Chewaucan (Baldwin 1976:124). The lower beach terraces appear to
represent more recent lake stands, and the numerous petroglyphs and
pictographs found in this area clearly indicate the former presence of
aboriginal peoples who lived along the lakeshore (Cressman 1937:27).

Several surveys in the right-of-way of Highway 395 along the east
shore of Lake Abert were carried out from 1975 to 1977 by archaeologists
from the Museum of Natural History at the University of Oregon, under
contract with the Highway Division of the Oregon State Department of
Transportation (Cole 1975d; Cole and Pettigrew 1976; Pettigrew and
at two sites within the right-of-way of Highway 395 has been completed
(Cole 1976). A report on the results of test excavations at additional
sites along the east shore of Lake Abert is currently in preparation.
In addition, an archaeological survey of four localities on the west
shore of Lake Abert where seeps or springs occur has been conducted by
the Bureau of Land Management (Cannon 1977).

The results of this research indicate that the Lake Abert
shoreline contains a very high density of archaeological sites.
Several sites with pithouse depressions, an unusual feature in the
Great Basin, are found along the edges of the lake. Test excavations
at some of these sites produced evidence that the lakeshore was
intensively occupied during the period from 5000 to 1000 years ago.
During this time the lake may have been larger, and the water fresher
than at present, and the aboriginal peoples living along the shore
appear to have been more sedentary than the Northern Paiute who
occupied the region in historic times. In view of the high density of
archaeological sites in this area, and because information on
aboriginal house structures is severely lacking in the present
archaeological record from the Northern Great Basin, the eastern shore
of Lake Abert has recently been placed on the National Register of
Historic Places as an Archaeological District.
Warner Valley

Warner Valley is situated east of the Warner mountains and west of Hart Mountain, just north of the junction between the Oregon, Nevada, and California borders. Once inundated by a sizeable Pleistocene lake, the floor of the valley now contains a series of small lakes and extensive marshes.

The first archaeological research in Warner Valley was conducted by Cressman as part of his early studies in the Northern Great Basin. Plush Cave, a small site located on the east side of Warner Valley near the town of the same name, was briefly investigated in 1938. The cave had been plundered by relic collectors prior to the investigation, but several artifacts recovered from the disturbed deposits were described by Cressman (1944). These artifacts included an atlatl, the butt end of an atlatl dart, a finely-worked chipped stone biface, and 11 fragments of Catlow Twined basketry. The disturbed condition of the cultural deposits prevented worthwhile excavations, and since the investigation took place before the development of radiocarbon dating, there are no direct dates available for the occupation of the cave.

After Cressman's initial work in the area, there was a hiatus in archaeological research in the Warner Valley of almost 30 years. This period ended when Weide (1968) conducted an archaeological survey in the northern end of the Warner Valley as part of an effort to define the nature of prehistoric human adaptation to the lake and marsh environments found in the area. The locations of the archaeological sites in this area, together with the distribution of the various types of artifacts recovered from them, suggested to Weide that four prehistoric activity patterns were represented in the Warner Valley (Table 4).

Although the same general settlement pattern appears to have been practiced as early as 7000 years ago, Weide (1968) proposed a three-phase cultural sequence (Figure 11) and suggested that some shifts in the utilization of microenvironments occurred over time. Weide's chronology for Warner Valley is based entirely on cross dating of temporally diagnostic projectile points. The Early Period, beginning sometime before 7000 and continuing to 3500 BP, was characterized by Cascade, Northern Side-notched, Humboldt, and Pinto series projectile points. The majority of the points from the Early Period were found at upland sites, with the remainder found on the valley floor. The Middle Period dates between 3500 and 1500 BP and was characterized by Elko series projectile points. These points were less common in the uplands and most frequent on the valley floor. The Late Period, from 1500 BP to historic times, was distinguished by the presence of Eastgate, Cottonwood, Desert Side-notched, and Rose Spring series projectile points. These points tend to occur more frequently in the uplands and in places previously unoccupied during the Early and Middle Periods.
### TABLE 4.

**MAJOR ABORIGINAL ACTIVITY PATTERNS FOR THE WARNER VALLEY**  
*(AFTER WEIDE 1968)*

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
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| Type 1. | Winter villages of some size and permanence of location housed communities winter after winter. Winter villages form the primary multi-family community, an open community with much similarity of composition from year to year.  
**Settlements:** situated on permanent water; the mouths of major streams and favored spots on Crump Lake.  
**Size:** 10-20 families. |
| Type 2. | Spring-summer groups of one or several families moving in independence of others.  
**Settlements:** Best exposed in the scattered camps of the dune and slough topography. Similar activities also in the Crump Lake-Hart Lake area, carried on from winter camp bases in part.  
**Size:** 4-10 people. |
| Type 3. | Postulated on the basis of virtual absence of food grinding tools in the upland; superimposed on Type 2, hunting parties of men from family groups in the valley traveling to uplands to hunt.  
**Settlements:** camps at edge of collapse lakes, springs, knolls overlooking grassy swales along streams.  
**Size:** 4-5 men (?) |
| Type 4. | Quarry-workshop sites located at the sources of obsidian and other workable lithic materials; lithic manufacturing activities primarily took place at these sites, which were visited individually or by small groups of men (?) from types 1-3. |
The spatial distribution of different projectile point styles over the three periods has important implications for understanding the lifeways of the prehistoric inhabitants of Warner Valley. On the basis of this evidence, Weide suggested that human activity may have been concentrated in the uplands during the Early Period, with a major shift during the Middle Period to the valley floor, although the uplands still continued in regular use. During the Late Period use of the valley floor apparently declined. The uplands may have again received relatively more frequent visitation, as in the Early Period, with the important difference that a number of previously unoccupied sites were abandoned, and new activity loci developed. Weide speculated that these shifts in settlement may have been related to fluctuations in climatic conditions, since the time of the heaviest use of the valley floor apparently followed the end of the Altithermal interval, when increased moisture might have expanded favorable lakeside habitats.

Weide (1968) further suggested that the aboriginal lifeway in Warner Valley during the Middle Period was similar to that practiced ethnographically by the Klamath Indians, who at the time of historic contact occupied the mountain valleys and lakes in the area roughly 100 miles to the west. Since the Northern Paiute who occupied Warner Valley in historic times are thought on linguistic grounds to be relatively recent arrivals in the Northern Great Basin (see the section entitled "The Numic Expansion"), Weide concluded her study by suggesting that the shift in settlement patterns noted between the Middle and Late Periods might indicate the withdrawal of earlier peoples with a lacustrine oriented adaptation (possibly ancestors of the Klamath-Modox) as a result of declining environmental conditions, and their replacement by the wider-ranging and less specialized Northern Paiute.

More recently, Weide (1974) has defined a subsistence network in the north Warner Valley based on the distribution of a particular lithic material, Flint Hills basalt, at certain sites in the area. It was found that sites where this basalt is present tend to cluster in the Rabbit Basin, the dune and slough area of north Warner Valley, and the adjacent portion of Poker Jim Upland. Sites adjacent to Hart Lake and in south Warner Valley contain virtually no Flint Hills basalt.

The north Warner Valley subsistence network includes an area of about 485 square miles and is considered the core of a prehistoric band territory. If it is accepted that Flint Hills basalt is an indicator of the sites utilized by a particular local band, then there is direct evidence for the exploitation in prehistoric times of adjoining but contrasting environmental zones: the marshes and sloughs of the valley floor and the open grassy reaches of the nearby uplands.

Judging from the dates assigned to projectile points found at these sites, as well as from obsidian hydration measurements, the north Warner Valley subsistence network appears to have functioned during the period from roughly 3200 to 1400 BP. The absence of late style projectile points at sites where Flint Hills basalt was found suggests that this
settlement pattern was not the same as that of the Northern Paiute who inhabited the valley at the time of historic contact, and that a different pattern of settlement and land use may be found for them.

In the early 1970s John Fagan of the University of Oregon began research at various spring sites in southeastern Oregon (see the section entitled "Climate and Culture in the Great Basin"). The purpose of his study was to test the hypothesis advanced by Bedwell (1970:217) that during the Altithermal interval (circa 7000 to 4500 BP) the focus of aboriginal occupation in the Great Basin shifted from lacustrine environments in the lower elevations to the higher elevations in the adjacent uplands. Fagan (1973, 1974) conducted surface collections at 34 localities and undertook small-scale excavations at 12 sites, including 11 associated with springs and one situated on a lakeshore. Four of the 12 excavated sites were in the Warner Valley area. On the basis of the presence of temporally diagnostic projectile points, the occupations of the four sites in the Warner Valley area were assigned to the following periods (Fagan 1974:98): Twin Springs, 150 to 3000 BP; Anthony Mound, 150 to 7000 BP; Anthony Spring, 150 to 11,000 BP; and Spearpoint Spring, 150 to 3000 BP and 5000 to 7000 BP. Spearpoint Springs was thus the only one of the sites excavated in the Warner Valley area at which a hiatus occurred at a time corresponding with the time span postulated for the Altithermal interval. The results of the study as a whole suggested that 10 of the 12 excavated sites were in fact occupied during the period from 4500 to 7000 years ago, and Fagan (1974:105) thus concluded that there was no general occupational hiatus in the area during the time span generally assigned to the Altithermal interval.

In the years since Weide's (1968) research on prehistoric land use and Fagan's (1973, 1974) study of the presumed effects of the Altithermal climatic interval on the demographic distribution of prehistoric peoples, a number of smaller-scale archaeological research projects have been carried out in Warner Valley. Most of these have involved surveys for cultural resources on federally controlled lands that might be impacted by various construction or development projects.

The first of these projects was a survey for archaeological sites on public lands that were under consideration as potential areas to be leased for the development of geothermal power. This project was sponsored by the Bureau of Land Management, and involved the recording of archaeological sites in both the Susanville and Lakeview Districts (Wood 1974). Twenty-five archaeological sites located in south Warner Valley were recorded during the project; all but 2 were petroglyph sites. As first indicated in Cressman's pioneering study (Cressman 1937:27-29), the Warner Valley area contains an abundance of prehistoric rock art. One of these sites, the Greaser Petroglyphs, has been placed on the National Register of Historic Places.
A second survey for archaeological sites on lands considered for geothermal leasing in the south Warner Valley was conducted by the University of Oregon under contract with the Bureau of Land Management (Mack 1975a). The research design of this project was based on the hypothesis that south Warner Valley would have a settlement and land use pattern similar to that delineated by Weide (1968) in the north Warner Valley. The survey of approximately seven and a half square miles resulted in the recording of 14 sites. Four sites were located in dune and slough topography on the valley floor. These were very similar to the dune and slough sites described by Weide in the north Warner Valley. The other ten sites recorded during the survey were located in the uplands, and they also fit the description of upland sites situated in the north Warner Valley. The artifact inventories from this second group of sites consisted primarily of used flakes, scrapers, and large bifaces fragments. There was a total absence of grinding tools and only a few heavy basalt tools. The results of this survey, then, suggest that the settlement pattern delineated by Weide (1968) for north Warner Valley may, in general, be applicable to the entire valley (Mack 1975a:20).

A survey for archaeological resources in the Competitive Crump Known Geothermal Resource Area (KGRA) in south Warner Valley was conducted by the Bureau of Land Management (Cannon 1975). The purpose of the project also was to evaluate the significance of archaeological sites on lands being considered for leasing to developers of geothermal energy. Forty-four sites were recorded during the project. These occurred primarily in two geographic zones: valley lowlands and adjacent uplands. Sites within the valley lowlands generally fit Weide's (1968) description of winter villages and camps. Sites in the uplands generally fit Weide's (1968) description of hunting and gathering camps and special activity sites. The latter localities were generally smaller in area, and were usually located near springs, streams, or game trails. The results of this survey of the Competitive Crump KGRA generally support Mack's (1975a:20) conclusion that the settlement pattern delineated by Weide (1968) for north Warner Valley is generally applicable for south Warner Valley as well.

An archaeological survey on lands in south Warner Valley that were being considered for exchange was conducted by D.L. Cole of the University of Oregon under contract with the Bureau of Land Management (1975e). Six sites were recorded, all of which were situated in dune topography along an old lake strand. Judging from the terrain in which the sites were located and from the artifacts observed during the survey, Cole (1975a:25) suggested that these sites were occupied by aboriginal peoples within the last 1000 years.

The previously mentioned survey for cultural resources along the route of Pacific Power and Light Company's 500 KV Transmission Line recorded nine sites in the Warner Valley area (Cole 1975a:21-28). Five were located in the uplands to the west of the valley, and four were found on the valley floor. With the exception of one rockshelter, all the localities recorded were open sites. A subsequent survey along rerouted sections of this transmission line corridor recorded seven archaeological sites in the area between Warner and Guano valleys.
(Cole 1977). Five of these were open flake scatters or middens; the remaining two were petroglyph sites.

The previously mentioned survey for cultural resources along the route of the Bonneville Power Administration's Celilo-Sylmar Transmission Line recorded 31 archaeological sites in the upland areas to the west of Warner Valley (Schoenberg 1976). All were open flake scatters of varying densities. The follow-up study by archaeologists from Oregon State University which involved test excavations at sites that might be impacted by construction of the transmission line has not yet been completed.

A survey for cultural resources in upland areas above north Warner Valley was conducted by employees of the Bureau of Land Management (Palmer and Yates 1977). The purpose of the survey was to evaluate cultural resources located on three large tracts of land being considered for exchange. Approximately 20 archaeological sites were recorded in each of the three tracts. Judging from the temporally diagnostic projectile points observed at these sites, the most intensive use of these upland areas took place within the last 2000 years.

An archaeological reconnaissance of seismic lines and access roads in the upland immediately adjacent to May Lake in south Warner Valley was conducted by the Archaeological-Environmental Research Corporation under contract with the Chevron Resource Company (Hauck and Weder 1978). A total of 33 archaeological sites was recorded in the area. Site types represented included lithic scatters of varying sizes, small temporary campsites, butchering localities, hunting blinds, an extensive camp, and an obsidian quarry. Judging from the distribution of temporally diagnostic projectile points, the uplands around May Lake appear to have been utilized by aboriginal peoples for roughly the last 8000 years. The hunting, butchering, and lithic scatter sites all fit the upland land use pattern delineated by Weide (1968). Especially notable was the recording of sites with stone hunting blinds; these features had not been previously reported for this area.

Goose Lake Basin

The Goose Lake area is yet another example of a large basin that once contained a Pleistocene lake greater in size than the contemporary Goose Lake. Although very little archaeological research has so far been conducted in the Goose Lake Basin, the few projects that have been undertaken make it clear that the area contains abundant evidence of occupation during prehistoric times.

A survey for cultural resources along the route of Pacific Power and Light Company's 500 KV Transmission Line from Malin, Oregon, to Midpoint, Idaho, resulted in the recording of 19 archaeological sites in the area around Goose Lake (Cole 1975a:11-20). Site types represented included quarries, manufacturing sites, camps, open middens and possibly some semi-permanent village sites.
An archaeological survey intended to identify cultural resources that might be impacted by a proposed reservoir project was conducted in the Thomas Creek watershed northwest of Lakeview (Decker 1975). A total of 20 sites was found, 3 of which were tested by small-scale excavations. All are open sites, and all had already been thoroughly picked over by relic collectors, effectively destroying most of their potential for contributing information on the prehistoric cultures of the area.

Archaeological research has also been conducted for several seasons at various localities around the California portion of the Goose Lake Basin. The results of this work have not yet been formally reported, but investigations at two sites by archaeologists from the University of California at Davis indicate that aboriginal peoples began occupying the shores of Goose Lake several thousand years ago (Richard E. Hughes, personal communication).

In 1975 test excavations were conducted at the Franklin Creek Site (CA-Mod-305), which is located on an ancient alluvial fan near the base of the Warner Mountain Range in the southeast portion of the Goose Lake basin. Preliminary analysis of the materials recovered suggests that this site was occupied on a semipermanent basis during the period from 6000 to 500 BP. In 1976 and 1977 excavations were carried out at another large occupation site (CA-Mod-301) on the southeast shore of Goose Lake. Several important features were exposed, including a cache of obsidian bifaces, and projectile points and other artifacts were recovered in good stratigraphic order. Occupation of this site also appears to span the period from 6000 years ago until late prehistoric times.

Klamath Basin

The Klamath Basin is located in an environment transitional between the deserts of the Great Basin and the forested slopes of the Cascade Range in southeast Oregon and northeast California. This is the westernmost fault-block valley within the Northern Great Basin system. Upper Klamath Lake dominates the northern, more heavily wooded end of the basin. North and east of it is the vast Klamath Marsh, and the Sprague-Williamson River system, which drain into the marsh and the lake. Lower Klamath Lake and Tule Lake occupy the more open, less forested, southern end of the basin. In historic times, the Klamath Indians were concentrated in the northern part of the basin, and the closely related Modoc occupied the southern part, extending as far east as Goose Lake, on the California-Oregon border.

The pioneering research of Luther S. Cressman of the University of Oregon in the Lower Klamath Lake basin in 1940 resulted in the initial description of two localities where early cultural materials were found. The earlier of these, located near the Narrows of Lower Klamath Lake, consisted of long fossilized bone pieces with beveled edges and sharp points, large heavy leaf-shaped and side-notched projectile points, and manos. Also in this locality, an obsidian knife and a crude scraper were found in association with bone and tusk fragments from a mastodon.
On the basis of this association, Cressman assigned this complex of artifacts to the Early Postpluvial, dating sometime between 10,000 and 7,500 years ago (Cressman 1940:305; 1942:102; 1943:239).

Early cultural materials were also recovered in the Lairds Bay region of Lower Klamath Lake. These artifacts included large and medium-size leaf-shaped, side-notched, and corner-notched obsidian projectile points, bone awls, a perforated stone disk, and manos. The association of these materials with ancient peat beds in the lake bottom led Antevs (1940:309), who collaborated with Cressman in this research, to suggest they date sometime before the lake filled again during the Little Pluvial, around 4,000 years ago (also see Cressman 1940:305).

Also in conjunction with Cressman's research, materials from two caves at Petroglyph Point near the southern shore of Tule Lake were analyzed by Heizer (1942:123-127). The artifacts included such items as Pacific Coast shell beads, small obsidian projectile points, and tubular pipes. A late prehistoric-early historic occupation, probably by Modoc Indians, was suggested for the caves.

The next archaeological research in the Klamath Basin consisted of a survey of Lava Beds National Monument (Squire and Grosscup 1952). The survey recorded 163 sites, which can be divided into four general types: (1) cave and rockshelter sites; (2) surface sites; (3) petroglyph and pictograph sites; and (4) burial and cremation sites. Lava tube caves and rockshelters were fairly evenly distributed within the area of the National Monument. Most of the surface sites were clustered around the southern shore of Tule Lake, although some were recorded in the interior portion of the Lava Beds; most of the latter were small surface scatters of lithic artifacts presumably representing temporary camps. Petroglyphs and pictographs were found in caves and rockshelters; these sites tended to be located on the periphery, as opposed to the interior, of the Lava Beds. The burial and cremation sites were distributed within the Lava Beds in no apparent pattern.

Squire (1956) briefly reported on the results of additional survey work in the vicinity of Lava Beds National Monument, and excavations in three rockshelters in Tule Lake Basin and two open sites on Lower Klamath Lake. All of the excavated sites apparently date from the late prehistoric - early historic period, and probably relate to the Modoc Indians inhabiting the area in historic times. The distribution of archaeological sites in the area documents the fact that the late prehistoric peoples followed a way of life primarily oriented toward resources of the lake basin.

Another survey in the southern portion of the Klamath Basin was conducted by Swartz (1961), under contract with the National Park Service, along the southern shore of Tule Lake. The sites recorded can be divided into several types: (1) camps; (2) milling stations; (3) chipping stations; (4) rockshelters; (5) graves and cremations;
(6) cairns; (7) petroglyphs; and (8) historic villages and Modoc War fortifications. Of these sites, four rockshelters were excavated, three of which contained graves (Swartz 1964:17, 20). The artifacts recovered during these excavations included a pipe fragment and several glass trade beads, suggesting that occupation of these rockshelters occurred fairly late in time.

In the Medicine Lake Highlands southwest of Lava Beds National Monument, 768 archaeological sites were recorded during a survey by Hardesty and Fox (1974). These sites were divided into five functional types: (1) semi-permanent camps; (2) chipping stations; (3) hunting blinds; (4) quarries; and (5) fortifications. Functional variability implied by these sites was partially correlated with different local microenvironments, as determined by the distribution of water, food, and obsidian. Projectile points collected during the survey indicated that some of the sites may have been occupied as early as 6,000 years ago, although the bulk of the evidence indicates that most of the sites were occupied much more recently. Deep pumice deposits from volcanic eruptions in the Medicine Lake Highlands, radiocarbon dated between 1,100 and 1,600 years ago, cover much of the area and may have buried most of the earlier sites. The range of activities recognized from the analysis of the survey data are similar to those known for the ethnographic Modoc, suggesting that their basic way of life has considerable time depth in the area.

The most important archaeological site so far excavated in the Klamath Basin was Kawumkan Springs Midden, located on the Sprague River in the northern part of the basin (Cressman 1956). The midden contained 21 housepit depressions, and was known to have been occupied by Klamath Indians as recently as the 1860s. The results of the excavations indicated that the culture pattern of the historic Klamath Indians extends back in time several thousand years. The primary artifact classes represented at the site included items associated with hunting, hide and wood working, root and seed processing, and fishing. While artifacts of all kinds became more numerous from the bottom to the top of the midden, the relative frequency of specimens in each artifact class remained remarkably stable over time.

The subsistence pattern observed in the archaeological record at Kawumkan Springs was shown by Cressman (1956:453 and Table 10) to compare very closely to that of the ethnographic Klamath culture. The relative proportions of manos to metates and mortars to pestles remained approximately equivalent throughout the occupation, documenting the age and importance of seed and root-processing activities at the site. The bones of large mammals and birds together made up about one-fourth of the faunal collections, with rodent and fish bones comprising the remaining three-fourths of the assemblage. River mussel shells were abundant throughout the deposits. The only noteworthy change observed in the distribution of faunal remains was an increase in the proportion of fish bones in comparison to rodent bones in the upper levels of the midden.
The first occupation of Kawumkan Springs Midden was originally estimated by Cressman (1956) to have begun by at least 7500 years ago, and possibly as early as 10,000 years ago. This interpretation was based primarily on the occurrence there of several leaf-shaped projectile points similar to specimens found under a layer of Mazama pumice at Odell Lake (Cressman 1948) in the Cascade Range to the north. As previously mentioned, the eruption of Mount Mazama is now known to have taken place around 7000 years ago (Kittleman 1973). A subsequent obsidian hydration analysis of projectile points from the site has revised downward the original age estimate for Kawumkan Springs Midden, showing that significant occupation of the excavated portions probably began about 5000 years ago (Aikens and Minor 1978). The results of the obsidian hydration study suggest that the occupation began late in the temporal spans of the earlier projectile point types, rather than early as previously assumed. A long, relatively continuous occupation beginning around 5000 BP and continuing to historic times was indicated for the site.

The results of excavations in Medicine Rock Cave on the Sprague River in the northern Klamath Basin were also reported by Cressman (1956:398-403). The cave was used intermittently from an unknown date before the eruption of Mount Mazama 7,000 years ago until historic times. Chipped stone items in the artifact assemblage included projectile points, scrapers, knives, drills, and gravers. Because of the dampness of the cave, perishable textile materials were not preserved. Bone and antler artifacts included an antler flaker, a fish gorge, a pendant, and a needle. Fish bones and a mussel shell dominated the faunal remains from the cave, and Cressman (1956:402) suggests that use of the cave was largely limited to the seasons of the fish runs up the Sprague River.

An important archaeological site located on the shores of Tule Lake in the southern Klamath Basin was excavated by Swartz (1964). The Peninsula Bay Site is an open midden some 200 meters across, which contained more than forty housepit depressions. The site was apparently the historic Modoc settlement of Gumbat, which is described as a large winter village (Ray 1963:207-208). This identification is supported by the fact that an intensive archaeological survey in the area found no other extensive village site that would fit the pattern of a Modoc winter settlement (Swartz 1964:109).

A reinterpretation of the data obtained from the excavations at the Peninsula Bay Site has recently been made by Aikens (n.d.). Excavations in the midden deposit and eight of the housepits led Swartz (1964) to conclude that three cultural components were represented at the site. Component I was characterized by artifacts found in the lower levels of the midden, including large lanceolate, leaf-shaped, side-notched, and bipo [partially obscured]. Component II was defined on the basis of the artifacts found in the upper levels of the midden. The quantity of artifacts and the range of types was greater in the upper levels of the midden than in Component I. Some of the projectile
points characteristic of the early levels continued to be found in Component II, notably large lanceolate, leaf-shaped, and bipoint forms. The other points characteristic of Component II are small notched and stemmed forms, and it is mainly the presence of these small points in the upper levels of the midden that distinguish Component II from Component I. Component III was characterized by the content of the eight excavated housepits. Virtually all of the kinds of projectile points found in the midden were also recovered in the housepits, but the housepits also contained a number of types not found in the midden. These included several varieties of small triangular stemmed points, many of which can be loosely assigned to the type known as Gunther Island Barbed.

Because of their good preservation and the numerous small projectile points found in their fill, Swartz (1964) assigned all the housepits at the Peninsula Bay Site to the late prehistoric period. The fact that some of the housepits contained significant numbers of large lanceolate, leaf-shaped and side-notched projectile points, however, suggests that the occupation of the housepits actually spanned a much longer time range (Aikens n.d.). Burned timbers from three of the largest housepits excavated suggest that they may have been comparable to the large planked winter earth lodges ethnographically known for the Klamath Indians. Smaller housepit depressions at the site may be equatable with the less substantial branch-framed dome-shaped earth lodge also known from ethnographic sources to have been built by the inhabitants of the region. Of the 42 housepits at the Peninsula Bay Site, approximately one-fourth fit in the size range of the planked earth lodges, while the remaining three-quarters fit in the range of the dome structures (Swartz 1964).

From 1958 to 1963 the University of Oregon carried out archaeological field research in several localities along the Klamath River in areas which were to be affected by the construction of powerhouse and dam facilities. These studies were conducted under contract with the California-Oregon Power Company, which is now a part of the Pacific Power and Light Company. The first phase of this research, called the Big Bend Project, took place in 1958 (Newman and Cressman 1959). Two rockshelters and an open site were tested. Most of the cultural materials recovered were comparable to those found at Kawumkan Springs Midden (Cressman 1956). A notable exception was the finding of three fragments of pottery, which had not been previously reported in the area.

The second study conducted by the University of Oregon along the Klamath River was called the Iron Gate Project. The results of excavations at one of three village sites found in the reservoir area of the Iron Gate Dam were reported by Leonhardy (1967). The Iron Gate Site was a late prehistoric village situated on a terrace which overlooks the Klamath River. The site contained 13 housepit depressions. One housepit was completely excavated, two partially excavated, and a fourth was tested. The houses exposed at this site were circular,
bark-covered structures. They are unlike the rectangular plank structures of the Shasta Indians who inhabited the area in historic times; they seem to be the most comparable to house forms with a wide distribution to the south in northern California (Leonhardy 1967:30).

In contrast, the artifacts from the Iron Gate Site were more comparable to those from the Klamath Lakes region and the Columbia Plateau than to those from northern California (Leonhardy 1967:40). On the basis of two radiocarbon dates, the Iron Gate Site appears to have been occupied sometime between 400 and 600 years ago. Because of fundamental differences in house types it does not appear that this was a Shasta village. Leonhardy (1967:37-38) suggests that either another aboriginal group was inhabiting the area at the time of the site's occupation, or that the material remains at the Iron Gate Site represent an earlier phase in the development of historic Shasta culture.

The third research project carried out by the University of Oregon along the Klamath River was the Salt Caves Project, the purpose of which was to locate and examine archaeological sites located within the Salt Cave Dam reservoir area. The first phase of the project was an archaeological survey in 1961 which recorded 12 sites, three of which were also tested (Cressman and Wells 1962). During the 1962 field season excavations continued at two of the three sites tested the year before (Cressman and Olien 1963). An early radiocarbon date of 6065 ± 400 BP was obtained from a major village site featuring 19 housepit depressions.

During the third season of the Salt Caves Project excavations were continued at this extensive site. The housepits uncovered were oval to circular depressions, and the archaeological evidence suggests they were covered with slabs of bark. A radiocarbon date of 540 ± 120 BP was obtained from charcoal recovered in one of these housepits. Probably the most notable results of the excavations during the Salt Caves Project was the recovery of a significant collection of pottery, which as mentioned previously, is not commonly found in this area. A doctoral dissertation based on the results of the Salt Caves Project is currently being prepared by Joanne Mack of the University of Oregon.

The Nightfire Island Site is another important archaeological site excavated by archaeologists from the University of Oregon in the 1960s. This site is an open midden located on the southeastern shore of Lower Klamath Lake. The abundant material recovered from this site has never been fully reported, but a large number of radiocarbon and obsidian hydration dates firmly document an occupation of the site spanning the last 6000 years. The five cultural phases distinguished in the archaeological record at the site have been concisely summarized by Grayson (1976:76-77):
Phase 1 is defined by the presence of leaf-shaped and large side-notched projectile points and dates between 6000 and 5000 BP.

Phase 2 is defined by the presence of corner- and side-notched projectile points, cylindrical mullers, and antler wedges, and dates between 5000 and 4200 BP.

Phase 3 is defined by an increase in relative frequency of corner-notched over side-notched projectile points, and dates between 4200 and 2000 BP.

Phase 4 is defined by the presence of small stemmed and corner-notched projectile points, and dates between 2000 and 1000 BP.

Phase 5 is defined by the appearance of Gunther Barbed projectile points, and is estimated to date between 1000 and 600 BP.

Analysis of over 7000 identifiable bones of birds and mammals from the site indicates that exploitation of the animal resources of the lake and marsh did not vary significantly throughout the 6000 years of the Nightfire Island occupation (Grayson 1973, 1976). Throughout this time a strong cultural preference for birds which feed by diving in relatively deep water is indicated, despite the fact that in modern censuses non-diving birds outnumber divers by over 20 to 1 in the Lower Klamath Basin. Of the mammals eaten by the inhabitants of the Nightfire Island Site, only bison and dog were not eaten by the historic Modoc Indians who occupied the area in historic times. Bison are not known to have been in the area in historic times, and the eating of dogs was strongly prohibited among the Modoc.

The strong cultural preference of the inhabitants of Nightfire Island for waterfowl which feed by diving in relatively deep water provided Grayson (1976) with the basis for making inferences about fluctuations in the level of Lower Klamath Lake over the last 6000 years (see the section entitled "Culture and Climate in the Great Basin"). These birds were the dominant form of waterfowl in the faunal collections from every cultural phase, but were most abundant between 6000 and 4200 BP. This situation is interpreted by Grayson (1976) as indicating that deep-water inhabitant in the vicinity of Nightfire Island was more extensive prior to 4200 BP than it was afterwards. This period of apparent high water appears to be contemporaneous with the Altithermal interval as originally defined by Antevs (1948, 1955), however, and contradicts earlier interpretations by Cressman (1942, 1956) which suggested dessication of the area, and perhaps the complete drying of Lower Klamath Lake, during that time.

Three smaller-scale archaeological research projects have recently been conducted in the Klamath Basin. The previously mentioned survey for cultural resources along the proposed route of Pacific Power and Light Company's 500 KV Transmission Line recorded 13 archaeological sites in Klamath and western Lake Counties (Cole 1975a:5-10). Most of the sites recorded represented the remains of small aboriginal camps or manufacturing stations, although one locality featuring a number of housepit depressions was found in Klamath County.
A survey for cultural resources within the proposed Duncan Riparian Habitat along the Lost River has been conducted by the Bureau of Land Management (Cannon 1978c). The objective of the survey was to locate cultural resources which might be impacted by the proposed construction of a fence along the canyon rim and wall above Lost River. Seven archaeological sites were recorded, including three sites featuring stone rings, one rockshelter containing petroglyphs, an additional petroglyph site, a campsite, and a lithic scatter. The stone rings were interpreted to be the remains of aboriginal habitation structures (Cannon 1978c:9). All of the sites recorded during the survey appear to date within the last 1500 years.

An intensive survey of lands proposed for exchange which are located in the area around Sycan Marsh in the northeastern corner of the Klamath Basin has recently been conducted by archaeologists from the Forest Service (Bunten 1977). Twenty-five archaeological sites were recorded in all; site types represented in the area included chipping stations, complex quarry sites, manufacturing areas, seed and root processing sites, rockshelters, and sites featuring possible housepit depressions. No estimates for the ages of these sites was provided.

**Surprise Valley**

Surprise Valley is located along the northern California-Nevada border immediately south of Oregon's Warner Valley. The valley is long and narrow, bounded on the west by the high, heavily forested Warner Mountains, and on the east by the low and barren Hays Canyon Range. The valley floor is relatively level and contains three playa lakes, the remnants of Pleistocene Lake Surprise.

The archaeology of Surprise Valley is known primarily from the research of O'Connell (1971, 1975). A transect survey extending across the southern part of the valley from the summit of the Warner Mountains to the crest of the Hays Canyon Range was conducted cutting across all biotic communities present in the valley. This resulted in the recording of information on 32 archaeological sites and their relationship to biotic zones. On the basis of location and characteristic artifact assemblage, the 32 sites discovered during the transect survey, and five additional sites known from other places in the valley, were grouped into seven categories: lowland occupation sites, caves, lowland seed gathering and processing stations, lowland temporary camps, upland temporary camps, obsidian quarries, and chipping stations.

The spatial distribution of temporally diagnostic projectile points suggests that lowland occupation sites and caves were in use throughout the known span of human occupation in Surprise Valley, while the remaining site types may only have been used during portions of the occupational sequence. O'Connell (1975:36) cautions, however,
that while the survey data may indicate variation in settlement patterns over time, the small sample of time markers recovered from most sites makes it difficult to exclude the possibility that all site types were in use throughout the span of human occupation in the valley.

In addition to the survey, excavations were conducted at three lowland occupation sites: Rodriguez (O'Connell and Ambro 1968), Menlo Baths and King's Dog (O'Connell 1971, 1975). The most notable result of these excavations was the discovery of domestic structures at these three sites (O'Connell and Ericson 1974). The earliest houses were semi-subterranean earth lodges, six of which were found. At the King's Dog Site these earth lodges were represented by a series of five superimposed floors. A radiocarbon date of 5640 ± 150 BP was obtained from bone recovered from the second lowest floor. A radiocarbon date of 5250 ± 120 BP was obtained from the floor of an earth lodge at the Menlo Baths Site (O'Connell 1975:33). These dates are generally consistent with the occurrence of Northern Side-notched projectile points on the floors of the earth lodges, which have a time range between 7000 and 3000 BP in the Great Basin (Hester and Helzer 1973:11).

These early semi-subterranean earth lodges were approximately 6 to 7.5 meters in diameter and were made in a bowl-shaped pit sunk roughly one meter below ground surface. A shallow central hearth depression was ringed by a series of postholes, and additional smaller postholes were scattered between the firehearth and the edge of the housepit. On the eastern side a steep ramp indicating the entrance-way ascended from the floor to the rim of the housepit. Judging from the archaeological evidence, these structures appear to be most like the historic houses built by the aboriginal peoples of the southern Columbia Plateau (Ray 1939:132-137).

These large semi-subterranean earth lodges were later replaced by smaller brush and pole shelters similar to those known from late prehistoric and historic times throughout the Great Basin. Evidence of at least 46 of the brush and pole shelters was found at the King's Dog and Rodriguez sites (O'Connell and Ambro 1968); at the King's Dog Site these structures were found stratigraphically above the earth lodges. At least two types of brush and pole structures were identified. The first is the domed wickup, which had a superstructure of poles covered with brush, bundled grass, or tule mats. Carbonized wood from the earliest wickup floor at the Rodriguez Site produced a radiocarbon date of 2850 ± 80 BP. The second type of brush and pole structure is an unroofed windscreen, consisting of a circular frame of short poles with brush and mats placed against it. Projectile points associated with these brush and pole structures included Rose Spring, Eastgate, and Bare Creek (Pinto) point types, which collectively span the period from around 5000 years ago to historic times in the Great Basin (Hester and Helzer 1973). Considered together, the stratigraphic sequence, radiocarbon dates, and associated artifacts suggest that the replacement of semi-subterranean earth lodges by small brush and pole structures took place sometime around 4500 years ago (O'Connell 1975:33).
From information recovered during the excavations, O'Connell (1971, 1975) divided the known occupation of Surprise Valley into four phases, spanning the period from 6500 to 600 BP. Based on the occurrence of late projectile points in the valley, a fifth phase was postulated by O'Connell in order to bring the cultural sequence up to historic times (Figure 11).

The Menlo Phase, from 6500 to 4500 BP, was characterized by large semi-subterranean earth lodges and a faunal assemblage dominated by mountain sheep and other ungulates. The most common projectile point type found during this phase was the Northern Side-notched. It is believed that the lowland occupation sites featuring earth lodges were essentially sedentary villages occupied the year round from which small groups would range out to exploit the floral and faunal resources in the different microenvironments found in the valley.

The succeeding Bare Creek Phase, from 4500 to 3000 BP, is characterized primarily by the presence of Bare Creek (Pinto) series projectile points, and by the replacement of the semi-subterranean earth lodges by the brush and pole wickups and windscreens. These brush and pole structures continued to be found throughout the remainder of the cultural sequence. There was also a trend during the remainder of the cultural sequence for ungulates to become much less common in the faunal assemblage, and evidence for the increased hunting of small game such as jackrabbits, cottontails, and waterfowl.

O'Connell (1975:43-45) proposes two possible explanations for the shift from the larger semi-subterranean earth lodges to the smaller brush and pole structures at the beginning of the Bare Creek Phase around 4500 years ago. The first possibility is that a change in climate from a relatively cool-moist to relatively warm-dry conditions may have made it no longer possible to maintain communal households at permanent locations in the face of a reduction in the amount and reliability of subsistence resources. A shift to a more dispersed residence pattern which would enable aboriginal groups to more easily exploit subsistence resources over a wider area may be reflected in the construction of less elaborate habitation structures (O'Connell and Hayward 1972).

A second possible explanation is that the change in domestic structures from earth lodges to brush and pole wickups and windscreens reflects a process of population replacement (O'Connell 1975:45-46). Semi-permanent villages with earth lodges are known to have been occupied at least as early as 5000 to 6000 years ago in the Klamath Basin to the northwest of Surprise Valley. In contrast, brush and pole structures are generally characteristic of the less sedentary settlement patterns of the aboriginal peoples inhabiting the Great Basin. It may be the case that the cultural changes occurring between the Menlo and Bare Creek Phases in Surprise Valley reflects a change in the territorial boundaries of aboriginal populations, with people from the central Great Basin displacing the earlier occupants of
Surprise Valley around 4500 years ago. While the changes observed in the archaeological record remain to be adequately explained, it is nevertheless very clear that the earlier occupants of Surprise Valley followed a much more sedentary way of life than was generally characteristic of prehistoric Great Basin peoples.

**Northwestern Nevada**

A collection of archaeological materials from Massacre Lake Cave in Long Valley, just to the south of the Oregon border in northwestern Nevada, has been described by Heizer (1942). A cache of textile artifacts was found which included a sagebrush bark bag, a Catlow Twine basket, a circular tray, several pieces of matting, and a single legging. Additional non-cache artifacts were also in the collection. Both large and small obsidian projectile points were found, suggesting that the cave may have been used over a long period of time. Wooden objects from the cave included a snare, portions of arrows, and firedrill fragments. Objects of bone included an awl, some bird-bone beads, and a rib scraper. Two olivella shells and a twisted strand of rabbitskin were also in the collection.

An obsidian workshop located in High Rock Canyon to the south of Long Valley in Nevada has been described by Ragir and Lancaster (1966). The presence of a large number of cores, waste materials, roughouts and blanks indicates the area was primarily used for the manufacture of blanks and blades. Very few finished artifacts were recovered, and there was little evidence that prehistoric peoples stayed in the canyon for any length of time. Ragir and Lancaster (1966:15) suggest that aboriginal bands from several different territories may have visited the canyon for a few days at a time to make blanks and blades for their own use.

In the volcanic tablelands of northwestern Nevada known as the High Rock Country, Layton (1966, 1970) has conducted surface collections and excavations at a number of sites; a cultural sequence consisting of six locally defined phases has been proposed for the area (Figure 11).

Excavations at Hanging Rock Shelter resulted in the recovery of temporally diagnostic projectile points which suggest a first occupation sometime around 10,000 BP. A period of apparent abandonment followed which is thought to coincide with the Altithermal climatic interval. Occupation of the site then resumed for several thousand years, before another hiatus is thought to have occurred from around 1800 to 700 BP. Layton believes that the cultural materials from the upper levels of the rockshelter can be linked to the Northern Paiute who occupied the area in historic times.

Another site excavated by Layton (1970) is Silent Snake Spring. This is an open midden situated around one of the few reliable water sources in the High Rock Country. Layton believes the occupation of
this site began during the Altithermal climatic interval around 5300 BP. The range of projectile points in the assemblage suggests relatively continuous use of the site until recent times. The presence of a large number of grinding stones indicates that seed grinding was an important activity carried out at the site. The strong evidence for seed processing is probably explained by the fact that the site is an open midden at a moist location where grasses would flourish.

Last Supper Cave was also tested by Layton (1970). Attention was primarily directed to surface features associated with historic Indian use of the site. These features consisted for the most part of three circular stone enclosures, interpreted as sleeping areas, and the remains of butchering animals, including at least one horse, three cows, and one antelope. Other sites in the High Rock Country tested by Layton (1966, 1970) included Smoky Creek Cave, Little Smoky Shelter, and Swallow Marsh Shelter; all three sites yielded projectile points of similar styles, documenting aboriginal use from around 5,000 years ago up to late prehistoric times.

Surface collections were made around the edges of the ancient Lake Parman shoreline and at a site near Smoky Creek Cave in the Calico Mountains. At both localities almost the entire Great Basin projectile point sequence is represented, indicating more or less continuous use of these areas from the time of the Western Pluvial Lakes Tradition around 11,000 years ago up until the late prehistoric period.

Archaeological research has also been conducted in the Black Rock Desert in northwestern Nevada. Clewlow (1968) carried out surface collections at seven sites, two of which yielded lithic materials attributable for the most part to the Western Pluvial Lakes Tradition. Typologically early specimens included fluted points, Black Rock Concave-base points, and chipped-stone crescents. Projectile points from the other five sites examined by Clewlow (1968) indicate all were occupied during the time span from 6,000 to 500 BP.

The results of excavations at the Barrel Springs Site in the Black Rock Desert have been reported by Cowan (1972). This site is situated in an area of rhyolitic lava flows which provided the raw material for quarry and workshop activities. Forty percent of the artifacts recovered at the site were rhyolite roughouts and blades. Other artifacts recovered, including projectile points, scrapers, manos and bone awls, indicated the site was also used as a temporary camp. Projectile points in the assemblage suggest the site was visited by prehistoric peoples during the period from 3,000 to 1,300 BP. Faunal remains indicate that the bighorn sheep was a primary source of food for the site's inhabitants, and Cowan (1972:22) suggests that the use of this particular rhyolite outcropping as a source of lithic material may correlate with the inhabitants' knowledge of the seasonal presence of a band of bighorn sheep in the area.
An analysis of over 200 lithic tools from another site in the Black Rock Desert of northwestern Nevada has been conducted by Hester (1977). The artifacts included a fluted point, and a number of chipped-stone crescents characteristic of the Western Pluvial Lakes Tradition. Most of the projectile points from this site, however, were of the Elko and Pinto series, suggesting that the heaviest utilization of this locality took place after 4500 BP.

Both Clewlow (1968) and Hester (1977) note that the archaeological evidence suggests a decreasing utilization of the Black Rock Desert by aboriginal peoples from earliest to latest times, possibly indicating that over time a degeneration of the regional environment took place, ultimately resulting in the very arid desert conditions characteristic of the Black Rock Desert at the present time.

Alvord Basin

The Alvord Basin of southeastern Oregon is another example of an area once filled by a sizeable Pleistocene lake. As climatic conditions changed over the last 10,000 years, however, the basin became increasingly dry, until at the present time it is essentially one vast playa surrounded by sand dunes.

An initial reconnaissance of the archaeological resources of the Alvord Basin was conducted by archaeologists from Portland State University under contract with the Bureau of Land Management (Newman et al. 1975). Subsequently, a systematic survey of a large portion of the basin was conducted by archaeologists from the University of Oregon under contract with the Bureau of Land Management (Pettigrew 1975). A simple random sampling scheme incorporating the variety of environmental zones in the basin was developed to determine which portions of the 179-mile project area to survey. In all, 65 square miles of the project area were covered in a systematic manner, resulting in the recording of 224 prehistoric sites.

The archaeological sites recorded in the Alvord project area were divided into eight descriptive types: spring, streamside, dune, hillock, rockshelter, cairn, strand, and open. Flaked stone tools such as projectile points, bifaces, unifaces, and cores were found at all types of sites; unifacially and bifacially flaked cobbles and hammerstones occurred less frequently. Manos and metates were associated to a high degree with spring sites, and only to a lesser degree with dune sites. This situation contrasts somewhat with that observed by Weide (1968) in Warner Valley, where it was found that manos and metates were associated with dune and slough sites more than any other kind of site. It also appears that manos and metates occur less frequently in the Alvord Basin than in the portion of Warner Valley surveyed by Weide (Pettigrew 1975:20).
Projectile points recovered from the Alvord Basin include most of the standard Great Basin types, and seem to indicate a more or less continuous utilization of the area from around 12,000 years ago to historic times. The majority of the temporally diagnostic artifacts collected during the survey are less than 6000 years old, but a significant number of specimens are early types dating from 12,000 to 6000 BP. These early artifacts include five fluted points, two Lake Mohave points, four Lind Coulee points, one Windust point, and 24 chipped stone crescents.

By correlating the age of the projectile points with the elevation of the site at which they were found, a pattern emerges which seems to indicate that the level of the lake in the Alvord Basin dropped below an elevation of 4050 feet after the time when fluted points were in use (Pettigrew 1975, Table 4). The Lind Coulee and Windust points, as well as the crescents, cluster at elevations above 4016 feet, suggesting that the lake had already dropped below that level before 8000 years ago. Most of the remainder of the projectile point types were distributed below this elevation, although only the Rose Spring series occurs below an elevation of 4000 feet in high frequency. Also notable is the fact that early projectile points are generally absent from elevations above 4100 feet, where late style projectile points occur most frequently, especially specimens from the Rose Spring series. This may indicate an increased use of the higher elevations by more recent inhabitants of the area, especially after 3000 BP (Pettigrew 1975:26).

The artifacts recovered from the Alvord Basin are very similar to those described by Butler (1970) from the adjacent Coyote Lake Basin, except that in the latter case the detailed locational data were not preserved. The Coyote Lake collection consists entirely of flake tools; while milling stones were also present, they were not collected or otherwise systematically documented. Projectile points in the collection are generally representative of the entire Great Basin point sequence, indicating human use of the basin from roughly 12,000 years ago to recent times. Distinctly late prehistoric and early historic artifacts, however, are scarce in the collection, a fact which suggests that Coyote Flat was less frequented then in comparison with earlier times.

Currently, a multi-disciplinary investigation of the prehistory of the Steens Mountain area on the west side of the Alvord Basin is being conducted jointly by the University of Oregon, University of Washington, and Washington State University. The major objectives of the project are: (1) establishment of a well dated sequence of climatic and environmental changes through analyses of lake and spring deposits; and (2) analysis of cultural materials from both surface and buried archaeological deposits (Grayson 1978).

In order to meet the first objective, pollen cores containing detailed information on environmental changes over the last several
thousand years were obtained from several localities in the Steens Mountain area. The age and composition of separate depositions of volcanic ash in the area have also been identified, providing a useful means for correlating the ages of archaeological sites. Most of the paleobotanical research was conducted during the 1977 and 1978 field seasons.

In order to meet the objective of correlating changes in past environments and aboriginal subsistence and settlement patterns, detailed information on the distribution of artifacts across the surface of the study area and from buried archaeological deposits is to be obtained. An archaeological survey of the project area, using a sampling design stratified on the basis of the geomorphic characteristics of the region, was begun during the 1978 field season. The archaeological survey is to be completed during the forthcoming 1979 season. Buried archaeological deposits will also be examined at this time. Archaeological fieldwork is currently planned at Catlow Cave, which was first excavated by Cressman (1942), and several other rockshelters in the Catlow and Alvord basins will be tested. The results of this archaeological fieldwork, when combined with the paleobotanical data, should provide a detailed record of human occupation in the area extending back in time for almost 10,000 years (Grayson 1978).

Glass Buttes Area

An archaeological survey of the potential geothermal lease area around Glass Buttes was conducted by archaeologists from the University of Oregon under contract with the Bureau of Land Management (Mack 1975b). A survey design using linear transects in order to cover 14% of the 132 square miles of the project area was implemented, resulting in the recording of 131 archaeological sites. The recorded sites were selectively surface collected for artifacts which were culturally or temporally diagnostic.

Analysis of the collected artifacts indicated that human use of the Glass Buttes area was more or less continuous from approximately 13,000 BP to at least A.D. 1100. Early artifacts include a chert graver, a possible Clovis point fragment, and several other projectile points similar to the earliest specimens found at Cougar Mountain Cave which probably date between 10-12,000 (Layton 1972). Additional projectile point types, assigned to time ranges prior to A.D. 1100, were also collected in the Glass Buttes study area. The absence of Desert Side-notched and Cottonwood Triangular points, however, suggests that the Glass Buttes area saw only limited, transient use from A.D. 1100 to modern times.

The nature of the land use and settlement patterns for the Glass Buttes area were described by Mack (1975b:46) as follows:
The area has undoubtedly been used by hunters and gatherers. Campsites seemingly used temporarily by hunting or gathering parties are often located adjacent to the confluences of intermittent streams or on interfluves. Lake margins may have been utilized both for small temporary hunting camps and more permanent winter camps. Ridges, knolls and fault scarp ridges seem to have been favored for knapping stations, their proximity to water being irrelevant. Large obsidian sources, aside from the quarrying activity, often have knapping stations adjacent to them.

Use of the Glass Buttes area by aboriginal peoples appears to have changed through time in a manner similar to that described by Weide (1968) for Warner Valley and by Pettigrew (1975) for the Alvord Basin. The earliest sites were concentrated on the plateau, adjacent to dry lake beds; these sites are probably associated with the San Dieguito Complex (Warren 1967) or the Western Pluvial Lakes Tradition (Bedwell 1973). The presence of Elko and Rose Spring-Eastgate series projectile points on the slopes of the Glass Buttes Range marks a new pattern of use by later inhabitants; both lake margins and upland slopes were occupied between 4000 and 900 BP. Use of the entire area appears to have decreased after 900 BP, as indicated by the general absence of late prehistoric point types.

**Harney-Malheur Basin**

An archaeological reconnaissance of the Malheur National Wildlife Refuge in the Harney-Malheur Basin was conducted over a three year period by archaeologists from Portland State University (Newman et al. 1974). Archaeological sites recorded in the area included open sites of various sizes, pictographs and petroglyphs, burials, stone rings, and rockshelters. While the results of this project have not been formally reported, it appears that the archaeological materials found in the Harney-Malheur Basin have their closest cultural affinities with artifact collections from sites in the Northern Great Basin (Newman et al. 1974:3). Although several fluted points were recovered during this project, and Fagan and Sage (1974) reported finding a number of Windust points in the area, most of the temporally diagnostic projectile points from the Harney-Malheur Basin are less than 6000 years old; the most intense occupation of the area by aboriginal peoples appears to date from within the last 2000 years (Newman et al. 1974).

Excavations were conducted at two localities in the Harney-Malheur Basin by John Fagan (1973, 1974) of the University of Oregon as part of his study of spring sites in the Northern Great Basin (see the section entitled "Climate and Culture in the Great Basin"). The Hogwallow Spring Site was interpreted as a temporary campsite at which marsh resources were exploited; occupation of the site appears to have
occurred over the last 5000 years (Fagan 1974:98). The Blitzen Marsh site was considered to have been a prehistoric village; radiocarbon dates of 930 ± 150 BP and 1110 ± 80 BP were obtained from a house floor exposed at this site (Fagan 1974:101). Occupation of this site was believed to have occurred over the last 7000 years (Fagan 1974:98).

Most recently, archaeological studies at ten sites near Stinkingwater Pass in the northeastern portion of the Harney-Malheur Basin were carried out by archaeologists from the University of Oregon under contract with the Highway Division of the Oregon State Department of Transportation (Pettigrew 1979). The purpose of the project was to salvage information from archaeological sites which might be damaged by highway construction.

Stinkingwater Pass is situated on the divide between the Harney-Malheur Basin, a subdivision of the Great Basin physiographic province, and the drainage area of the Malheur River, a part of the Columbia Plateau physiographic province. Primarily on the basis of the distribution of different kinds of lithic materials, Pettigrew (1979) suggests that the sites around Stinkingwater Pass were used by two different groups of peoples coming from different directions into the area. Specifically, sites in the southwestern portion of Stinkingwater Pass, with a high frequency of obsidian and basalt detritus and a near absence of silicate flakes, are thought to have been occupied by peoples entering the area from the Harney-Malheur Basin to the southwest. On the other hand, sites in the northeastern portion of Stinkingwater Pass, with high proportions of silicate flakes and relatively low proportions of obsidian and basalt detritus, are thought to have been within the territory of people living to the northeast in the Malheur River valley.

Based on the kinds of artifacts recovered, both sets of sites are interpreted as temporary upland hunting camps, most likely occupied during the warm months between July and September. Judging from the distribution of temporally diagnostic projectile points, the area near Stinkingwater Pass does not appear to have been heavily visited by aboriginal peoples until after 4000 years ago (Pettigrew 1979).

**Owyhee Plateau**

The Owyhee Plateau lies in the border zone between southeastern Oregon, southwestern Idaho, and northern Nevada. Although the area is part of the Columbia Plateau physiographic province, the known archaeological cultures have their closest affinities with those of the Northern Great Basin. The results of excavations at Dirty Shame Rockshelter, conducted by the University of Oregon in 1973, have added a much-needed and detailed cultural sequence to the archaeological record of this region (Aikens et al. 1977; Hanes 1977; Adovasio et al. 1977; Grayson 1977; Kittleman 1977). A series of 22 radiocarbon dates from the rockshelter was used to delineate six cultural zones of occupation in the rockshelter's deposits (Figure 11).
Cultural Zone VI, dated between 9500 and 7900 BP, represents the earliest occupation of the rockshelter. The small assemblage includes large stemmed lanceolate and triangular side-notched projectile points. The fact that the cultural deposit was disturbed and mixed with later levels is indicated by the anomalous presence in it of triangular corner-notched projectile points, which according to the established Great Basin projectile point sequence (Hester and Heizer 1973) should not be found in such an early occupation. Simple twined basketry fragments, cordage, and sandals of both the Fort Rock and Spiral Weft types were also present in this earliest cultural zone.

Cultural Zone V, dated from 7900 to 6800 BP, contained little cultural material. Projectile points were similar to those from Zone VI. Only one fragment of twined basketry and no sandals were found in this zone. Apparently, the rockshelter was only occasionally occupied at this time.

Cultural Zone IV, dated from 6800 to 6300 BP, yielded a greater abundance of cultural materials. Simple twined basketry was still the predominant form, although some open diagonal twined pieces were present as well. Fewer Fort Rock type sandals were present, while the number of Spiral Weft sandals increased. Other items from this zone included ground stone implements, netting, abundant cordage, and triangular notched projectile points.

Cultural Zone III, dated from 6300 to 6900 BP, was characterized by the appearance of a new sandal type, Multiple Warp, which was now in use with the two other types from the preceding zones. Another basketry technique, close simple twining, also appears as an addition to the other forms found in Zone IV. Projectile points included both large lanceolate and triangular notched types.

Between 5900 and 2700 BP there is an hiatus of 3200 years in the archaeological record at Dirty Shame Rockshelter. This interval apparently represents a period of little or no occupation of the site, as there is no indication of erosion or other processes which may have destroyed a once-existing cultural deposit representing this time span.

The archaeological record at Dirty Shame Rockshelter resumes with Cultural Zone II, dated between 2700 and 1100 BP. This zone was unique in containing the remains of several small, circular pole-and-thatch huts or windbreaks, which were built one after the other in the same place. These structures appear to be similar to the brush and pole wickups and windscreens discovered in Surprise Valley by O'Connell (1971, 1975). Sandals, basketry, and cordage items were scarcer in comparison with Zone III. Large lanceolate and triangular projectile points continued to be found, but many smaller notched and expanding-stem projectile points were encountered for the first time.

Cultural Zone I, dated between 1100 and 400 BP, was marked by the presence of small side-notched and expanding-stem projectile points, although a few large, triangular notched points continued to be
present. A wide variety of basketry techniques was represented, including the first examples of coiled basketry. Cordage was present, but no sandals were found.

Based on an analysis of the faunal remains, Grayson (1977) suggested that the 3200-year hiatus observed in the archaeological record at Dirty Shame Rockshelter may have been caused by a general climatic drying trend (Altithermal interval) which peaked between 6300 and 5900 BP and may have rendered the locality undesirable for occupation for a considerable period of time. Use of the site resumed again when climatic conditions apparently became cooler and moister.

The artifact assemblage and biotic evidence from Dirty Shame Rockshelter indicates that the same basic tool kits and similar subsistence patterns have been used throughout the site's occupation (Aikens et al. 1977:22). The manufacture of stone tools and woven items, as well as food preparation, were the principal activities carried out at the site. The biotic remains suggest that the rockshelter was most likely occupied in the late summer and fall, as a base camp for utilizing the natural resources offered by the nearby creek and uplands.

Archaeological Evidence for the Expansion of Numic-speaking Peoples

Although the archaeological record indicates that the same basic way of life (with regional variants) has been followed for thousands of years in the Great Basin, there is evidence which suggests the region has not always been occupied by the same cultural-linguistic groups. Linguistic evidence derived from the technique of glottochronology suggests that the Numic-speaking peoples, which includes the Northern Paiute who inhabited the Northern Great Basin in historic times, expanded across the Great Basin from a homeland near the California-Arizona-Sonora border around 1000 years ago (Lamb 1958; Hopkins 1965; Miller 1966; Goss 1968; Miller et al. 1971; Freeze and Iannucci 1974). Despite the linguistic evidence, however, some archaeologists have argued against such a theory on the grounds that cultural continuity, rather than population replacement, is expressed in the Great Basin's archaeological record (Heizer and Napton 1970; Swanson 1972; Hester 1973).

The best archaeological evidence presented so far in support of the linguistic theory of a Numic expansion has been mustered by Madsen (1975), using the distribution and dating of Paiute-Shoshoni pottery. Dates for this type of pottery, which is one of the hallmarks of Numic-speaking peoples, indicate that Numic-speakers were present at least 1000 years ago in the southwestern corner of the Great Basin, which according to linguistic theory was their ancestral homeland. Dated occurrences of pottery in the rest of the Great Basin indicate that pottery and, by implication, the Numic-speakers spread north and east within the next several hundred years.
Archaeological evidence in support of the theory of a Numic expansion has been found in at least three localities in the Northern Great Basin. Cultural materials thought to be intrusive into the area were found by Cressman (1942) at both Catlow Cave No. 1 and Roaring Springs Cave. Pieces of coiled basketry were found at both sites; in addition, eight sherds of plain grayware pottery were found at Catlow Cave No. 1. At both sites these materials were found in the uppermost levels of the cultural deposits. Both coiled basketry and pottery were made by Numic-speaking peoples living elsewhere in the Great Basin.

In her study of settlement patterns in Warner Valley, Weide (1968) noted that around 1000 years ago there occurred changes in projectile point styles, a strong tendency to utilize previously unoccupied sites, and a shift in emphasis of occupation from the valley floor to the adjacent uplands. She suggested that these changes may have resulted from the expansion of the Numic-speaking Northern Paiute into south-central Oregon. Weide (1968:266) further suggested that the expansion of the Northern Paiute was probably coincident with a climatic change which rendered the earlier lake-marsh oriented settlement pattern unfeasible and brought about a retreat of the area's previous inhabitants.

Most recently, excavations at Dirty Shame Rockshelter in southeastern Oregon has resulted in the collection of additional evidence in support of the Numic expansion theory (Aikens et al. 1977). An influx of new cultural traits occurred in Cultural Zone I, the latest at the site, including coiled basketry and several new projectile point styles. These new materials may represent the first occupation of the site by Northern Paiute. The division between Cultural Zones I and II at Dirty Shame Rockshelter occurs at 1100 BP, a date which is consistent with the Numic expansion theory. Sandals present in Cultural Zone II and earlier levels are absent in Zone I (Adovasio et al. 1977, Tables 1 and 5). Likewise, the remains of thatched structures found in Cultural Zone II do not occur in Zone I. Some projectile point and basketry types do suggest continuity from Cultural Zone II into Zone I. This situation could be interpreted to indicate either amalgamation by immigrant Northern Paiute of people already present in the region, or to mean that a common cultural background was to a large extent shared by the Northern Paiute and the previous inhabitants of the region (Aikens et al. 1977:23).

SUMMARY

Archaeological evidence exists for the presence of prehistoric peoples in the Northern Great Basin as early as the end of the Pleistocene epoch between 11,000 and 13,000 years ago. A radiocarbon date of 13,200 ± 720 BP from Fort Rock Cave in south-central Oregon has documented the earliest dated human occupation in the Great Basin; this is also one of the earliest radiocarbon dates for the presence of prehistoric peoples anywhere in North America. But because of the
early age assigned to the initial occupation of Fort Rock Cave, and the small size of the earliest artifact assemblage, there is some difficulty in determining exactly where the site fits into the overall culture-historical framework of North American prehistory.

Aside from the early occupation at Fort Rock Cave, and other allegedly early manifestations whose precise cultural affiliations are presently unknown, the first widespread evidence for the presence of prehistoric peoples in the Great Basin is represented by the distinctive Clovis and Folsom projectile points of the Fluted Point Horizon. Although none of the fluted points so far found in the Great Basin have been directly dated, elsewhere in North America these distinctive artifacts have been radiocarbon dated within the narrow time span between 11,500 and 10,000 BP. In the absence of direct information on the age of fluted points in western North America, it seems reasonable to suggest a similar time range for the Fluted Point Horizon in the Great Basin as well.

From a time overlapping with and subsequent to the Fluted Point Horizon, there occurs in western North America a series of similar lithic complexes which can be collectively referred to as the San Dieguito-Windust-Milliken Horizon. These artifact assemblages are characterized by large shouldered and stemmed lanceolate projectile points, large leaf-shaped projectile points or knives, and chipped-stone crescents. In the Great Basin this early cultural manifestation is locally referred to as the San Dieguito Complex or the Western Pluvial Lakes Tradition. Artifact assemblages representative of these manifestations are commonly found along the shorelines of now-dry pluvial lakes. The general chronology of the San Dieguito-Windust-Milliken Horizon falls within the period from 11,000 to 8000 BP.

After about 8000 years ago the archaeological record in the Great Basin becomes more complex, as specialized adaptations to locally available resources began to develop in each area. The variety of locally adapted cultures which begin to appear at this time can be subsumed within what is referred to as the Desert Culture or Great Basin Archaic way of life, which involved the intensive exploitation of the resources of all the environments—deserts, lakes, and mountains—in the Great Basin. In the Northern Great Basin locally adapted cultures representative of the Archaic way of life persisted up to historic times.

Although the archaeological record in the Great Basin suggests a high degree of cultural continuity over time, there is a linguistic theory which suggests that the Northern Paiute peoples who inhabited the Northern Great Basin in historic times were relatively recent arrivals in the area. Changes in the archaeological record which seem to support this linguistic theory have been observed in at least three localities in the Northern Great Basin. This evidence strongly suggests that the Northern Paiute have inhabited the area for little more than a thousand years.
CHAPTER III

ETHNOGRAPHIC OVERVIEW

INTRODUCTION

The interpretation of past lifeways which are evidenced in the archaeological record depends primarily on making inferences from pertinent ethnographic evidence. This method, known as ethnographic analogy, involves comparing the archaeological evidence with the known cultural patterns of natives inhabiting the region during times of Euro-American contact. Inferences about the older lifeways are then made on the basis of similarities and differences between the historic and prehistoric inventories. The main problem with the use of ethnographic analogy is that it is often not possible to assign archaeological material a specific linguistic or cultural affiliation. In the case of south-central Oregon, the archaeological record indicates that the inhabitants have followed a similar subsistence pattern for many millennia. Although it is possible and even likely that the same cultural or linguistic groups have not always occupied the region, the most accurate interpretation of the prehistoric record can be obtained only by examining the ethnographic and historical records describing the aboriginal occupants of the area during contact times.

There is one major shortcoming in the accounts of explorers, fur traders, pioneers, and missionaries who were the earliest Euro-Americans in the area. When Oregon was initially explored and settled, the explorers, settlers, and fur traders "clung to the main river course [the Columbia River] shunning the arid country which borders it on both sides from the Cascade Range to the Snake River" (Suphan 1974a:14). The arid basin-and-range of much of south-central Oregon did not have any rich farm land or productive trapping territory to offer the whites, and so the area was generally bypassed and the lifeways of its inhabitants, particularly those inhabiting the desert, were left largely unrecorded. The earliest records we have describing the area are the journals of Lewis and Clark (Thwaites 1905), which mention the inhabitants of settlements encountered along the Columbia River in 1805 and 1806, as well as hearsay which was gathered from the Columbia River Indians mentioning the people to the south.

Fortunately, several journals exist which recount later explorations into south-central Oregon along the Deschutes River valley. Peter Skene Ogden, a fur trader for Hudson's Bay Company, kept a journal while he trapped along the Deschutes and John Day rivers in 1825-29 (Ogden 1950, 1961, 1971). Nathaniel J. Wyeth (1899) kept an account of his expedition along the Deschutes River in 1834-35. John Charles Fremont (1846) explored the Deschutes on his way to California in 1843, and Lieutenant Abbot (1855) of the Pacific
Railroad Survey reported his journey down the Deschutes River from Klamath territory. These historic accounts provide scant but important bits of information of the natives of the region.

In addition to the historical records, various ethnographic and linguistic studies have also been made of the historic native inhabitants of south-central Oregon. These studies will be mentioned below in the appropriate subsections on the native occupants of the region. It should be mentioned that all ethnographic research in this region was undertaken many years after the aboriginal inhabitants had been moved to various reservations and their culture drastically affected by contact with the whites. As a result, these accounts may not relate a completely accurate picture of the native cultures prior to historic contact.

**Linguistic Relations of Aboriginal Occupants**

The languages of North American Indians have been taxonomically ordered by linguists according to the number of linguistic features they share with each other. Like the biological taxonomies which the language taxonomies are patterned after, inclusion in a particular grouping indicates a given level, or certain degree, of "genetic" or shared similarities. For example, phyla are more distantly related than families, which in turn share fewer features than languages within a single family. Dialects are closely related forms of a single language which can be understood by anyone speaking a dialect of that language. Languages which contain a high level of unique features are termed "language isolates"; this term indicates that such languages can only be related tenuously to other languages within the language phylum.

The aboriginal people who occupied actual portions of the Lakeview District at the time of contact spoke several languages which have been classified into two main language phyla--Penutian and Ut-Aztekan--which are presented in Table 5 in the context of other Oregon linguistic groupings. As indicated in Figure 14, speakers of the Penutian languages were situated in the western one-third of the Lakeview District in the more forested regions. Speakers of Northern Paiute, a Ut-Aztekan language, covered the remaining two-thirds of the study area as well as most of southeastern Oregon.
TABLE 5

CLASSIFICATION OF OREGON LANGUAGES

I. Penutian Phylum
   A. Sahaptian Family
      1. Nez Perce Language
      2. Sahaptin Language (includes the dialects of Tenino, Umatilla, and Wallawalla)
   *B. Klamath-Modoc Language Isolate
   *C. Molala Language Isolate
   D. Cayuse Language Isolate
   E. Chinookan Family
   F. Kalapuyan Family
   G. Takelman Language Isolate
   H. Alsean Family
   I. Siuslawan Family
   J. Coosan Family

II. *Ut-Aztekan Phylum (includes the Northern Paiute language)

III. Hokan Phylum (includes the Shasta language)

IV. Athabaskan Phylum (includes languages spoken by groups in southwestern Oregon)

V. Salishan Family Isolate (no known phylum association)

*Languages within the Lakeview District
Culture Areas of South-Central Oregon

Upon cursory examination of the various aboriginal cultural groups which occupied the study area, one's initial impulse is most likely to differentiate two separate, and presumably very different, cultural traditions—that of the desert-dwelling Paiute and that of the marsh- and riverine-dwelling Klamath-Modoc. While the cultural affiliation of the Northern Paiute is not in question at this time, the cultural position of the Klamath-Modoc has always been somewhat of a problem.

In defining the cultural and natural areas of aboriginal North America, Kroeber (1939)minimizes the differences between the two aboriginal peoples. He classifies the entire area encompassed by the Lakeview District as within the Great Basin culture area, which he further divides into two related subareas (1939:51):

(1) the cultural Basin area proper, which is occupied by the Northern Paiute, and

(2) a marginal subarea of the Basin comprised of the Klamath-Modoc and the Achumawi and Atsugewi further south in California.

Spier (1930) had earlier concluded that the Klamath-Modoc were most closely linked to the Plateau culture area and had noted that many Californian traits were also to be found. Kroeber is of the opinion, however, that the Plateau and California culture area traits were just a recent veneer on Klamath-Modoc culture. He justifies his inclusion of the Klamath-Modoc in the Great Basin area on both physiographic and cultural bases. Although the Klamath-Modoc territory is higher in elevation and consequently is characterized by pine forests instead of juniper and sagebrush, the area is still considered to be a part of the Basin and Range physiographic province. Kroeber also sees the roots of Klamath-Modoc culture in the twined basketry found in the oldest cultural deposits of Lovelock Cave, Nevada; hence the inclusion of Klamath-Modoc in the Great Basin culture area.

Problems Regarding Aboriginal Distribution

Problems have arisen in the course of attempting to determine the pre-contact territories occupied by native groups because they have varied through time. There are several reasons for this territorial state of flux. First, contact with Euro-Americans brought diseases and epidemics for which the aboriginal people had little or no resistance. Consequently, the native populations were drastically reduced in the early part of the nineteenth century. The virulent
epidemics were mainly concentrated among the large settlements along the Columbia River (Minto 1900:309), but disease also took its toll among the more sparsely settled natives of the interior regions to the south, significantly reducing their populations. With a sudden reduction in population, the territorial boundaries of various groups were not as stable as they otherwise might have been.

Another reason for the uncertainty of the native distribution in eastern Oregon is that the aboriginal populations had been shifting and becoming more mobile in the protohistoric period, further blurring the boundaries of group territories. This was largely due to acquisition of the horse which was in the possession of the Plateau people sometime after 1730 (Haines 1938; Ray 1939:13). The horse increased the mobility of the natives, allowing the various groups to travel further from their homes for purposes of trading, raiding, hunting, or visiting. Consequently, groups in northern Oregon underwent a great deal of territorial flux in the protohistoric period.

The Klamath-Modoc and the Northern Paiute acquired the horse during the first half of the nineteenth century, sometime after the horse was being used by their neighbors to the north. Shortly after acquiring the horse, the two southern groups actively began to raid their neighbors and each other. Nonetheless, it appears from available ethnographic and other documented information that the tribal distribution of the southern Oregon groups remained relatively stable during protohistoric times.

The remainder of this section will be concerned with the subsistence and settlement patterns, technology, social structure, political organization, and religious systems of the Northern Paiute, Klamath-Modoc, and their neighbors. Information on these aspects of the aboriginal lifeways is abstracted from the historic accounts mentioned above and from the ethnographic sources cited in each subsection.

THE NORTHERN PAIUTE

At the time of white contact, the Northern Paiute occupied vast territories in the northwestern portion of the Great Basin in Oregon, Idaho, Nevada, and California. These people shared a single basic cultural tradition and spoke various dialects of the same language. Within Oregon, the Northern Paiute were situated in the central and southeastern regions, occupying close to one-third of the state. They were bounded to the north by the Tenino, Umatilla, Cayuse, and Nez
Perce who were located along the Columbia River; to the west were the Molala, Klamath, Modoc, and Achumawi peoples.

The only substantial ethnographic fieldwork specifically among the Oregon Paiute was that carried out by Omer C. Stewart (1938, 1939, 1941). Other sources which deal with the distribution of the Northern Paiute in Oregon include Blyth (1938), Kelly (1932), Murdock (1938), Suphan (1974a, 1974b), and Whiting (1950). Additional studies, such as those by Lowie (1924), Angulo (1929), Julian Steward (1933, 1934, 1937, 1938, 1955), Park (1934, 1937), Kelly (1934), Underhill (1941), Wheat (1959, 1967), and Riddell (1960), have dealt with Northern Paiute Bands outside of Oregon.

**Language**

The Northern Paiute have been referred to by various names in historical journals and ethnographic accounts. The term "Snake" was used by early explorers, such as Lewis and Clark, Ross, and Ogden, to refer to all peoples speaking languages of the Numic, or Plateau Shoshonean, family of the Utaztekan language phylum. Numic speakers include the Northern Paiute, Mono, Shoshone, Ute, and Southern Paiute, all of whom inhabited the Great Basin, so that the term "Snake" was applied to Great Basin peoples in general and not solely to the Northern Paiute. Other terms, such as "Bannock", were similarly applied to a variety of Great Basin groups including but not limited to, Paiute. "Paviotsio" and "Digger Indians", on the other hand, are terms which apparently distinguish the Northern Paiute from their Shoshone neighbors to the east. The term "Paiute" is derived from the native words *pa* ("water") and *ute* (direction), although the Northern Paiute spoke of themselves collectively as "noho" ("people") (Stewart 1939:127).

**Territory**

The range of the Northern Paiute was restricted to the desert of the Great Basin physiographic province. Omer Stewart (1939:144) gives a detailed description of the extent and nature of the boundaries of the Northern Paiute territory:

The total Northern Paiute territory, shaped roughly like an isosceles triangle with a 275-mile base at Blue Mountains, Oregon, and with 600-mile sides reaching to a point at Owena Lake, California, contains approximately 78,000 square miles of the near desert land of the Basin and Range physiographic province of western United States. The western boundary conforms closely with the edge of the Great Basin, although the Paiute did not exclusively occupy
the slopes of the Sierra Nevada and the Cascade mountains. The northern boundary, technically beyond the edge of the interior basin because it includes streams draining to the ocean, is, nonetheless, coincident with the desert sagebrush vegetation zone boundary, for the volcanic plateau which extends into the northern end of the Great Basin has modified the physiographic scene more than it has the vegetation. Consequently, we may assume that Blue Mountains, the northern edge of the Great Basin flora, is the real border of the Basin. Since both early explorers and my informants considered Blue Mountains the northern boundary of Oregon Snake (Paiute), we can say that the northern and western boundaries of the Northern Paiute tribe coincide with geographic boundaries. The eastern boundary between the Paiute and the Shoshoni, both within the Great Basin, does not agree with any geographic boundary.

There is no doubt that the Northern Paiute considered themselves to be one people. In addition to occupying the same physiographic zone, they spoke mutually intelligible dialects of the same language and shared the same semi-nomadic hunting-and-gathering lifestyle. They also made a sharp distinction between themselves and the adjacent Penutian and Shoshone tribes, whereas the band divisions within the Northern Paiute tribe were often vague and indefinite, as noted by Stewart (1939:130).

The Northern Paiute Bands

The sociopolitical organization of the Northern Paiute is best described as being of the band type at “the family level of integration” (Service 1962:64). These bands did not exist as political entities, but were simply a loose association of a number of family groups occupying the same general region. The composition of these bands was fluid, and families moved from band to band as they desired. Steward (1939:261) made the following observations on the nature of Northern Paiute bands:

There was no native band concept connoting true solidarity among members of a political or territorial division. They agree that land was not owned by any group, that the population was fluid, and that political control was minimal, never extending over the inhabitants of a well-defined territory: in short, that the main bond between families was association in more or less the same area.
Twenty-one Northern Paiute bands have been identified by Steward (1939). Bands were frequently named after local foods or geographical landmarks which were for some reason considered remarkable by neighboring groups; hence Northern Paiute bands included, among others, the Atsadadad (Wada-Seed Eaters), the Koalagaitoka (Salmon Eaters), the Atsakudokwa tuviwarai (Red Butte Dwellers), and the Sawawaktodatuviwarai (Sagebrush Mountain Dwellers). Steward (1939:262) concludes that "the emphasis...is clearly upon the territory rather than upon any unified group of people occupying it." When a family or group moved to a new locality, it acquired a new name derived from their new habitat.

Given this native pattern of nomenclature, it is not surprising that apparent contradictions in group names and boundaries have been recorded. A band may be addressed by more than one name by its neighbors or several bands may be referred to by the same name. Also, since well-defined boundaries between bands did not exist, it is expected that the various maps of Northern Paiute band territories based on information from native informants will not necessarily coincide. In particular, Stewart's map (1939:126) does not agree in detail with Blyth's distribution of Oregon Paiute bands (1938:396). Steward (1939:262) suggests that "it will never be possible to make a final map of bands for the greater part of the Northern Paiute area" simply because bands did not exist as separate social and political entities and because a standard nomenclature for bands was not in use by all the Northern Paiute.

Stewart (1939, 1941) discusses seven aboriginal Paiute bands whose ranges may have fallen within the Lakeview District (refer to Figure 15), and Blyth (1938) lists five groups which roughly correspond with some of the bands Stewart mentions (see Figure 16). These groups and their territories are briefly described below (also cf. Kelly 1932:72-73).

(1) The Hunipuitoka (meaning unknown to Stewart) or Walpapi, also known as the Canyon City Indians, occupied an area encompassing about 7,000 square miles, which included the Crooked River Valley and the upper reaches of the John Day River to the north of the Lakeview District. It is interesting to note that the term Walpapi is derived from the Klamath term walpapis, which is a translation of the Paiute hunipuitoka (Stern 1966:288, note 55). The boundaries for this group are given by Stewart (1939:131) as follows (cf. Wheeler-Voegelin [1955]):

The boundary...starting at Pauline Mountain (Twin Buttes) in Des Chutes County, runs North through Jefferson County to the Wasco County line where Highway 97 crosses; thence east to the John Day River, up the river to North Fork, then up the North Fork
Figure 15. Distribution of Northern Paiute Bands as Given by Stewart (1939).
Figure 16. Distribution of Northern Paiute Bands According to Blyth (1938).
to the Blue Mountains; thence south along the Blue Mountains to the head of the Malheur River; thence southerly along the divide between the John Day and the Malheur drainages to Pauline Mountain, the place of beginning.

Stewart mentions that this area may have been occupied by more than one band. Blyth locates two groups within this area. The first group, the Wa'dčʰi'tiŋa (Juniper-Deer Eaters), inhabited the area between Bend to the south and Gateway to the north. Their range included Prineville in the east and Mount Jefferson to the west. Portions of this band customarily wintered at Bend and along the northern bank of the Metolius River. The second group mentioned by Blyth were the Hu'nipwi'tiŋa (Root Eaters). These people appear to be the same as those referred to by Stewart. Blyth designates their winter camps as centering around Canyon City Creek, the town of John Day, and the John Day valley to the west. They inhabited areas as far west as Dayville and as far south as Seneca and Izee. Blyth was uncertain as to their northern and eastern boundaries but indicated that the group ranged as far east as Baker. Although the central territory of this northernmost Northern Paiute band does not lie within the Lakeview District, it is possible, given the customary wide range of travel, that some band members occasionally wandered into the study area.

(2) Directly south of the Root Eaters, Stewart places the Wadatōka (Blyth's Wada'č'hka), or Seed Eaters. Stewart estimated that their area covered 5,250 square miles, including the drainage areas for Harney and Malheur Lakes and Malheur River. Blyth cites this group as wintering in Silver Creek, Harney, Diamond, Blitzen, and Catlow valleys in Harney County. Hampton, located on the toe of Deschutes County, was given by Stewart as the northwesterly extent of this band's territory.

(3) The heart of the Lakeview District was probably occupied by the Goyatōka (Crawfish Eaters) or the Yahuskin according to Stewart, or the Yapač'hka (Yapa Eaters) according to Blyth. This group was centered in the vicinity of Paisley in Lake County, west of the Seed Eaters and south of the Juniper-Deer Eaters. According to Stewart, the band covered 5,000 square miles within the region of Silver, Summer, and Abert Lakes. This group traveled as far north as the Paulina Mountains region which was the southerly range of the Juniper-Deer Eaters.
Some confusion exists regarding the identity of the group or
groups referred to as the Yahuskin Snakes. Stern (1966:288, note 54)
summarizes the problem as follows:

An able exposition by Erminie Wheeler-Voegelin (1955)
holds that the Yahuskin Snakes of the treaty were a
pick-up band of Indians from the Surprise-Warner valleys
area, with whom Colonel Drew [in charge of getting the
Klamath Treaty of 1864 signed by the tribes] had made
contact, and that the group subsequently designated by
that name were the Upland Klamath. The latter view
accords with that previously advanced by Nash (1937),
p. 396. There are, however, grounds for maintaining
the view that they comprised a small band of Paiute,
drawn chiefly from the Silver-Summer-Abert Lake region,
living together with the Upland Klamath [cf. Stewart
1939:132].

(4) Just to the south and east of the Crawfish Eaters were loca-
ted the Kidůtkːadd (Woodchuck Eaters) of Stewart’s account or the
Gidi'tika (Groundhog Eaters) which are mentioned by Blyth and appear
to be the same as Kelly’s Gidůtikadd (1932). Blyth’s only comment
on this band was that they resided "southeast of the Wada Eanders, and
[were] separated by the plateau to the southeast of Catlow Valley"
(1938:404). Stewart gives a much more detailed account, particularly
concerning territorial boundaries (1939:135):

Except for minor points, the Kidůtikadd boundaries
given to me agree with those reported by Kelly [1932].
Starting at the north end of Goose Lake, the line runs
northeasterly along the summit of Warner Range about
60 miles; thence, skirting the north end of Warner
Valley, goes about 30 miles southeast before turning
south to follow the Lake County-Harney County line about
50 miles to the Nevada-Oregon state line; thence it
continues in a southwesterly direction about 50
miles to the south end of Long Valley; thence it goes
about 30 miles westerly past the south end of Lower
Lake to the south end of Warner Range; thence northerly
it follows the crest of Warner Range 60 miles before
dropping down to touch Goose Lake near Fandango Creek.

This particular band’s territory included some 5,000 square miles
including the eastern slope of the Warner Range, Surprise Valley,
California, and Warner Valley, Oregon. Additional hunting territory
was comprised of a section of desert in Washoe County, Nevada. An
exhaustive ethnographic account of this group is presented by
Kelly (1932).
(5) Approximately 2,600 square miles of desert in the Steens Mountain region was occupied by the Tsosdöötuviwarai (Cold Dwellers). Interestingly enough, Blyth shows this region to be unoccupied according to her informants.

(6) East of the Woodchuck Eaters and south of the Cold Dwellers resided the Agapi'ganadöku (Fish Lake Eaters) or Maodöku (Wild Onion Eaters). Their core territory began at the Oregon-Nevada state line in Washoe County, California, and extended south to include approximately 2,800 square miles of desert and mountain land. Blyth's informants also indicated that this region was unoccupied or common territory of surrounding bands.

(7) The last band whose territory might have been included in the Lakeview District are the Atsaköökwatuviiwarai (Red Butte Dwellers) of McDermitt, Nevada. According to Blyth, a band named the Gwii'nid'ba (meaning unknown) occupied the vicinity of Denio and McDermitt, Nevada to the south of the Wada or Seed Eaters. The territory of this band, like the Fish Lake Eaters, lay primarily in Nevada, but it is quite likely that portions of Oregon were utilized at one time or another. The band's range probably extended over 2,700 square miles south of the Oregon-Nevada border.

Subsistence

Each band's territory centered upon a core area from which most of the subsistence resources could be obtained. The extensive, sterile, dry stretches surrounding the productive spots were not necessarily recognized as belonging to a certain band. Rather, several bands may have made mutual use of the more barren areas. However, bands did recognize possession of certain productive tracts such as lakes, streams or hunting grounds which they established primarily through regular use. Other bands were free to hunt and gather in those areas, but they always did so with the understanding that they were visitors.

The general scarcity of foods in the region was such that the population of the Northern Paiute had an average density of one person for every ten to twenty square miles, depending on the locality. The distribution of food sources required that each family be, for the most part, a self-sufficient economic unit. In order to make the best use of the desert's scattered food resources, the Northern Paiute families moved about frequently in their search for food.

After a long cold winter when stored food supplies were becoming low or had disappeared, the Northern Paiute searched the stream banks, lake edges and low hills for the first green plants of spring. The stems or leaves of many of those plants, such as thistle and squaw cabbage, could be cooked or eaten raw as "greens". With the coming
of summer, seeds of many plants began to ripen in the moist hills. Many people left their winter villages in small groups of one or two families and sometimes trekked great distances to collect the tiny seeds. Occasionally, families traveled thirty or forty miles if word reached them that there was an abundant crop to be found in that area. Seeds of innumerable species of grasses in the desert provided much of the Northern Paiute diet. These grasses included common fescue, wheat grass, Indian rice grass, and bluegrass. Seeds of the cattail, rushes, and sunflowers were also sought. The Paiute collected sagebrush seeds as well, but because the seeds were so bitter they were only collected when there was little else to eat.

Seeds were collected by knocking them off the stalks into conical baskets with basketry seed beaters; they were then winnowed and sometimes parched in basketry trays. In order to be eaten, the seeds were ground into flour on stone metates or were boiled in pots to make a mush. Stored seeds were cached in pits, baskets, bags, and available caves and rock crannies located as near as possible to the winter village so that they would be easily accessible during the bleak winter season.

Later in the summer, edible roots, bulbs and berries were gathered from the moist grounds near springs, lakes and streams to add to the winter's stores. Wild onion, camas, arrowroot, cattail root, tiger lily bulbs, bitterroot and tule were among the roots dug with a simple digging stick to be baked, boiled, or dried and stored. Serviceberries, gooseberries, currants, raspberries, and wild cherries were gathered to be eaten immediately or dried and stored for winter. In addition, sugar was found in the reeds which grew in marshy areas.

With the coming of winter, the desert plants became less fruitful, and the Northern Paiute settled down into villages consisting of two to fifteen families which were located near a reliable source of water and the food caches of stored seeds, roots, and berries. Although plant foods provided most of their diet throughout the year, the people welcomed the addition of fresh fish and game, particularly in the wintertime. In the higher elevations, deer, pronghorn antelope and mountain sheep were occasionally taken by individual hunters during the year. The Hart Mountain area was known as a particularly good hunting area for sheep and antelope. Communal drives for deer or antelope were occasionally organized by several families of a band and directed by game shamans. Such large-scale hunts could only take place on an average of every twelve years in the same general area due to the low population of the larger game animals in the desert. Snares, nets, traps, and blinds were used by hunters to catch small game, such as squirrels, field mice, gophers, raccoons, rabbits, chipmunks, porcupines, and an assortment of birds. Fish and waterfowl constituted an integral but small part of the Paiute diet. Fishermen caught trout, suckers, salmon,
and minnows in lakes and streams, using fish nets, weirs, rock dams, elongated fishing baskets of willow or tule, harpoons, fish arrows and lines with bone hooks. Waterfowl, including mud hens, ducks and geese, were taken in occasional communal drives and were also stalked by individual hunters. Caterpillars, ants, crickets, and insect larvae added variety to the general diet when they were in season.

Although the population of the Northern Paiute had an average density of only one person for every ten to twenty square miles, ideally the desert could probably have supported many times as many people except for several limiting factors. First, the plants which provided the much-needed seeds and roots were widely scattered across the countryside, limiting the efficiency with which they could be gathered. Second, the seeds of various plants could be gathered for only a few days to a couple of weeks before the seeds fell off the stalks and could no longer be collected for food. Consequently, most seeds ripened and fell before the inhabitants had a chance to gather them. Third, due to the erratic rainfall in the region, the seed yield varied considerably from year to year and sometimes failed to support even the tiny local population. In the event of a severe food shortage, the families of a band split up to visit friends and relatives in more productive areas. Sometimes, however, food was scarce in many places, and the people starved.

**Material Culture**

The semi-nomadic Northern Paiute had to keep their possessions to a minimum. Because they did not have horses until after contact times, they had to pack everything on their backs. As a result, they carried only essential baggage on their wanderings. Tools for butchering, food processing, and woodworking were often fashioned on the spot from available cobbles and abandoned when the immediate task was completed. Countless "activity areas" of this sort, hundreds or thousands of years old, are still found in the desert today. Favorite grinding tools or other bulky or heavy items which the owner wished to keep were probably stored at the winter camp to which the owner returned year after year.

The limited number of material items made and used by the Paiute shows how frugally these people used plants and animals for purposes other than food. Bone and horn were used to fashion spoons, dippers, stirrers, knives, knife handles, awls for punching holes in skins, drill tips, and arrowheads. Wood was used to make cooking implements, drillshafts, arrowshafts, and bows. Obsidian, a natural glass so frequent in eastern Oregon, made knives, scrapers, and arrow points, whose freshly chipped edges were sharper than surgical steel. Willows and tule provided the materials for fashioning the seed beaters and baskets used in food gathering. Since the Northern Paiute did not make pottery of any kind, they wove watertight pitched ollas or bottles
Figure 17. An Indian Woman and Child (Probably Northern Paiute) at a Camp in South-Central Oregon around the Turn-of-the-Century. Photograph courtesy of the Schminck Memorial Museum.
Figure 18.
A Turn-of-the-Century Photograph of Indian Men and Children (Probably Northern Paiute) at a camp in South-Central Oregon. Photograph courtesy of the Schmid Memorial Museum.
for carrying precious water on their long treks through the desert. Watertight unpitched baskets were also used for cooking. Red-hot stones were taken from the fire and stirred in a basket partially filled with water to boil meat, seed meal, or other food (Lowie 1924:225). Shredded sagebrush bark, which was always in abundance, proved useful for weaving bags, blankets, and sandals. The lower stems and roots of the rabbitbrush provided an ever-available supply of chewing quids. Numerous other plants were used for concocting poisons, treating ailments, and making rope.

Weapons of the Northern Paiute included a three-foot sinew-backed bow of juniper or serviceberry, with a sinew or vegetable fiber bowstring. Arrows were made of various woods and were generally about 2½ feet in length. Stone, bone, and horn points were made and attached to arrowshafts with sinew. Arrow poison was sometimes used in hunting. To straighten arrow shafts, a hunter used his teeth, a grooved stone slab, or a perforated horn. Stone headed clubs were used, but atlatls and darts were not in use at the time of Euro-American contact. Slings were used only as toys and not for serious hunting.

Women usually wore knee- or shinlength dresses of deer, antelope, or mountain-sheep skins, which were often decorated with paint, Olivella shells, or bone beads. The men generally wore nothing except skin headbands and belts, although they did don skin shirts, fur leggings, and fur hats to keep warm in the winter. Robes and capes for keeping out the cold were twined from vegetable fibers and furs or were made from a patchwork of hides. Although the Paiute usually went barefoot, they sometimes wore moccasins of skin or sandals of shredded bark or tule and rushes.

**Shelter**

The Northern Paiute constructed several forms of shelter according to their needs. For temporary or summer camps, they often formed a crude windbreak or sun shade out of brush. A circular domed wickiup with a frame of bent willows covered with grass, tule, brush, or mats was used both in summer and in winter. These dwellings were usually six to eight feet high and eight to fourteen feet in diameter and had grass-covered floors. A tripod-foundation house, with three supporting poles tied at their intersection like a teepee with similar covering, was also sometimes constructed in both summer and winter. Occasionally, caves served as temporary dwellings. Wickiup-type sweat houses big enough for as many as four people were built and heated by pouring water over hot rocks; sweathouses were used for curing sicknesses as well as for ritual cleansing and praying (Stewart 1941:377-379).
Sociopolitical Organization

Since the organization of the Paiute was very flexible, there were no rigid social proscriptions. Leaders led with the consent of the entire group and had little authority. Leadership was not inherited but depended upon personality and experience. Special "chiefs" each organized and led different activities, such as dances, and rabbit, antelope and waterfowl drives. There were no definite rules for marriage, except that one could not marry a blood relative. Marriage residence was also optional, although matrilocal residence (living with the wife's family) was preferred. Both polygyny and polyandry occurred, but apparently the practices were not frequent (Park 1937, Stewart 1941). The sororate, a practice where a man married his dead wife's sister, and the levirate, where a widow married her husband's brother, were also practiced.

Religious Beliefs

Rituals were exceedingly limited and religion served as an integrating factor only to a minor degree. The primary religious figure among the Paiute was the shaman. Shamans were mature men or women who had acquired shamanistic power in a dream. In the dream, power was bestowed by one or more spirits in the form of an animal or natural phenomenon, such as thunder, lightning or the moon. Shamans received several power-bestowing dreams from their guardian spirits during their lifetimes and sometimes went on long lonely retreats in quest of such visions. The shamans were highly respected and feared for their powers, which allowed them to cure diseases, wounds and snakebites, control the weather, and foretell the future. The people believed that a shaman could punish them supernaturally with sickness or death if they did something wrong, so the presence of the shaman served as an effective form of social control. Shamans who misused their power and caused innocent people to die, however, were killed as a menace to the group.

The Paiute conceived of death as the loss of one's soul. When death occurred, the body was usually painted, adorned and wrapped in a blanket for burial. The usual method of disposing of the body was by burial in the ground, especially on rocky hillsides or talus slopes, and covering the grave with stones to protect it from wild animals (Lewis 1906:190; Stewart 1941:412). Bodies were also placed in caves or rock clefts which were then blocked with stones (Lowie 1924:282). The deceased's house was usually burned, and personal property was destroyed, buried, or taken by relatives.

Among the native traditions of the Northern Paiute are stories of a people called the "Old-time" Indians, who occupied the desert land before the Paiute came to live there. The Paiute claim that the "Old-timers" were the ones who made and left all the stone mortars
and pestles which are now found in the Paiute country. They also say that the petroglyphs or rock carvings which occur in the area were done by the "Old-timers" (or by Coyote, an important mythological figure) and not by the Paiute (Stewart 1941:418). Kelly (1932:186) records a Groundhog-Eater informant as stating that the Klamath originally held Warner and Surprise valleys until the Paiute "got the best of them" and drove them out long ago. According to this informant, the Klamath erected wall-like structures for protection which were "just high enough so a person can sit behind them and shoot over the top." Interestingly, there is some archaeological and linguistic evidence to indicate that the Paiute have been in eastern Oregon for less than a thousand years.

**Trade**

Since the Northern Paiute were somewhat removed from the trading centers along the Columbia River, trading was not a major activity, particularly in pre-contact times. A Deer-Eater Paiute informant is reported by Suphan (1974a:64) as saying that "the Paiute traded regularly with the Tenino living at Sherar's Bridge, giving buckskin and roots for salmon and horses." Anastasio (1972:136) notes that roots and elk meat were traded to the Plateau people by the Great Basin groups. In addition, from the archaeological evidence it is known that the obsidian from Glass Buttes and the surrounding area was traded as far away as British Columbia.

**Historic Contact**

Subsequent to the advent of Euro-Americans in the Northwest, the northern boundary of Paiute territory changed rapidly in response to the movements of neighboring native groups. During the 1700s, Paiute territory probably extended further northward to include the present-day Warm Springs Indian Reservation. The Northern Paiute traditionally were a peaceful people for whom warfare was practically nonexistent, but there is evidence of friction between the Sahaptins and the Paiute. Ray (Ray et. al. 1938:391) describes the nature of this conflict as follows:

Sahaptin informants declare that from time immemorial conflict has existed with the [Northern Paiute]. Neither side ever attempted to wrest territory from the other. Marauding parties carried away moveable property, but the main object of warfare was the attainment of glory...In these contests the [Northern Paiute] often pushed as far north as the Columbia River...but the invaders never remained long and in no case established permanent camps.
Before 1800, these raids, specifically between the Northern Paiute and the Tenino, were made on foot and required several days of travel. After the turn of the century, however, the balance between the two groups began to shift in favor of the Tenino. The northern group, situated along the Columbia River trade route, acquired the horse and new weapons from Euro-Americans, which gave them a definite advantage over the Paiute, who had not yet adopted the horse. Consequently, the Tenino began to push south into the area of the present day Warm Springs Reservation, which originally was Paiute country.

After the Tenino were settled on the Warm Springs Reservation in 1857, the Northern Paiute took the opportunity to raid the Tenino in return. During this time, the Paiute also apparently raided the Klamath on occasion (Stern 1966:23). By this time, the mobility of the Paiute had been greatly increased due to the acquisition of the horse sometime during the mid-1800s. The Northern Paiute raids continued for about ten years and even extended past the signing of two treaties in 1864 and 1865 (refer to Wheeler-Voegelin [1955] for a complete account of the treaty process). The Northern Paiute were eventually subdued and persuaded to move onto reservations. The Paiute moved to several reservations, including the Klamath Reservation (which was terminated by law in 1954), the Warm Springs Reservation and the Burns Reservation in Oregon, as well as several reservations in Idaho and Nevada.

**THE KLAMATH-MODOC**

Although the Klamath-MoDoc peoples were distributed in ethnographic times over one-third of the area encompassed by the borders of the Lakeview District, only 6% of the actual 5,250 square miles of BLM land in the district was occupied by Klamath-MoDoc speakers. A majority of the territory is presently privately owned or under the jurisdiction of the U.S. Forest Service.

From the archaeological evidence it appears that the Klamath Basin has been occupied for at least 10,000 years by peoples who were the forerunners of the ethnographic Klamath-MoDoc (Cressman 1956). Situated on the southeastern flanks of the Cascades, the Klamath-MoDoc were bordered to the south and west by the Achumawi, Shasta, Upper Takelma, and Southern Molala. Their neighbors to the north and east were the Northern Paiute.

Because of their strategic position along the earliest travel routes between the middle Columbia River and California, historical journals contain more references to the Klamath-MoDoc than to their neighbors. Such historical accounts include Abbot (1857), Ogden (Elliott 1910), and Fremont (1845).
Ethnographic and linguistic researchers did not arrive until much later. The first ethnographer to visit Klamath country was Albert S. Gatschet (1890), who conducted ethnographic and linguistic research there in 1877. Subsequent studies of the Klamath and Modoc were made by the botanist Frederick B. Coville (1897, 1902), and ethnologists George A. Dorsey (1901), S.A. Barrett (1910), Leslie Spier (1927a, 1927b, 1930), Verne F. Ray (1939, 1942, 1963), M.A.R. Barker (1963a, 1963b, 1964), and Theodore Stern (1953, 1956a, 1956b, 1966).

Ray's presentation (1963) of the Klamath and Modoc stresses the differences between the two groups to the point of placing the Klamath in the Plateau culture-area and the Modoc in the California culture area. However, Stern (1964:676) suggests that "many of the differences noted by Ray between the Klamath and the Modoc seem rather the selective tribal emphases upon a common cultural capital." The Klamath emphasized fishing to a greater extent than the Modoc who preserved a less specialized subsistence pattern. This emphasis seems to correspond to the greater availability of fishing areas in Klamath as opposed to Modoc territories. This brief summary of the Klamath and Modoc will treat them as two closely related aspects of the same basic lifeways.

Language

Klamath and Modoc are two closely related dialects of the same language and have been described as being perhaps no more different than "the English of New England and that of Virginia" (Voegelin, cited in Rigsby 1965:77). The two dialects were initially grouped into a distinct linguistic stock called Lutuamí (Hale 1846). Later Gatschet (1890) as well as W.E. Myers, a linguist working with Edward S. Curtis, noted resemblances between Klamath-Modoc and languages to the north. Subsequently, Klamath and Modoc have been classified together as the Klamath-Modoc language isolate; their distant similarities to the languages spoken by the peoples along the Columbia River and across much of western Oregon is indicated by the inclusion of these languages into the Penutian language phylum (Sapir 1929; Jacobs 1937; Voegelin and Voegelin 1964, 1965). The inclusion of Klamath-Modoc within the Penutian phylum seems to be supported by lexical resemblances as observed by Aoki (1963). On the other hand, Rigsby (1965:252-253) has argued that such resemblances are due to recent borrowing of linguistic elements rather than to a common ancestor language. Although the genetic relationship of Klamath-Modoc remains unclear, the fact that the two dialects share elements in common with linguistic groups to the north indicates that they have been in extensive and direct contact with each other at some point in the past. Rigsby suggests that shared numerals, for example, may stem from recent trading contacts at The Dalles; the more remote lexical links may indicate a more distant Penutian affiliation.
The origin of the term "Klamath" remains obscure despite numerous guesses involving different derivations. The term was first used by Ogden in 1826 who apparently learned of the "Cleammitte" from the Columbia River tribes before reaching the Klamath territory. Gatchet suggested that the term was of Yurok origin, but Kroeber thought it was derived from Athlamer, which was the Kalapuya term for the Klamath (Spier 1930:1-2). It now appears that the term is from Chinooken, as originally proposed by Hale (Theodore Stern, personal communication).

According to Spier (1930:1), the Klamath called themselves maklaks ("men") and referred to other tribes by directional or locality names. The Modoc were known as moadok ("south people") or moadokkni ("southerners"). The Pit River peoples, also to the south of the Klamath, were called the moatuxas, also derived from the stem moas which means "south". The peoples to the north were generally known as yamokkni ("northerners") (Spier 1930:2-3).

Territory

The territory occupied by the Klamath-Modoc has been well-defined by Spier (1930:8-10) and Ray (1963), as shown in Figure 17. The Klamath settlements centered around Upper Klamath Lake and Klamath Marsh as well as along the Williamson River and its tributaries. They utilized a much greater area from the open deserts and broken lands to the north and east which were occupied by Northern Paiute, to the Cascade watershed in the west and the Klamath Valley to the south. Klamath territory probably did not extend as far north as the headwaters of the Deschutes River. The Klamath ventured further east in the summer to make use of the resources found in and around the Sycan River, the Sycan Marsh, and Yamsay Mountain. That they probably went as far east as Chewaucan Marsh, between Summer and Abert lakes, is indicated by the derivation of the name from the Klamath term tĉuwakan, meaning a place where arrowhead (arrowroot or wapato) was gathered (Spier 1930:10).

The territory of the Modoc is delineated by Ray (1963:xii) as follows:

The tribal territory of the Modoc was roughly four-sided, permitting the boundaries to be described in terms of the cardinal directions. The western line was that of the Cascade Divide, extending from the summit of Mt. Shasta northward to within two or three miles of the present California-Oregon border. The northern boundary ran from this point northeasterly to the region of small lakes south of Quartz Mountain,
and southeasterly to Goose Lake, again at the Oregon-California border. The boundary emerged from the lake at its southern extremity, then followed a south-easterly direction to Mt. Shasta. Goose Lake was shared with the Yahuskin Paiute and the Achomawi. Only a part of the western shore was the territory of the Modoc.

Klamath-Modoc Tribelets

The Klamath and Modoc were divided into several areal subdivisions known as tribelets (Spier 1930:21; Stern 1966:19; Ray 1963:204ff). Spier notes that all groups were "readily defined by the [geographical] districts they occupy, the names of which they bear" (1930:21-22). These tribelets appear to be strictly geographical units, rather than subdivisions based on any dialectal or cultural differences (Stern 1966:19). Ray (1963:203) makes the following comment regarding the nature of the tribelets:

These divisions were strictly geographical, not ethnic nor political except quite incidentally. The minor cultural differences which distinguished one group from another were the consequence of response to the physical environment, either in terms of the resources available or the configuration of settlements and their positions with respect to ceremonial centers and neighboring tribes.

Feuds frequently occurred between tribelets but never between settlements of a single such subdivision. These raids were carried out much like warfare with foreigners or non-Klamath—property was destroyed and slaves were taken. When threatened by outsiders, however, the tribelets banded together for protection.

Five Klamath tribelets are distinguished by Spier who also gives the general location of 62 major village sites (1930:12-21). The Klamath divisions are as follows (see also Figure 17):

(1) The Klamath Marsh - Williamson River group (aukckin) -- Spier records 29 villages for this group which outnumbers all the other groups together. The settlements were primarily located along the southern margin of the Klamath Marsh and along the lower Williamson River.

(2) The Agency Lake group (kowadikni) -- Only one winter village site was recorded for this tiny group on the north shore of Agency Lake. Spier mentions that this group may be a splinter group of the Klamath Marsh peoples (1930:23).
Figure 19. Distribution of Klamath-Modoc Tribelets (after Stern 1966:280).
(3) The Lower Williamson River group (dulwakni) -- Five villages identified with this group are located at the mouth of the Williamson River on the north end of Upper Klamath Lake.

(4) The Pelican Bay group (gumbotkni) -- Ten sites are mentioned on the west side of Upper Klamath Lake and on the marsh north of the lake which were occupied by this group.

(5) The Klamath Falls group (ju?lalonkni) -- These southernmost Klamath occupied a large area along the east shore of Klamath Lake in the vicinity of Klamath Falls where 17 sites are recorded by Spier. During the summer, families of this group frequently moved to the marshes west of the lake or to Lost River.

A sixth Klamath group is alluded to by Spier (1930:13) and is set forth by Wheeler-Voegelin (1955:118) and Stern (1956b:242, 1966:19):

(6) The Upland Klamath of the Sprague River Valley (no native designation given) -- Although Spier mentions these people in connection with the Klamath Marsh group, he notes that the towns were widely distributed far upriver, quite unlike the extremely close settlements of the people near the marsh. Roots were dug along the Sycan River, and the Sycan Marsh was used as a summering place.

The Modoc were comprised of three tribelets whose territories are defined by Ray (1963:202-203) and are shown in Figure 17 (c.f. Stern n.d. for a different interpretation of group names):

Modoc tribal territory was divided into three geographic areas and the residents of each area were known by a distinctive name. The Gumbatwas were, literally, "people of the west." The root of the name was the word for west; the point of reference was Tule Lake. Thus, all Modoc living west of a line following the ridge between Lower Klamath Lake and Lost River Valley, to the northwestern corner of Tule Lake, then through the lake to its southeastern corner, then southeastward to the southern tribal boundary, were Gumbatwas.

All tribesmen living to the east of this line, except for the lower valley of Lost River, were Kokiwas, literally, "people of the far out country," referring to their remoteness from the more concentrated population centers of the lower Lost River Valley and the Lower Klamath Lake region. Many of their villages were located on the far reaches of Lost River, east of Lost River Gap (now Olene, Oregon) with a heavy concentration in Langell Valley. Apparently the name of the
river was different on the two sides of the gap, the designation (Kokiwat) in the Gumatwas area being derived from, or giving its name to, the divisional population.

The Modoc of Lost River Valley from the gap to Tule Lake were Paskanwas, which means "river people," possibly a name derived from that of the lower river.

Forty-seven village sites and ritual centers are plotted by Ray within Modoc territory. Both Klamath and Modoc villages tended to be clustered about lakes and rivers where there was a plentiful source of water and fish.

**Subsistence**

Much like the Northern Paiute, the Klamath-Modoc moved about on an annual subsistence round in response to local food resource availability. The primary difference between the subsistence patterns of the two groups was the greater abundance of food resources which were available to the Klamath-Modoc. Consequently, group territories were smaller and settlements were occupied for longer periods of time in the Klamath-Modoc region than in the more arid areas occupied by the Northern Paiute.

As winter drew to a close, the inhabitants of the winter villages prepared to move to other locations along the rivers and lakes where the spring fish runs, which usually occur in March, could be easily caught and dried. Stern (1966:11-12) describes the activities which no doubt took place in the early spring:

At the spot on the [Sprague River] where Gmukamps ["Earth Maker"] first instituted the tradition, the Klamath observe the first sucker ceremony, which ensures propitious run. On the lower reaches of Lost River near present-day Olene, there is a famous fishing station, where Modoc and many Klamath congregate for several weeks, catching and drying an estimated fifty tons of fish. On a stream tributary to the upper Sprague, the teeming run of small suckers draws upland Klamath, Modoc, and Paiute and gives to the nearby settlement, the easternmost of the permanent villages of the Klamath, the name, "Sucker-fishery." Others make their way to stone weirs, built, it is said, by Gmukamps himself, or to the lakes to fish with a variety of dip nets, gill net baskets, the two-pronged harpoon and the multi-barbed spear. At night, men set forth in canoes upon
the lake to fish by torchlight. Set lines are put out infrequently. While the men catch the fish—suckers, salmon, and trout—their wives work ceaselessly, splitting them and laying them in the sun to dry.

As the fish runs began to abate, families moved to the digging grounds of the flats and meadows to collect important root crops, primarily camas, epos (or ipos, Carum sp.), arrowroot, and yams or sego lily (Calochortus sp.). Tule and cattail roots were also gathered along with wild celery, mosses, and the eggs of waterfowl. Small game was continually hunted, and occasional fishing continued. The Modoc began stalking antelope and mountain sheep, as well as deer, during the latter part of the summer. Additional fish runs in August and September provided additional opportunities to increase the stores of dried fish. As summer wore on and fall began, the higher elevations of the region were occupied as the women picked berries and gathered a wide variety of seeds, including wokas (pond lily seeds). Detailed discussions of the fish, animals, birds and plants utilized by the Klamath and Modoc and the techniques by which they were procured and prepared are presented in Covilie (1897, 1902), Ray (1963, Appendix II), and Spier (1930:144-169).

While the Klamath and Modoc made use of the same resources, they emphasized different foods according to what was most abundant in their region. The Modoc relied more upon hunting than did the Klamath whose primary food was fish. Also, the most important plant food of the Modoc was epos (Carum oreganum Wats.), while wokas (the seeds of Nymphaea polysepala) was of primary importance to the Klamath. These minor differences in food utilization should be seen as resulting from local environmental variation and not as indicating different cultural traditions.

In October, as winter began to settle in the basin, the people returned to their winter villages and their caches of dried fish and meat. The earth lodges were rebuilt and firewood was gathered in preparation for the long cold winter. In December, the winter run of trout appeared, and more fishing was undertaken in the streams and open lakes. Fishing continued on a smaller scale throughout the winter by fishing through holes in the ice. Hunting of deer and small game was also pursued through the winter. The people sustained themselves during these lean months by relying on their caches of meat and fish and on occasional fresh fish and game. If spring was late in arriving, the people sometimes resorted to eating hides, lichens, or the tender new cambrium layer beneath the bark of young ponderosa and lodgepole pines. Nowhere, however, is there any mention made of people starving because food was scarce at any time. In this way, the Klamath-Modoc were more fortunate than the Northern Paiute.
Material Culture

Due to the semi-sedentary nature of the Klamath-Modoc villages and the regularity with which the sites were revisited, the inventory of material items was significantly greater among the Klamath and Modoc than among the Northern Paiute. Although many tools were fashioned for immediate, short-term use from available cobbles or flakes, many other items were the result of many hours of pains-taking labor. The following brief presentation of the types of implements, clothing, and shelters made and used by the Klamath and Modoc is derived primarily from Barrett's study (1910) of Klamath-Modoc material culture. His information has been supplemented by Spier (1930:144-217).

The most distinctive stone implements of the Klamath are thin, flat metates and two-horned mullers which were favored for grinding wokas seeds. Lava mortars and cylindrical pestles were also used for grinding seeds but were less common. Hopper mortars were used by the Modoc, but not by the Klamath. Although Barrett (1910:247) mentions stone axes and adzes in conjunction with the Klamath-Modoc, Spier (1930:172) states that he knew of no such stone tools. The general lack of large stone chopping and cutting tools from archaeological deposits (Cressman 1956) favors the information given by Spier. Shaft straighteners consisted of a flat-bottomed stone with a single groove ground across the top or a doughnut-shaped stone. Net sinkers were round stones, three to four inches in diameter, which were each encircled by a groove about which a cord was tied to join the weight to the net. Knives, scrapers, arrow points, and spear points were primarily made of local obsidian. Small anthropomorphic sculptures called "henwas" were used by shamans and were believed to have special powers. The Klamath County Museum in Klamath Falls, Oregon has an impressive display of these figures. Roy L. Carlson has described what is known of "henwas" and other stone sculpture of the region (1959). Many stone utilitarian items such as bowls, mortars, manos and metates were decorated by the Klamath.

Bone and horn tools included elkhorn wedges, bone awls, large bone points for fish spears, fish hooks, and elkhorn adze blades which were lashed to wooden handles. Bone knives were often used to separate the inner and outer bark of pine trees. River shells were sometimes used to make sharp cutting knives. Dentalia were used for ornamentation.

Woodworking was an undeveloped art to a great extent. The most ambitious woodworking project undertaken was the building of a canoe. The typical canoe, preferably made from a ponderosa pine log and hollowed by fire, was a "clumsy-looking, trough-like affair, with blunt ends, heavy and long" (Spier 1930:169). Most canoes were only eight to ten feet long and 18 to 24 inches wide, but some were as
large as 35 feet long and three feet wide. Wood was also used for the planks of the earth-lodge roof and for carved figures of spirits made by shamans (Spier 1930:171). Canoe paddles were made of juniper. Wokas gathering staffs consisted of a long pole to which a bundle of 18-inch-long wooden prongs were tied at one end. These poles were pressed against the roots of the wokas to gather the plants.

Hardwood mauls, used in conjunction with antler wedges for woodworking, are reported by Spier (1930:171). Digging sticks were about three feet long and were usually made of mountain mahogany or service berry. Wooden spoons and buckets of lodgepole pine bark were also made.

The basketry of the Klamath-Modo was twined into both soft and rigid items from tule, cattails, and swamp grasses. The wide variety of basketry which was manufactured includes the following inventory (Spier 1930:178):

There are really only four or five types of basket from a structural standpoint. Twined bowls, hats, gambling or sifting trays, and circular baskets, all in close twine weave; burden baskets of all forms and storage baskets, in open twine, are simply variations of one structural procedure. The second type, comprising seed beaters, ladles, and winnowing bas-
kets, are open twine construction based on rigid warps bent into a loop. Triangular fans and trays, two-handed baskets, canoe-shaped receptacles, fish traps, and cradles, all of open twine, constitute a class differing but little from the last. The fourth group is the twined flat bag. Each of these groups merges structurally into the others, largely as variations in form demand. But the fifth type, the water basket, is built on an entirely different principle, namely, coiling.

Mats of tule and grasses were also woven to be used as bedding and house coverings. Rafts were quickly constructed by lashing bundles of tules together. Cordage was fashioned from nettle bark and flax fibers and made into nets. Three-strand ropes were braided from grasses, tule, hide and nettle fibers.

Cradleboards were constructed of willow sticks and tules. Babies were padded with soft tule bark and wrapped onto the cradle with fur or cordage. Flattening of the forehead was customarily accomplished by tying a stuffed buckskin sack across the child's head and onto the cradle. Hrdlička's informants noted that "the Klamath regard a long head, i.e., a non-deformed head, with derision. They say it is
slave-like, that their slaves had such, and that a man with such a head is not fit to be a great man in the tribe. Deformed heads are called 'good heads'" (Hrdlicka 1905).

Weapons of the Klamath-Modoc included three-foot bows with sinew backing, wooden clubs, spears, body armor of hide or tules, and in rare cases a hide shield. Arrows had wooden or reed shafts and were kept in tule quivers.

Clothing was optional during the warm summer months, but was required in winter. Apparel included sagebrush bark or skin skirts for women and skin aprons and leggings for men. Twined basketry hats were frequently worn in all seasons "because they were considered decorative and as protection from sun in summer, cold in winter, and chafe of the forehead tumpline by which burdens were carried" (Ray 1963:164). Summer moccasins were made of skin, while winter shoes were woven from tule or sagebrush bark. Winter robes were made of skin, fur, or feather strips or woven of tule or swamp grass.

Shelter

Several different forms of shelter were constructed by the Klamath-Modoc according to their activities and needs. Spier (1930: 197-206) and Ray (1963:146-163) describe the following house types in detail:

(1) The winter earth lodges were dismantled every spring, probably to air out the circular house pits which were between two and four feet deep. The Modoc tended to construct deeper house pits, while the Klamath preferred more shallow ones. The conical roofs of the houses were supported by log beams and rafters. Tule mats were placed over the rafters and covered with earth to insulate the lodge. Occupants and visitors entered the lodge through the smokehole in the roof. The lodges were rebuilt with new timbers in the late fall before the snows fell. Several families often occupied a single dwelling which could be as large as 35 feet in diameter.

(2) The summer houses were smaller in size and were rebuilt every summer. No pit was excavated for the floor of the house, and mats formed the only covering for this type of dwelling.

(3) Dome-shaped cook houses were often constructed next to the winter earth lodges. Bent willow poles formed the frame which was covered with mats to form a circular enclosure about ten feet in diameter. In addition to being used as cook houses, domed huts were also used to store bulky materials, such as floor grass, matting materials, firewood, extra mats, and metates. Occasionally these huts were built for summer habitation. Although these structures
were intended for cooking, storage, or summer use, elderly persons who had difficulty climbing in and out of the earth lodges sometimes used abandoned cook houses for winter shelter.

(4) Two kinds of sweatlodges, commonly known as summer and winter lodges, were both utilized at all times of the year. The "summer" lodge was a dome-shaped mat-covered affair which was blanketed with grass to hold in the steam. The "winter" lodge was somewhat smaller and was covered with sticks, bark, grass, and dirt. Stones were heated in a fire outside the lodge and then rolled into a hollow in the sweathouse floor. Sweathouses might have been used jointly by men and women.

Miscellaneous house forms include menstrual huts where women were isolated during menses and childbirth, and mourners' sweatlodges which closely resembled the winter earth lodge.

Sociopolitical Organization

Klamath-Motec social activities can be divided into three realms: warfare, religious affairs, and domestic affairs. Accordingly, the leadership offices of war chief, shaman, and leader or chief corresponded to each of these realms (Ray 1963:3). Each was restricted to his specific sphere of activities and had no authority in other matters. The functions of the war chief and the shaman were specialized and obvious. The domestic leader was responsible for keeping peace within the community and maintaining good relations with other communities. Oratory, haranguing, arbitration, casual advice, and leadership by example were the principal means by which the leader fulfilled his obligations to the community. Leaders held their positions with the consent of the group and had little power. A village might have one or more leaders depending on its size; some tiny villages had no leaders and followed the example of a larger neighborhood village within the same tribelet. The basic qualities sought in a leader were oratorical ability, wealth, and size of household, the latter of which was an indication of the number of people over which he had domestic control.

Although there were wealth differences among the Klamath-Motec, there was no formal class stratification. Wealthy men were accorded prestige as indicated by the fact that the same term was used for chief and wealthy person (lo'ki). The attitude of the Klamath-Motec toward the poorer folk is depicted by Stern (1966:17):

A poor man is 'like a slave.' The impecunious aged, lacking kinfolk to provide for them, are no better. Yet the myths do not depict the lot of the poor and the orphan as inalterably fixed: by dint of striving
they may win their way to spiritual power and to material affluence, thereby gaining the esteem of their fellows.

Slaves, which were frequently taken in raids against opposing tribelets or neighboring tribes, were treated as inferior to the rest of the population. Most slaves were sold or traded at The Dalles in exchange for a variety of trade goods or horses. Slaves sometimes married into the group by which they were taken, but some stigma remained throughout the rest of their lives. Much of the information on the practice of slavery among the Klamath indicates that the taking of slaves was rare or nonexistent prior to Euro-American contact. Ray states, however, that "Modoc tradition held that the taking of slaves had always been a tribal practice" (1963:145).

The force of public opinion and familial pressures, in addition to the prestige of leaders and checks imposed by rival villages, served as forms of social control. Differences between rival villages often grew into feuds which were joined by the kin groups of both parties if the disputes were not quickly settled.

Religious Beliefs

The shamanistic complex was the central focus of Klamath religion. According to Spier (1930:93),

Klamath religion centers so largely in shamanism that it may be permissible to describe the whole in terms of shamanistic practices, the spirits with which they are concerned, and the acquisition of supernatural powers... The religion is only weakly developed. Power is sought from a host of spirits whose characteristics are not sharply defined. These are predominantly birds and animals, winds, lightning and the like, and a handful of anthropomorphic beings. They are however definitely localized in many instances and partly identified with the figures of mythology. But there has been no attempt to marshal the spirits into an ordered pantheon. Relations to the spirits have no ethical implication. The belief in a land of the dead, too, stands apart from the spirits and their functions. It has solely a folkloristic existence, for it little concerns the actions of the living.

Both men and women could be "called" in a dream by the spirits to become shamans. After communing several times with the spirits and receiving their powers and support, an inaugural dance of five days duration was given by the initiate as a means of announcing to neighbors and nearby villages that the new shaman was ready for
public practice. Shamans were primarily responsible for curing diseases and wounds, but they also acted occasionally to call back lost souls, control the weather, foretell the future, and locate lost or stolen objects. Some of the more common spirits which lent their powers to all shamans were Eagle, Fish Hawk, Frog, Pelican, Crow, Rattlesnake, and the ghost spirit (Ray 1963:46). The status of the shaman is clearly stated by Spier (1930:107):

It is clear that the shaman is the most important individual in Klamath society, taking precedence over rich men, the chiefs. Shamans' houses are the largest in the village and they have at least as much property as wealthy laymen. Invariably my informants spoke first of shamans in describing outstanding individuals.

Although the acquisition of supernatural powers was restricted to shamans, all individuals embarked on crisis quests several times during their lives. The purpose and format of such quests were as follows (Ray 1963:77):

Certain crises in the life of the individual were occasions for observance of a quest involving fasting, isolation, strenuous artificial activities, and ritual bathing. The occasions for such ritualization were puberty, the birth or death of one's child, and consistent and serious losses in gambling; also, occasionally, chronic illness, or the death of one's spouse. The basic ritual pattern was identical for all...The framework of the ritual was a quest in which the individual wandered about the woods and hills in areas isolated from human settlements. That which was sought in the quest was a prophetic and satisfying dream. This was achieved by engaging in energy-consuming but economically worthless activities [such as piling rocks], followed by a short period of sleep.

The remains of these vision quests, in the form of vision quest mounds or piled stones, are abundant in the upland regions of the Klamath Basin and may still be found today.

The sweat house was an important part of the crisis quest. Prayers were most frequently made in the sweat lodge, where spiritual and bodily cleansing also took place. Shamans sometimes performed curing ceremonies in the sweat lodge.
Death was conceived as the departure of one's soul. The universal practice for disposing of the dead among the Klamath-Modoc was by cremation. Corpses were sometimes transported for long distances so that they could be cremated at the regular cremation place of the paternal relatives. The cremation site was usually located a short distance from a group of settlements (Spier 1930:71-76; Ray 1963: 113-122).

Mythology was an integral part of Klamath-Modoc culture and characterized the world view of the people. Studies of Klamath-Modoc mythology include those made by Barker (1963b), Clark (1953), Curtin (1912), Gatschet (1879), Spencer (1952), and Stern (1953, 1956a, 1963).

Intertribal Relations and Trade

The historical record of the interactions between the Klamath and Modoc and other native groups presents a complex picture (Anastasio 1972). The earliest recorded raids against the Klamath were made by the Sahaptin speakers of the middle Columbia River region in the early 1800s who, equipped with guns and horses obtained through trade further north, began to take Klamath slaves (Ray et al. 1938). Before midcentury, however, the Klamath and Modoc were raiding other neighboring tribes in turn, particularly the Shasta and Achumawi, for slaves to be traded at The Dalles. A general view of intertribal relations is offered by Spier (1930:24-25):

Besides the close bond with the Modoc, normally friendly relations are maintained with the Molala across the Cascades, the Wstankni (Warm Springs people) of the Deschutes, and the Wishram-Wasco at the Dalles. Warfare is directed toward all other directions. Raids are exchanged with the Shasta several days' journey down the Klamath River, the Upland Takeitma on the Rogue River, and the Northern Paiute (Snake) of the desert to the east. The Klamath fight the Kalapuya and take horses from the Warm Springs Indians.

Spier (1930:24-25) also mentions that the Sahaptins, Cayuse and Shasta had been known to raid the Klamath for slaves, but such raids apparently were quite rare.

That a profit motive was responsible for these raids is made clear by Chiloquin, one of the Klamath leaders at that time:
When the Snakes [Northern Paiute] made war on us that made us keen to fight other Indians and we made war without provocation on the Pitt Rivers, Shastas and Rogue Rivers, but they never made willing war on us. Those wars lasted a great many years. We found we could make money by war, for we sold the provisions and property captured for horses and other things we needed. It was like soldiers nowadays who fight for money. We made war because we made money by it and we rather got to like it anyhow. The snakes pro-voked us to make war on them. (Cited in Stern 1966:23)

The Modoc rarely journeyed to trade at The Dalles as the Klamath usually acted on their behalf in trading at The Dalles. Items exchanged by the Klamath at The Dalles included slaves, Pit River bows and beads, and lily seed (wokas) which were swapped for horses, blankets, buffalo skins, parfleches, beads, dentalium, dried salmon and lamprey eels (Spier and Sapir 1930). Buckskin clothing was also a popular item of trade at The Dalles during later historic times.

**Historic Contact**

The Klamath-Modoc first felt the effects of Euro-American contact indirectly through the raids staged against them by the Sahaptin speakers to the north in the early nineteenth century. Shortly thereafter, the effects of white contact were more clearly seen in the form of guns, horses and other trade items obtained from The Dalles. The acquisition of the gun and the horse led in turn to an emphasis on warfare and the consequent accumulation of foreign wealth. Leaders and war chiefs began to take on more importance in the communities than the shamans.

The arrival of the white settlers was a time of upheaval for the Klamath-Modoc. The settlers displaced the native occupants, taking many of the choicest areas and turning their livestock out to browse on the camas, kous and berries which were mainstays of Klamath-Modoc subsistence. After a while, the land could not support the traditional lifeways of the natives.

The misappropriation of their lands and the degredation to which the aboriginal inhabitants were subjected by the white settlers led to raids between the two. Eventually, these disputes escalated to the Rogue River Indian Wars of 1851-1856, which involved the Klamath, Modoc, Shasta, Takelma, and several other neighboring groups (Beckham 1971; Sutton and Sutton 1969).

The Treaty of 1864 led to the removal of the Klamath and Modoc to the Klamath Reservation northeast of Upper Klamath Lake within
the boundaries of the Lakeview District (Beckham 1977; Johnson 1947; Stern 1956b). The disillusionment of the Modoc with reservation life was expressed in the brief Modoc War of 1872-73 (Murray 1959; Riddle 1914; Powers 1877; Stern 1966; see also pp. 166ff. of this overview). Changes which drastically affected the material culture, sociopolitical structure and religious belief system of the Klamath-Modoc have been discussed by Stern (1966) and Zakoji (1953). One of the most significant movements to sweep through the Klamath and Modoc was the nativistic Ghost Dance religion which was introduced in 1871 by a Paiute (DuBois 1939; Nash 1937; Spier 1927b, 1935). The Klamath Reservation was terminated by law in 1954; the process of termination and the life of the Klamath and Modoc before and after 1954 is thoroughly documented by Stern (1961-62; 1966).
THE MOLALA

The Molala were a small aboriginal group who are now extinct and for whom little ethnohistorical or ethnographic information is available. Scattered references to the Molala may be found in the notes taken by various linguists and ethnographers, including Horatio Hale (1846), Gatschet (1877), John Powell (1891), Franz Boas (1890), Melville Jacobs (unpublished), Leo Frachtenberg (unpublished), Teit (1928), Spier (1930), and Murdock (1938). Unfortunately, much is second- or third-hand information from other native groups and was not verified in the field. The Fate of the Molala, as a result of treaty attempts on the part of the U.S. government and the Molala War of 1847-48, is briefly mentioned by Bancroft (1886), Coan (1922), Clark (1927), and Stern (1956b).

Language

The Molala, who called themselves la'ti?ayf, spoke a language which is classified as a "language isolate" of the Penutian phylum. Such a designation indicates that the Molala language was only distantly similar to the other Penutian languages of Oregon, which include Klamath-Modo, Takelma, Kalapuya, Cayuse, Nez Perce, Umatilla, and Tenino.

Until recently, linguists believed that the Molala and Cayuse (who occupied northeastern Oregon) spoke mutually intelligible dialects of the same language. This bit of misinformation seems to stem from the "discovery" of a Protestant missionary in the Walla Walla Valley, Marcus Whitman, who wrote in 1844 that "the Molalas speak the same language as the Kaius [Cayuse] and are said to have been separated from them in their ancient wars with the Snakes" (Hulbert and Hulbert 1936 [3]:90). The purported relationship was not critically examined until Rigsby (1965, 1969) examined the linguistic evidence of the case. He concluded that there was no evidence for linking the Cayuse and Molala languages, hence the status of Molala as a language isolate.

Territory

During historic times, the Molala occupied the mountains of the central Cascade Range. They have traditionally been recognized as two subgroups: the Northern Molala who were focused around the Molala drainage system in the vicinity of Mount Hood, and the Southern Molala who occupied Douglas County west of the Klamath Lake area. The southern Molala subgroup is of greater interest here as this group's territory slightly extends into the western portion of the study area in the Crater Lake region.
The earliest account of the Southern Molala is provided by Joel Palmer, the first U.S. Indian Agent for the Willamette Valley, who wrote in 1853:

While on my late expedition, I came to the knowledge of the existence of a tribe of Indians inhabiting the country on the upper waters of the north and south forks of the Umpqua and the headwaters of the Rogue River, called the wild Mo-lal-la-las. The name so nearly resembles that of the Mo-lal-las of the Willamette that they have been confounded with that tribe; but the information I have obtained satisfies me that they are a distinct tribe speaking an entirely different language and having no connections whatever with them. They have had but little intercourse with the whites, being located in a mountainous region off the line of travel from Oregon to California. They roam sometimes as far west and southeast as the headwaters of the Deschutes and the Klamath Lake (cited in Coan 1922:34).

It appears, however, that the Indians mentioned by Palmer were indeed related to the Molalas further north. This fact is borne out in the correspondence of Albert S. Gatschet, an early linguist and ethnographer, who also described the Southern Molala: "Some Molele or Molala, renegades of the Cayuse tribe, have recently become mixed with Rogue Rivers [Takelma] and Klamaths, and have adopted the Klamath language in consequence" (1877:165). In addition, one of Gatschet's Northern Molala informants told ethnographer Leo Frachtenberg in 1910-1911 that "in Douglas County there lived people who understood his language but named everything different" (quoted in Rigsby 1965:72). This information suggests that there was probably a slight difference in the dialects spoken by the two Molala subgroups (Rigsby 1965:74). Quite recently, Farmer and her associates (1973:14), and Rigsby (n.d.) have concluded that the two Molala groups occupied a continuous territory from north to south along the western and eastern slopes of the Cascades, extending to the Deschutes River.

For over a century, largely as a result of misleading information from informants, it was believed that, in addition to sharing a language, the Molala and Cayuse had been geographical neighbors in recent times. Some ethnologists proposed a westward migration of the Molala from east of the Deschutes River to the Cascades (Clarke 1905:133-135; Curtis 1911(8):80; Minto 1903:241; Berreman 1937:44-46). Others have suggested that the Cayuse moved eastward instead (Boas 1890; Garth 1964:45). Rigsby (1965, 1969, n.d.), however, concludes from the linguistic evidence and more reliable informant information
that there is no evidence for the migration of either people. Rather, available information indicates that the Molala have occupied the Cascade uplands for quite some time (Figure 14).

**Ethnographic Lifeways**

Rigsby (n.d.) presents a summary of ethnographic information on the Molala which was collected by Leo Frachtenberg in 1910-1911 but which still remains unpublished:

The Molalas wintered in sites located along streams in the lower elevations, usually west of the Cascades, and they exploited the higher country for roots, berries and larger game (deer, elk, and bear) at other times of the year. They also fished for salmon, steelhead, trout, eels, and other species in suitable streams and lakes.

Significant tribal or village organization was lacking, and small family groups occupied common winter houses and moved together. Leadership was task-oriented and leaders derived their positions from personal reputation and family status. Slaves were commonly bought from the Klamath, but their numbers and economic significance are unknown. Kinship reckoning was bilateral; kindred exogamy was the norm; and the levirate was practiced. The Molalas also intermarried with their Chinookan, Sahaptin, Klamath, and Kalapuyan neighbors.

Female infants' heads were flattened, but not those of all males. Both sexes had the nasal septum pierced and were tattooed on the arms. The dead were usually cremated.

**The Molala War**

In 1947, the Molala leader Crooked Finger visited the Umpqua, Rogue River (Takelma), Pit River (Achomawi and Atsugewi), Klamath and Modoc Indians, seeking recruits for an uprising against the whites. About 150 followers were assembled, including men, women, and children, over half of whom were Klamath (Stern 1966:26). Their plan was to attack the whites during the winter of 1848, when many of the settlers would be absent in the militia fighting against the Cayuse, who had begun an uprising to the north. In fact, according to Stern (1956b:238) there is little doubt that the Molala uprising was intended to be a diversionary tactic preliminary to a major Indian offensive against the settlements in the Willamette Valley.
Unhappily for the Molala, the settlers were forewarned and the hostile force was ambushed by a mixed body of whites and Indians on Butte Creek. The women and children, as well as many of the Indian men, were slaughtered by the whites. The survivors were given three days to leave, and they departed southward along the Klamath Trail, bearing their dead with them. According to Stern (1956b:239), "the entire engagement was long suppressed by the participant whites, for shame of the slaughter of women and children, for which a frontier ruffian seems to have been responsible. This encounter has subsequently been known as the Molala War; for accounts of this incident, see Bancroft (1886(1):746-751), Clark (1927(1):550-552), and Stern (1956b:238-239).

Several years later, the Molala and the Kalapuya signed the Dayton Treaty of 1855 and relinquished claim to any land holdings; shortly thereafter, most of the Molala were removed to the Grande Ronde Reservation west of the Cascades. In 1891, Powell wrote: "There are 31 Molala now on the Grand Ronde Reservation, Oregon, and a few others live in the mountains west of Klamath Lake" (1891:128). Even later, Spier noted that descendants of the Southern Molala subgroup were still living among the Klamath Indians (1927a:361).

THE TAKELMA

As with the neighboring Molala to the north, very little is known of the Takelma speakers who occupied much of Jackson and Josephine counties prior to their eventual removal to reservations in 1856. Ethnographic and linguistic notes on the Takelma have been presented in Dorsey (1889, 1890), Sapir (1907a, 1907b), Spier (1927a), Drucker (1937), Berreman (1937), and in unpublished field notes of J. P. Harrington (Walsh 1976:24).

Language

The Takelma Indians were divided into two tribes which spoke mutually intelligible dialects of the Takelman language, which has been associated with the Kalapuyan language further north (Frachtenberg 1918; Sapir 1929). However, Voegelin and Voegelin (1964 and 1965) have classified Takelma as a "language isolate" of the Penutian phylum, which indicates that Takelma has a distant, and perhaps doubtful, genetic relationship with other Penutian languages, including Molala, Klamath-Modoc, and Kalapuya.

Territory

The fact that the two tribes of Takelma Indians occupied distinct geographic regions is mentioned in every account concerning the Takelma speakers. The Lowland Takelma, or the Takelma proper,
occupied the middle Rogue River and the upper reaches of Cow Creek, a southern tributary of the Umpqua River, in Josephine and western Jackson counties. They referred to themselves as Dagelman, or "those living alongside the river" (Sapir 1907a:252). The territory of the second tribe, the Upland Takelma, was located further east in Jackson County extending to the western boundary of the Lakeview District. Because of its greater proximity to the study area (Figure 14), the Upland Takelman tribe will primarily be dealt with in this section.

The Upland Takelma referred to themselves as Latgawa ("those living in the uplands") (Sapir 1907a:252). Their territory is described by Berreman as follows (1937:27):

The Upland Takelma lived on both sides of Bear Creek and on the Rogue River in the Jacksonville and Table Rock region. They extended east to the summit of the Cascades to border on Klamath territory. In historic times they were not farther up the Rogue River than Prospect, the upper reaches being occupied by the intrusive Molalla. It seems probable that they occupied the entire watershed before the Molalla came in, but there is no evidence of this except its geographic position. On the southwest they bordered on the Shasta...They seem to have extended down the Rogue River valley somewhere below the mouth of Bear Creek.

The intrusion by the Molala to which Berreman refers is an allusion to the Teit-Berreman hypothesis of a series of aboriginal population movements incited by purported Northern Paiute invasions east of the Cascades during historic times. As has been discussed above, however, there is no evidence to support such a theory (refer to Rigsby 1965, 1969). In addition, there are no surviving Klamath oral traditions supporting a recent incursion of Molala into the Douglas County area (Stern cited in Rigsby 1969:80). The best-supported interpretation of the available evidence would be to say that the Upper Takelma have occupied essentially the same territory originally specified above by Berreman and by Sapir (1907a:252) for an unknown period of time (Rigsby 1969:71).

Both Dorsey (1890:235) and Sapir (1907a:255) obtained lists of Takelma village names and locations. Dorsey's seventeen village names are Athabaskan terms, but the eleven sites named by Sapir are in the Takelman language. The only village site which is specified as belonging to the Upper Takelma is Latgau or Latgauk ("upper country") which was located "beyond Table Rock" (Sapir 1907a:255). None of the Takelman villages are known to be located within the boundaries of the Lakeview District.
Ethnographic Lifeways

The lifeways of the Takelma were quite similar to those of the neighboring Shasta and Klamath peoples, who were more closely associated with Northern California groups than with peoples to the north and east. A brief outline of the more notable aspects of Upper Takelma culture is given by Sapir (1907a:252):

These eastern Takelma seem to have been on the whole less advanced than their down-river kinsmen. They are said to have been shorter in stature than these, to have used log rafts instead of canoes, and because of greater economic distress, to have used for food crows, ants' eggs, and other such delicacies, much to the disgust of the Takelma proper, who however do not seem to have been particularly averse to the eating of lice and grasshoppers themselves. The Upland Takelma were much more warlike than their western neighbors, and were accustomed to make raids on the latter in order to procure supplies of food and other valuables. The slaves they captured they often sold to the Klamath of the Lakes, directly to the east.

This description is confirmed by Drucker who provides the only detailed known account of Upper Takelma ethnographic practices (1937:294-296) from which the following summary is taken.

The subsistence pattern of the mountain people centered around hunting and gathering, with fishing being of lesser importance. Deer were snared, stalked using a deer-head disguise, and driven or run down by groups of men with dogs. Rabbits, grasshoppers, caterpillars, yellowjacket larvae, and snails were eaten, along with vegetable products such as acorns, grass seeds, camas, and pine nuts. Salmon were taken during low water in the summer using two-pronged harpoons, nets or even bare hands, but poison was not used by the Upper Takelma to catch large quantities of fish. The salmon were split, dried, and occasionally pulverized for storage. The Upper Takelma often traded venison and deer hides for salmon from the Lowland Takelma.

Summer dwellings were temporary shelters of boughs. More permanent winter structures were semisubterranean gabled dwellings of bark slabs, some of which had earth-covered roofs. Sweat houses of Californian type were small earth-covered huts where the men retreated for training, purification, and curing rites.

 Implements used by the Upland Takelma include ring-topped pestles, pounding slabs with hoppers (hopper mortars), elk horn wedges, unmodified rocks as Mauls or hammerstones, simple digging sticks,
pole ladders and hooks for pine-cone gathering, looped stick food stirrers, and tongs for moving hot stones used in cooking. Basketry items were primarily fashioned of spruce roots and tules and included hoppers for mortars, cooking and eating vessels, parching and winnowing trays, seed beaters, carrying and storage baskets, and cradles. Canoes were rarely used as the river was too swift and rocky. Concave, tubular, wooden pipes were made to smoke tobacco which was locally grown.

In warm weather, men generally wore only a deerskin apron, one-piece moccasins, and quivers which held their arrows. Women wore two-piece leather skirts and basketry caps. In colder weather, men wore leggings, deerskin robes, fur caps, fur-lined moccasins, and arm-warmers of foxskin. Women also wore a deerskin shirt or gown for extra warmth.

Very little is known of the social organization of the Upper Takelma. Drucker comments that it seems similar to that known for the neighboring Athabaskans and makes only the following note:

Wealth, in terms of dentalia, flints, etc., gave prestige among the small kin groups. The rich man's wealth benefited and protected his poorer relatives. He bought wives and paid wedgild for them. They stood by him in times of common danger. The only point of difference in this phase of culture was that the sum of a "rich" man's possessions was smaller than, e.g., among the Tolowa (Drucker 1937:295).

At death, the body was washed, painted, finely dressed and flexed before being carried from the dwelling to a small round grave a short distance away. Mourners threw valuable items, such as money, tools, flint blades, and dentalia, into the grave. Immediate family members mourned and fasted for some time after the death. If a death occurred in a summer hut, it was burned, but a winter house was not destroyed.

The little which is known of the religious beliefs and ceremonies of the Takelma is presented by Sapir (1907b). Although ceremonies appear to have had limited significance in the life of the Takelma, they had a rich belief system which centered upon supernatural beings and the forces of nature. As with the Northern Paiute, the Upper Takelma had shamans who received their powers from guardian spirits encountered in dreams.
Historic Contact

The encroachments of white miners and settlers into the Rogue River region was bitterly resented by the Takelma and their neighbors who retaliated by raiding and killing whites and stealing goods and horses. These skirmishes finally erupted into the Rogue River Indian Wars of 1851-1856 (Sutton and Sutton 1969; Beckham 1971).

When it became evident that the fighting between the whites and the Indians would continue as long as the Indians remained in the area, Indian Superintendent Joel Palmer made plans to remove the Indians of southwestern Oregon from their homelands. In 1856, some of the Takelma were moved to the Siletz Reservation at the headwaters of the Siletz River in the Coast Range. Other Takelma were removed to the Grand Ronde Reservation on the south Yamhill River. Both reservations were shared by many tribes, which led to changes in the traditional culture and language of the Takelma. Although their numbers had previously been drastically reduced during the wars with the whites, various factors, including disease and the inability to pursue the traditional subsistence pattern, subsequently led to an even further decline in the Takelman population.

The Shasta

The Shasta constitute another small aboriginal group whose cultural customs, unlike those of the Molala and the Takelma to the north, were recorded in some depth by early travelers and ethnographers before they were lost. The primary source for a description of Shastan culture is the work of anthropologist Roland B. Dixon (1905a, 1905b, 1907, 1910) who spent four seasons from 1900-1904 with the Shasta in California and in Oregon. After one month's research in 1937, Catherine Holt (1946) published additional notes on Shastan culture. Edward S. Curtis (1924), the noted photographer-ethnographer, also published a brief account of his impressions of the Shasta.

Secondary studies concerning this group include Berreman (1937), Kroeber (1976), Martin (1971), Swanton (1952), and Voegelin (1942). A very recent summary and discussion of Shastan peoples by Silver (1978) cites an extensive list of all known linguistic, ethnographic, and historical references to the Shastan peoples and includes both published and unpublished sources.
Language

The Shastan peoples of Oregon and California spoke four distinct languages of the Shastan linguistic family which in turn has been related to the Hokan phylum (Dixon 1905b, 1907). One of these Shastan languages was spoken by the Shasta proper who were by far the largest of the Shastan groups. The three smaller Shastan-speaking groups were located to the south of the Shasta proper in California. For the purposes of this overview, only the Shasta will be considered in this section.

According to Holt (1946:344), the Shasta referred to themselves as Ka'hosadi. Silver's research indicates that the Shasta called their homeland Rahu'ariye'ki ("among those who talk right") (Silver 1978:223). Terms for Shasta which occur in the literature include "Shasti", "Tcheste", "Chastays", "Shasteeca", "Shasty", "Sastise", "Sasti", and "Shastika". Despite much speculation, the origin of the appellation is unknown (Curtis 1924:106; Merriam 1926: 522-25; Silver 1978:222).

Territory

The Shasta group, which shared the same language, was grouped into four main divisions which were each comprised of one or more dialect groups: (1) settlements in Oregon's Jackson and Klamath counties, (2) Shasta Valley, (3) Scott Valley, and (4) the Klamath River area along the northern border of California. Much of our information pertains to the California Shasta, for very little is known of the Oregon Shasta. Although the Shasta occupied none of the lands within the Lakeview District, they interacted with the neighboring Penutian-speaking Klamath, Modoc, and Molala who did inhabit portions of the study area.

The Oregon boundaries of this group have been in question for some time as mentioned by Berreman (1937:26). Dixon's Shasta informants claimed the Bear Creek Valley near Jacksonville and Table Rock in addition to the Jenny Creek drainage as their territory (1907:386). Dixon also noted that his informants claimed to have driven out the Rogue River Indians a century earlier from the Bear Creek region. Berreman (1937:26-27), along with Sapir (1907a:253), preferred to believe that the Rogue River/Bear Creek area was disputed territory which alternated between the Takelma and the Oregon Shasta. Beckham apparently concurs with Berreman in restricting the Oregon Shasta to the Jenny Creek drainage (Loy 1976:7; see also Figure 14). Silver (1978:211) disagrees, however, and includes the Bear Creek area as Shasta territory (Figure 18). There now seems
Figure 20. Distribution of Shasta (from Silver 1978:211).
to be little question that the Bear Creek Valley was jointly utilized by the Shasta and the Takelma as both groups claimed the region.

Although no information is available on Oregon Shasta settlement patterns, Silver makes the following note regarding the settlements of the California Shasta (1978:213):

Along the Klamath River, the favored Shasta village site was at the mouth of a creek into the main river; a few villages, situated near oaks, were located away from the river in the high hills. In the Shasta and Scott valleys, villages were usually located at the edge of the valley where a stream came down out of the mountains.

Further information on Shasta settlements is provided by Heizer and Hester (1970).

*Ethnographic Lifeways*

The Shasta lived a sedentary life in forested mountains which were rich in food resources. Accounts of Shasta cultural activities are given by Dixon (1907), Curtis (1924), Voegelin (1942), and Holt (1946). A comprehensive review and summary of Shastan culture has recently been published by Silver (1978).

The four Shasta divisions were composed of villages, some of which consisted of a single family group. Each village had widely recognized territorial boundaries within which village members had their own recognized tracts of land. Hunting and fishing places belonged to individuals and were inherited in the male line.

Each large village had a headman as did each of the Shasta divisions. The chieftainship of the Oregon Shasta appears to have been hereditary, passing to a brother or son. Headmen were responsible for setting a good example for their people as well as acting as mediators when civil problems arose.

The abundance of food resources allowed the Shasta to pursue a varied economy. Subsistence activities included hunting, fishing, and gathering seeds, bulbs, roots, insects, grubs, pine nuts, and acorns. Various hunting methods were used for a wide variety of large and small game, such as tracking and stalking, smoking game out, driving it into enclosures, and using pitfalls, deadfalls, and basket traps. Fishing equipment was also varied and included set, dip, and long flat seine nets; basket traps; weirs; spears; and hooks and lines. Simple digging sticks were used for digging roots, and poles or forked-stick grapples were handy for gathering acorns and pinecones.
Land was sometimes burned to promote better crops of seed or tobacco. Wild seed was occasionally scattered to produce a better crop.

Household items made by the Shasta included twined basketry; wooden pipes, mush paddles, and spoons; and bone or antler scrapers, awls, wedges, arrow flakers, and salmon-gigs. Stone implements included cylindrical pestles, serpentine pipe tips, obsidian knives and scrapers, and soapstone dishes. Cordage, netting, and deersnares were made from wild hemp, iris, grapevine, and willow withes. Miscellaneous items, such as rawhide containers and spoons of elk knee caps and deer skulls were also made. Canoes were rarely used or made. Hunting equipment included painted sinew-backed wooden bows with matching painted arrows. Single-shaft arrows which were headless or had points of wood or bone were used for small game and birds, while foreshaft arrows with obsidian points were used for hunting large game or for war. Armor of elkhide or woven rods was also used during wartime.

The Shasta feuded among themselves, and occasional retaliatory raids took place between the various divisions. Conflict with other tribes, such as the Achumawi, the Takelma, the Modoc, and the Wintu, has also been documented (Merriam 1955:15-16; Silver 1973:213).

Despite the conflicts between groups, there was much friendly interaction as well. The Shasta traveled to, visited and traded with other Shastan villages as well as with neighboring tribes. Dentalia were obtained from the Oregon Athabaskans for dried acorn paste, while obsidian was traded in turn by the Achumawi for dentalia from the Shasta (Curtis 1924:131). Buckskin, obsidian, and dentalia were traded to the Wintu for acorns and pine nut necklaces (Voegelin 1942:198). In historic times, Warm Springs Indians traded buckskin clothing to the Shasta in exchange for dentalia (Voegelin 1942:199).

Large rectangular dwellings, 16 by 20 feet, were constructed for winter occupation. Such winter houses were excavated to a depth of about one meter, with dirt sidewalls and floor, board end walls, and a sloping roof. Fireplace pits were generally built in the center of the house. Large villages had an assembly house, which functioned as a center for community activities. The assembly house was similar in construction to the winter dwelling house, but larger and excavated to about two meters. During the warmer seasons, families occupied brush shelters or bark houses. Dome-shaped sweathouses of willow poles, bark and skins were built by families and used by both sexes for purification rites.

The Shasta buried their dead in family burial plots not far from the village. Personal property of the deceased was either burned or buried with the body. The deceased's dwelling house was abandoned, torn down, or burned.
The Shasta shared many beliefs about the supernatural world with their neighbors. Among the Shasta, the doctors (or shamans) were nearly always women who had received the powers of axe ki? ("pains") or spiritual forces which controlled disease, death, and general troubles. The axe ki? frequently visited the chosen one during trances to bestow the sought-after doctoring powers. Illnesses and accidents were also treated successfully by nonshamanistic uses of herbs and skilled nursing.

Historic Contact

The Shasta first contacted Euro-Americans in the 1820s and 1830s when fur trappers, such as Peter Skene Ogden, traveled through their lands (cf. Elliott 1910). As a result of their strong participation in the Rogue River Wars of 1851-1856, the surviving Shasta were taken first to Grand Ronde and then to the Siletz Reservation. Dixon (1907:390) estimated the Shasta population at 2,000 in the early 1800s; by 1907, he counted only 40 Shastas left on the Siletz, Grande Ronde, and Yakima reservations. In 1924, Curtis found almost no full-blood Shasta in the Klamath River Country. As of 1962, 36 Shastas were residing in Scott Valley in California, and only a handful of others were to be found in the vicinity of the former Siletz and Grande Ronde reservations in Oregon (Silver 1978:212).

The Achumawi

To the south of the Shasta and Modoc peoples and west of the Northern Paiute lived the Achumawi or Pit River Indians of northern California. Ethnographic accounts of Achumawi culture include those by Kroeber (1925:305-317), Merriam (1926, 1928), Kniffen (1928), and Angulo (1926, 1928). The most up-to-date and all-encompassing summary of the Achumawi is presented by Olmsted and Stewart (1978) from which most of the following summary is taken.

Language

The language of the Achumawi belongs to the Palaihnihan family of the Hokan phylum of North American Indian languages (Olmsted 1964, 1965, 1966). The only other member of the Palaihnihan family is the language of the neighboring Atsugewi people. The Achumawi and Atsugewi have sometimes been jointly referred to as the Pit River Indians. The appellation was derived from the practice of the local inhabitants of digging pits along the river for the purpose of trapping deer.

The tribal designation is drawn from the Achumawi term for "river people" (ażúmá-wi), which originally was used to refer to one
tribelet of the Achumawi (Olmsted 1966). Anthropologists and historians later applied this term to all who spoke dialects of the Achumawi language. The Klamath called the Achumawi blaykni ("uplanders") and mo watwa s ("home in the south") (Barker 1963a:63, 242, 544; Powell 1891:97; Gatschet 1890:269).

**Territory**

The variable nature of Achumawi territory is emphasized by Olmsted and Stewart (1978:225):

The Achumawi or Pit River Indians had a varied material culture in response to the great variation in elevation, climate, and vegetation of their homeland. In the west Mount Shasta, 14,162 feet, and Lassen Peak, 10,466 feet, served as the northwest and southwest corners of Pit River Indian territory. The eastern boundary separating the Achumawi from the Northern Paiute was marked by the Warner Range with a half-dozen peaks ranging from 7,843 to 9,934 feet above sea level. Twenty peaks over 6,000 feet elevation were scattered over the Pit River interior area, breaking it into many distinct valley and stream systems. From the high of over 14,000 feet, Achumawi territory descended to sections of Pit River canyon below 2,000 feet elevation. Most of the valleys and plains vary in elevation between 3,500 and 5,500 feet.

Concomitant with the great elevational variation, Achumawi lands included many life zones and vegetation types in and around the swamps, lakes, rivers, springs, meadows, mountains, grasslands, and recent lava flows. The diversity offered by the land provided a rich subsistence base for the Achumawi.

**Ethnographic Lifeways**

The diverse subsistence potential offered by the land was well utilized by the Achumawi. Goose Lake, in the northeast corner of Achumawi territory, and Eagle Lake to the south were both used for fishing. In addition, about 50 miles of salmon streams and 150 miles of streams containing bass, catfish, lamprey, pike, suckers, trout, minnows, crawfish and mussels were also utilized (Olmsted and Stewart 1978:225). Basketry traps, dip-nets, gill-nets, and seines were used for fishing (Curtis 1924:136-137).
Figure 21. Achumawi Distribution (from Olmsted and Stewart 1978:226).
Ducks, geese, mudhen, swans, cranes, grebes, pelicans, coots and other waterfowl were netted in their swampy breeding grounds. The swamp lands also provided tules, which were used as food and for twining mats, shoes, cloaks, floor and house coverings, and rafts.

The grasslands provided an abundance of vegetable foods and fibers and insects. Squawroot (Perideridia spp.), camas, brodiaea bulbs, tiger-lily bulbs, wild onions, and other bulbs were gathered during the summer to be dried and stored for winter. Milkweed (Apocynum) fibers were twisted into string which was used in making nets and cordage. Young clover and thistle plants were best when eaten in the early spring. A variety of wild grass seeds were collected in the fall with baskets and seed beaters. Some of the tougher grasses were woven into baskets and were used as roofing thatch for winter houses. Basketry was also twined from willows as well as grasses. The grasslands were frequently burned in the late fall in order to stimulate the growth of seed and berry plants and also to drive deer and collect insects.

The wooded areas of pine and juniper were most important as hunting areas, where sage hens, grouse, jack rabbits and deer were plentiful. Some game animals, such as the mountain sheep, elk, and antelope, were found only in the higher elevations. Game animals were not hunted solely for their meat; hides were made into shields, robes and blankets, shirts, caps and quivers, while hoofs became rattles. Antlers were fashioned into tools such as chisels and arrow shaft straighteners. Other animals hunted were: bear, badger, coyote, beaver, chipmunk, fox, groundhog, marten, mink, skunk, otter, mountain lion, mole, porcupine, rats, raccoon, turtles, squirrel, wildcat, weasel, and wolf. In addition to game, the forests provided pine sap sugar and a variety of berries and nuts (acorns, piñón pine nuts).

Summer huts took the form of conical or hemispherical tipis which were covered with tule mats (Curtis 1924:137). More substantial winter dwellings were large semisubterranean houses about 15 feet square. Wooden poles and cross beams served as a framework upon which grass, tule and bark were placed and then covered with a heavy coat of earth (Curtis 1924:138-139).

Due to the abundance of obsidian deposits in the region, many arrow points, spear points, knives and scrapers were made from the volcanic glass. Bows were usually made of yew, mahogany or juniper, while arrowshafts were made from many different woods.

The Achumawi were organized into autonomous political units or tribelets, which Kroeber (1932:258) defined as "groups of small size, definitely owning a restricted territory, nameless except for their tract or its best-known spot, speaking usually a dialect identical with that of several of their neighbors, but wholly autonomous."
Although the tribelets had well-defined and separate territories (Figure 19), they were bound through intermarriage and their common language.

The Achumawi maintained close, friendly ties with the Atsugewi to the south with whom they frequently intermarried. Relations with the neighboring Shasta, Yana and Northern Paiute were limited to occasional amiable encounters while hunting along territorial borders or to infrequent trading sessions. The Modoc, however, frequently raided the Achumawi for slaves and loot (Stern 1966:19; Olmsted and Stewart 1978:231).

The religious beliefs and closely associated practices of folk medicine as employed by the Achumawi have been discussed extensively by Angulo (1928). Achumawi religion centered about the concept of the tiniho-wi ("guardian spirit" or "medicine"). This supernatural power brought good luck in hunting, fighting, gambling and curing. The zi2i?wa-lu ("doctor" or shaman) was highly respected due to the powers bestowed by his tamakomi, which was "power" or "medicine" even stronger than a tinihowi. The shamans were called upon to cure sicknesses, heal wounds, counteract poisoning by another shaman, and call back wandering souls. In such cases, if the shaman failed, the patient died. The dead were usually taken to a nearby spot and cremated without ceremony.

**Historic Contact**

Unlike many other native groups, the Achumawi have continued to occupy their pre-contact territory to the present day. Nonetheless, white contact has had a considerable impact upon the Pit River Indians. In addition to dramatic cultural changes, the Achumawi have undergone a drastic decline in population over the last 100 years. Kniffen (1928:299) calculated that the Pit River Indians originally numbered 3,000 prior to the arrival of the Euro-Americans. In 1936, the number had diminished to about 500 (MacGregor 1936). Despite their depleted numbers, the Pit River Indians are one of the largest Indian groups in California and are an active force in current American Indian affairs (Olmsted and Stewart 1978:235).

**SUMMARY**

The primary occupants of the Lakeview District during ethnographic times were the Northern Paiute and the Klamath-Modoc who occupied the western portion of the Great Basin culture area and physiographic province which extends into southeastern and south-central Oregon. The Molala of the Cascades claimed a bit of territory in the northwestern corner of the study area. Other neighbors with whom the Northern Paiute and Klamath-Modoc interacted were the
Takelma, the Shasta, and the Achumawi. After the acquisition of the horse, various Plateau groups, such as the Tenino, Umatilla, Walla Walla, Cayuse and Nez Perce, occasionally traveled through the area, but these excursions were infrequent and of limited significance.

With the exception of the Klamath, little is known of these groups because they were rapidly decimated due to factors such as disease, wars, and famine which resulted from contact with the Euro-Americans. The available ethnographic information indicates that the Klamath-Modoc and the Northern Paiute shared many basic cultural traits in common. Both followed a semi-sedentary subsistence pattern. Settlements tended to be seasonal, with groups generally returning repeatedly to the same village sites and camping spots. Food resources were utilized on a seasonal basis whenever and wherever they occurred. Both groups hunted game animals, fished, gathered roots, seeds and berries, and stored dried food for the winter. Due to environmental differences, the Northern Paiute emphasized hunting and seed gathering, while the Klamath-Modoc relied more on fishing and root and wokas gathering. Neither group had a well-developed socio-political organization. The Paiute were much more flexible and loosely organized, however, than the Klamath-Modoc.

The emphasis on raiding which was exhibited by both groups seems to have been a result of contact with Euro-Americans and the acquisition of the horse and guns. Other traits, such as the taking of slaves and the development of a chieftainship among the Klamath, are also outgrowths of the contact era and do not reflect the pre-contact lifeways.

Drastic changes occurred with the arrival of the white settlers and their domesticated plants and animals. In a few short years, the settlers succeeded in altering the natural vegetation of the land to such an extent that the traditional means of subsistence soon became no longer viable for the Indians and many starved. Whites and Indians competed to survive, but the military strength and sheer numbers of the whites soon overpowered the Indians who did not give up without a struggle.
CHAPTER IV

HISTORICAL OVERVIEW

The history of recorded human activity in the Lakeview District of the Bureau of Land Management involves many of the elements common to the frontiers of the American West in the nineteenth and early twentieth centuries. The far-flung lands of south-central Oregon—Guano Valley, Warner Valley, the High Desert, Goose Lake Valley, the Silver Lake—Lake Abert axis, and the Klamath Basin—were the scene of many familiar developments. The fur trade, government-supported exploration, Indian-white relations, mining, cattle raising, natural history studies, overland emigration, settlement, land speculation, and townsite development were all among the activities of the historic period. So too, transportation, lumbering, farming and other enterprises added to the economic base holding a population in the region. Each of these undertakings drew in people, and the actions and interactions of these individuals produced the history of that area.

Parts of the Lakeview District have had but limited history. Human activity in the vast northern reaches of Oregon's Great Basin has been limited. The cast of characters in many areas has been small. Other areas such as the margins of Goose Lake and the Klamath Basin have, on the other hand, produced a fairly substantial record of events. The growth of towns and institutions, the extension of transportation systems and the evolution of trade connections, the existence of seats of government and a fairly steady population base have given those areas a much more extensive history. Some regions, such as the Fort Rock Valley, have had explosive but brief periods of human activity in the historic period. The rush of homeseekers to the High Desert immediately prior to World War I boded initially for a new direction in the development of Central Oregon. The harsh realities of land and weather, however, shattered those expectations and rather quickly led to the emergence of old patterns of limited human impact on the land.

The following narrative lifts up the major themes of importance in the history of the Lakeview District and links that area's history to the broader region of which it is a part.
EXPLORATION

The Klamath Basin and Oregon's Great Basin region were far removed from the developments of the eighteenth century which led to eventual European and American interests of the Pacific Northwest. In that age of the Enlightenment nation-states sent out maritime expeditions to carry on scientific research, to seek lands for possible colonization, to find new trade routes, and to secure information on resources for potential development. The voyagers of the coast of Oregon in the 1770's, 1780's, and 1790's were engaged in those missions. Their landings along the seaboard were few; their penetration of the lands they sighted was negligible. Lt. William R. Broughton's explorations of the estuary of the Columbia in 1792 to the foot of the Cascades was an exception to the usual pattern of eighteenth century white activity on the Northwest Coast (Cook 1973).

The era of land-based exploration which eventually brought about the penetration of south-central Oregon by outsiders commenced during the winter of 1805-06 when the Lewis and Clark Expedition trekked back and forth along the Columbia from the Clearwater River to the Pacific Ocean. These government-financed explorers saw parts of the Columbia Plateau and recorded the first general ethnographic information about the northern neighbors of the Indians who then occupied the Lakeview District. Although the Lewis and Clark party noted the mouths of streams later known as the John Day and the Deschutes which flowed from the south into the Columbia River, they did not ascend those tributaries nor explore central Oregon (Thwaites 1905).

Both the maritime explorers and the Lewis and Clark party saw the fur wealth of the Pacific Northwest. Indeed, shortly after Captain James Cook's expedition to the coast in 1778 enterprising mariner-traders began a regular trade for furs with the Indians from Alaska to California. So rapidly did this trade grow that by 1791 nineteen different vessels from five nations pried the waters of the North Pacific; in 1792 thirty-two vessels came to the coast to tap these opportunities (Cook 1973: Appendix E). In 1811 the German-born fur trader, John Jacob Astor of New York City, added an important new element into this activity. Astor's Pacific Fur Company established a post at Astoria at the mouth of the Columbia River. This land-based trading station became the first permanent white settlement in the Pacific Northwest (Porter 1931).

Although Astor's company did not prosper and was bought out in 1814 by the North West Company of Canada, the presence of fur seekers working on the continent remained a constant feature in the evolving history of the Pacific Northwest in subsequent decades.
Employees of the North West Company spied out the Willamette Valley and traveled regularly back and forth along the Columbia River between Fort George, their name for the former Astor settlement, and their trading posts at Fort Okanagan and Spokane House on the Columbia Plateau (Johansen 1967: 102-03). This activity intensified markedly in the years after 1821 when the North West Company merged with the British-based Hudson's Bay Company. The new administrators of the land-based fur trade in the Pacific Northwest charted policies which eventually brought fur seekers into South-Central Oregon.

Competition was the key factor. Aggressive George Simpson, architect of the Hudson’s Bay Company’s designs in North America in the 1820’s, toured the Department of the Columbia in 1824 (Rich 1947). Simpson keenly sensed that his company needed to act quickly and decisively to block the threatening American thrust of its Missouri Country fur trade to the west of the Rocky Mountains. While at Fort Vancouver, the Hudson's Bay Company's new post near the confluence of the Willamette and Columbia rivers, Simpson wrote to Chief Factor John McLoughlin: "The opposition with which we are at present assailed all along the South side of the Columbia and at its entrance, renders our utmost exertions necessary for the protection of our own interests, and to prevent our rivals in trade from profiting by their encroachments... Let us therefore lay ourselves out for active, well regulated & animated Opposition (Merk 1931)."

Simpson feared that the Americans, especially those who were pushing farther and farther westward, would enter the Pacific Northwest and become serious competition to the near monopoly which the Hudson's Bay Company possessed in the region by the mid-1820’s. Simpson's plan of "animated Opposition" was to intensify the trapping in the watershed of the Snake River and, if necessary, virtually to exterminate the fur-bearing animals sought by the trappers and traders throughout that entire region. His plan was to create so unrewarding a place that Americans crossing through the Rockies to the Snake Country and the Great Basin would find so little return for their arduous journey and work that, in frustration, they would turn back and leave the Northwest to the British firm. The determination which Simpson displayed to mount this program appeared in 1824-25 when he placed the vigorous Peter Skene Ogden in charge of the Snake Country expeditions. To assure that Ogden would have success in the work, Simpson and McLoughlin supplied the 1824-25 brigades with "2 gentlemen, 2 interpreters, 71 men and lads, 80 guns, 364 beaver traps, 372 horses" (Rich 1947).

In 1825, shortly after his return to Fort Vancouver from his first expedition to the Snake River region, Ogden was ordered to return to the area but to approach it by passing through Central Oregon. Taking his men and animals along the eastern flank of the
Cascades, Ogden eventually turned eastward and in the freezing chill of December led his party slowly through the watershed of the Crooked River. After laboring for several months in the watershed of the Snake, Ogden and his men returned to Fort Vancouver (Rich 1950). In mid-August, 1825, Dr. John McLoughlin ordered FinIan McDonald and Thomas McKay to penetrate the Willamette Valley, find the Umpqua, and locate a large lake (Klamath Lake) believed to exist along the eastern flank of the Cascades. The orders said that these men were to "proceed in the direction you think will enable you to make the best Hunt keeping in view if there is any probability of your making a good Hunt in the Vicinity of the Lake so much talked [about] and which lies about SSW of Walla Walla" (Davies and Johnson 1961: xxxiii-xxxiv).

The McDonald-McKay expedition of 1825 brought the first whites into the Klamath Basin. Crossing the Santiam Pass and following the Deschutes and Little Deschutes rivers, these men journeyed south along the eastern side of the Cascades to the watershed of the Williamson River. They followed the Williamson to Klamath Marsh and there turned back to the north because of limited supplies and fears of the warlike nature of the Klamath Indians (Davies and Johnson 1961: xxxiv).

The labors of the men of the Hudson's Bay Company led to a much more complete reconnaissance of the lands later to be in the Lakeview BLM District in 1826-27. On September 11, 1826, Peter Skene Ogden headed his third Snake Country brigade as it turned up the Columbia River from Fort Vancouver. With thirty-six or thirty-seven men, Ogden planned to carry out extensive explorations, trapping, and trading in central and eastern Oregon. By early November the party was encamped near Malheur Lake. Ogden had originally planned to shove on to the southeast directly to the Great Salt Lake. The scarcity of food and the condition of his men, however, led him to "take the nearest route . . . to reach the Clammeitte Country and from thence take Guides to proceed further . . ." (Davies and Johnson 1961: 20).

Ogden's party moved northwest from Malheur Lake to the Newberry Crater and there turned south along the Little Deschutes toward Klamath Lake. Ogden's expectations for the region mounted as he contemplated that a large river must surely drain the region of marshes and lakes and lead toward the Pacific Ocean. He wrote:

It is from this river and its vicinity that I have hopes if we can not find Beaver we will find Deer and probably if it be a woody Country we may find Elk, we also have a chance of seeing Indians and probably trading Salmon this is all so much in our favour and
time only will confirm my hopes God grant I be not dis-
appointed I shall, however in the interim persevere and
endeavour to make the River . . . (Davies and Johnson
1961: xlviii).

Ogden found friendly Indians at Klamath Lake in December, 1826.
They supplied his hungry and weary men with dogs, roots, and fish.
Indeed, the Indians offered so many dogs that Ogden named the large
body of water near where they lived Dog Lake. These Hudson's Bay
Company men moved south toward Tule Lake, skirting the east side
of marshy Lower Klamath Lake. From December, 1826, until May,
1827, Ogden and his party trapped and explored the watersheds of
the Klamath, Rogue, and Pit rivers in western Oregon and northern
California. Then, in late May, Ogden turned north from Pit River
and entered the Goose Lake Valley; Ogden referred to the large
body of water as Pit Lake (Davies and Johnson 1961: 116-17; liv-
lv).

Journeying along the east side of Goose Lake, Ogden's party
found no beaver. "This is certainly strange and also most vexing,"
Ogden noted, "to see so many fine streams and find nothing nor can
I account for its being so for if one third of the Rivers we have
discovered this year had been stock'd in Beaver we should now have
more than we could transport and as we are now situated we have noth-
ing. . . ." More rewarding, perhaps, were the 40 trout that Indians
living at the north end of Goose Lake traded to Ogden. These were
especially welcome, for, as he said, "we have been for some time
past with scarcely a sufficiency to keep Soul and Body together

In late May the Ogden party crossed the Warner Mountains and
descended to Pelican Lake near present Adel. The condition of the
men was poor. Everywhere they expected to find beaver; nowhere could
they find success in setting their traps or even find signs of the
animals. Slowly the party moved to the northeast, treasuring the
few sources of fresh water and delighting in the occasional success
in killing an antelope for food. In June the men reached Harney
Lake and from there they eventually moved on east to the Snake
River (Davies and Johnson 1960: 118-25).

Ogden's Snake Country explorations took him into central and
eastern Oregon again in 1827-28 and 1828-29. In 1829, following
a journey south to the lower Colorado River and the Gulf of Lower
California, Ogden again passed through the region between the Pit
River and the fort at Walla Walla. This intrepid fur seeker,
diarist, and cartographer greatly expanded the fur trade era's
understanding of south-central Oregon. His diaries, not published
until the mid-twentieth century, chronicled in detail his activi-
ties in the region. Possibly Ogden was also the anonymous author
of a general account of the native inhabitants of the vast regions he explored. The volume, *Trails of American-Indian Life and Character*, was published in London in 1853 (Williams, Miller, and Miller 1971: 177-79).

These rather extensive operations of the fur seekers had little ultimate impact on the American knowledge of or settlement in south-central Oregon. In fact, the extensive narratives in the *Illustrated History of Central Oregon* (1905) mention the activities of the fur seekers only in brief sentences. In the chapters on Klamath County, the volume stated "there are no accounts of their visits here." In the section on Lake County the documentation and awareness was equally terse: "That they penetrated the Eastern Oregon country at a very early day is known for fact, though the records of their visits are very meager" (Shaver et al. 1905: 923, 805).

The explorations which caught the popular imagination and brought new names to the features of the land were those carried out in the region by John Fremont. A man with a glamorous reputation in the nineteenth century, this explorer and his activities in south-central Oregon became widely known. William F. Goetzmann assessed his impact, in part, when he said:

Fremont, if anyone ever did, fitted perfectly the requirements of the romantic hero-symbol of an age of expansionism. Handsome, with something of a Byronic legacy, he was a self-made cavalier. Famous as a lover, eager as a student, admired and befriended by his elders, he could command the allegiance of an astonishing range of people from congressmen and savants to mountain men and Indians (Goetzmann 1966: 241).

Fremont's activities in the region were a direct product of the dreams of his powerful father-in-law, Senator Thomas H. Benton of Missouri. Long advocating American expansion and development in the West, Benton helped secure financing for Fremont's activities in the 1840's. On his second major expedition to the Far West in 1843, Fremont turned south near The Dalles of the Columbia to explore Central Oregon. Describing his labors, Fremont later remarked:

This was our projected line of return—a great part of it absolutely new to geographical, botanical and geological science—and the subject of reports in relation to lakes, rivers, deserts, and savages hardly above the condition of mere wild animals, which inflamed desire to know what this terra incognita really contained (Shaver et al. 1905: 806).
Fremont's explorations of Klamath and Lake counties occurred in December, 1843. That month he and his men, making perhaps the first botanical collections in the region for scientific study, moved south from the Deschutes headwaters to Klamath Marsh. They turned east through Sycan Marsh and climbed the forested ridges to the east seeking a way out of the snow and drifts that made their travel arduous. Suddenly the party spied daylight through the trees and found itself atop the long escarpment looking down onto the lush, green margins of Summer Lake. Fremont found the contrast between the uplands and the lake so striking that he gave these features the companion names of Winter Ridge and Summer Lake. The American explorers then moved southeast to Lake Abert, entered the Warner Valley, and journeyed on into northern California (Fremont 1851).

Fremont returned to southern Oregon in 1846. In the spring of 1845 he had turned west on his third expedition to journey from the Salt Lake via the Humboldt Route to California. His large party of Americans received an icy reception from Mexican officials of that province. When his men did not abide by the restriction that they remain in the Central Valley if they were to spend the winter in California, they were ordered to leave. Slowly Fremont retreated north toward Oregon. At Klamath Lake he left Mexican lands and carried out explorations which involved a complete circuit around the lake. During these labors the Klamaths killed two or three of Fremont's men and he was swift in striking back at them. Overtaken at the lake by Lt. Archibald Gillespie, Fremont turned back to California to cast his fortunes as a "soldier of fortune" in the coming campaigns of the Mexican War (Caughey 1953: 227-28).

Fremont's explorations were of considerable significance in expanding the understanding of south-central Oregon. His diaries, skillfully polished by his wife, Jessie, were churned out by the thousands of copies through the careful patronage of Senator Benton and the presses of the Government Printing Office. Further, as early as 1844 Fremont had clearly perceived a major geographical feature of the American West—the existence of the Great Basin. Not only did his vivid narratives and geographical assessments add to the information about the region, the maps drawn by his cartographer, Charles Preuss, gave substance to places and concrete new names to features long familiar to the Indians of the area. Of special importance was the Map of Oregon and Upper California from the Surveys of John Charles Fremont and Other Authorities (1848). This publication identified a number of features which have remained a part of the geographical nomenclature of Oregon: Little Klamath Lake, Klamath Lake, Tule Lake, Summer Lake, and Lake Abert (Nevins and Morgan 1964).

Explorations of another sort brought Americans through south-
central Oregon prior to Fremont's 1843 explorations. Nearly two months before this government-supported explorer spied out the region, Pierson B. Reading trekked through the area and recorded his experiences in his diary. Reading came west that year with the large emigration of approximately 900 pioneers. At Fort Hall, Reading remained for a rear group to catch up and noted: "I shall remain at this place until the small company comes on: will then proceed for the valley of California by an unexplored route."

Reading's "unexplored route" was sketched for him at Fort Boise by Francis Payette, the Hudson's Bay Company trader (Reading 1930).

Payette knew little about the country that Reading intended to explore. He told the party that the Indians had killed a number of trappers in the area of the lakes to the southeast and that the party was too small to be safe. Nevertheless, Reading and his companions left the Snake River at its confluence with the Malheur and in early October set out toward the southeast. The party passed through the Harney Basin and found many Indians. By October 19 the men had reached what was probably Lake Abert. Reading wrote:

Set off at 10 o'clock and after about an hour's travel came to a very large lake. It is fresh water and one of the most beautiful, romantic sheets of water I ever beheld. Surrounded by high mountains. Traveled on the SW bank for several hours, discovered some tracks of a deer. In the evening, just before camping, had the good fortune to kill a fine buck. Camped in good spirits, on the shore of the lake in a small grove of pines, having traveled 24 miles south (Reading 1930).

Reading's party moved on south into California and finally on November 10 reached Sutter's Fort at Nueva Helvetia in the Sacramento Valley. Reading became one of the earliest white settlers of the northern end of that valley. Eventually the town of Redding, California, though inaccurately spelled, took his name. His explorations, though prior to those of Fremont, were of no consequence in the subsequent history of eastern and central parts of Oregon. His diary, though accurate in its descriptions, was not published until 1930 (Reading 1930; Bancroft, Vol. 6, 1888).

In 1846, when Fremont visited the Klamath lakes region for a second time, other Americans also explored the Great Basin. That spring settlers on the Willamette decided that a new emigrant route was sorely needed. In 1843 the overland parties had faced many trials in attempting to descend the Columbia River in the last days of their trek to western Oregon; some had perished when their boats swamped in the rapids. In 1845 perhaps as many as a thousand pioneers had followed Stephen H. L. Meek into Central Oregon on an ill-fated attempt to open a new route for the Oregon Trail from the mouth of the Malheur due west and through the Cas-
cades to the Willamette Valley. Perhaps twenty-five people perished before the beleaguered emigrants turned their wagons north to the shores of the Columbia near the The Dalles. With these experiences and the reports of the arduous route over the southern flanks of Mount Hood spied out in the fall of 1845 by Samuel K. Barlow and Joel Palmer, a party set out in June, 1846, to find a new way into western Oregon (Bancroft, Vol. 1, 1888: 543-44).

These explorers, led by Levi Scott and the Applegate brothers—Jesse and Lindsay—took the Oregon-California Trail south through the watersheds of the Umpqua and Rogue valleys. At the base of the Siskiyous they turned east toward Klamath Lake, entered northern California near Tule Lake, and moved on east through the Humboldt Sink area of California and Nevada until they at last reached Fort Hall in eastern Idaho. In August they persuaded approximately 500 people with between 90 and 100 wagons to take the new and only partially "developed" Southern Emigrant Route or Applegate Trail as an alternative to the Oregon Trail along the Snake and the south bank of the Columbia (Helfrich 1971; Applegate 1921: 12-45).

Although the first emigrant party faced terrible difficulties on the route, especially in the Umpqua Mountains of western Oregon, the trail saw use in many subsequent years. In 1847 about 45 wagons used the route; in 1848 a number of travelers used the eastern portion of the trail but turned south to follow the Pit River route into California once they had reached the Goose Lake region. Perhaps as many as 2,000 wagons came over the eastern portion of the route in 1849 as gold-seekers surged westward to California. No evidence survives of any wagon coming over the route and into Oregon in 1850. The Applegate Trail was used in the following years, but it was never a strongly popular alternative to the Oregon Trail (Helfrich 1971).

The explorations for the Applegate Trail afforded a wandering botanist an opportunity to carry out work in a region which had not received extensive attention from collectors of plants in previous years. Joseph Burke, who had collected plants for Lord Derby in South Africa from 1839-42, had worked in the vicinity of Fort Hall from November, 1844 until August, 1846. A collector for the Royal Botanical Gardens in London, Burke jumped at the chance to accompany the road builders westward on their return trip over the newly explored trail. Burke collected specimens at the southern end of Goose Lake and in the Klamath lakes area in August and September, 1846 (McKelvey 1955: 813-14; Cronquist et al., Vol.1, 1972: 49).
While Fremont was technically a lieutenant and his explorations were nominally under the direction and control of the War Department and the Topographical Bureau, his work in Oregon in 1843 and 1846 was not of a military nature. The expedition of Capt. William H. Warner of the Topographical Engineers in 1849 was, however, clearly a military undertaking. In February of that year General Persifer F. Smith arrived at Monterey, California, to take command of American forces along the Pacific Coast. Smith began immediately to exert the military presence in the region and dispatched forces to Oregon Territory to establish military posts at Fort Vancouver on the Columbia and at Fort Steilacoom on Puget Sound. He ordered Theodore Talbot to explore the northern coast of Oregon for sites for forts and lighthouses and dispatched Warner to explore the southern border of the territory for an alternative emigrant route and military road into California (Bancroft, Vol. 2, 1888: 83-87).

Warner, escorted by soldiers commanded by Lt. Colonel Silas Casey, left Sacramento in August, moved to the headwaters of the Sacramento River, passed through the Sierras, and spent several weeks exploring the region north and east of Goose Lake. Returning through the mountains, probably in the area just south of the Oregon border near Goose Lake, Warner was killed on September 26 by the Indians. Several geographical features in Lake County were later given his name. His explorations had included the Abert Valley and Warner Valley areas but did not lead to the location either of an emigrant route or, as General Smith had ultimately hoped, for a railroad route either (Bancroft, Vol. 2, 1888: 87; McArthur 1952: 634-36).

Lt. Robert Stockton Williamson, a cartographer in Warner's 1849 expedition, continued as an explorer in the region in the 1850's. In 1851, for example, Williamson led a party from Yreka to the east side of Mount Shasta and back through the Sierras to Fort Reading. In the summer of 1855 with Lt. Henry Abbot, Williamson returned to the region to mount the Pacific Railroad Surveys along the eastern flank of the Cascade Range. On August 13 the contingent of Topographical Engineers entered Oregon Territory by passing around the west side of Lower Klamath Lake. Abbot took another group up the eastern bank of Lost River. On August 14, Abbot wrote:

On reaching the summit of the very low divide, composed of trap rock, we saw outspread before us Upper Klamath lake. It was a fine sheet of water, thirty miles long and twelve miles wide, bordered by timbered ridges with an occasional narrow belt of tule. Light clouds of smoke rising from signal fires upon several of the hills satisfied us that watchful eyes were measuring our advance (Williamson and Abbot 1855: 66-67).
This party was talented and diverse. It included Williamson, a well-known cartographer; Abbot, his assistant; Dr. John S. Newberry, geologist and botanist; Dr. E. Sterling, physician and naturalist; John Young, draughtsman; H. C. Fillebrown, an assistant engineer, and eighteen other men. The crew carried a multifaceted assignment of finding a railroad route, accurately mapping the country it explored, collecting natural history specimens, recording detailed observations on the land, and sketching the features of the terrain for the illustrative plates which were to accompany the final reports (Williamson and Abbot 1855: 56).

The Williamson-Abbot party accomplished all of its missions. In fact, in the Klamath Basin, Williamson and Lt. George Crook were even able to record a basic vocabulary of the Klamath language, the first linguistic work carried out with the region's Indians. The final reports of this party, including the scientific studies, added an immense new body of information for those interested in Central Oregon. John S. Newberry, for example, devoted an entire chapter to the "Geology of Pit River and Klamath basins." The reports of specialists covered the fossils collected, an analysis of water and minerals taken from hot springs, and monographs with extensive illustrations of the botany and zoology in the areas explored (Williamson and Abbot 1855).

To the east of the Klamath Basin no record of white activity has been preserved in the 1850's or early 1860's. To be sure hardy emigrants continued, at intervals, to use the Applegate Trail, but they were, however, traveling in Nevada and California except when they turned north at Klamath Lake to climb over the Siskiyous into the valley of the Rogue River. In 1864, however, a proud and determined Indian killer, Charles S. Drew of Jacksonville, led his Oregon Volunteers east into the area (Shaver et al. 1905: 808).

Drew, long an apologist for exterminating the Indians of southwestern Oregon, had served as quartermaster of the Oregon Volunteers in the Rogue River Valley in the Indian war of 1855-56. By the early 1860's he held the commission of Colonel in the state forces. The outbreak of the Civil War and the withdrawal of Army forces from the Pacific Northwest for operations in the East created a need for new soldiers to staff the military posts surrounding the Indian reservations and providing escort service for emigrants on the Oregon Trail. In November, 1861, the Army raised ten companies of cavalry in the region for three years of service. Drew became a Major and in the spring of 1863 a lieutenant-colonel. Drew about this time ordered Company C of the First Oregon Cavalry to move to Klamath Lake and begin construction of Fort Klamath to provide military protection for travelers on the Applegate Trail (Bancroft, Vol. 2, 1888: 488-95; Stone 1964).
The departure of the Army regulars and the infusion of Oregon Volunteers into the new military companies in the region ran directly parallel to a mounting of expeditions against the Indians and a rapidly accelerating tally of violent actions in the central and eastern parts of the Oregon Territory. Aggression appeared to breed aggression; such had been the case in the Rogue River Indian wars of the early 1850's and the pattern developed again in the distant parts of the territory in the 1860's (Beckham 1971; Bancroft, Vol. 2, 1888: 495-ff).

During the summer of 1864 extensive military operations were carried out in the Harney Basin by the new forces. The opening of new gold fields in Idaho and the subsequent rush of miners from California northward through central and eastern Oregon exacerbated the problem. The Northern Paiute, none too disposed to allow trespassers on their lands to go freely, attacked some of these parties. Charles Drew and his forces were in the field that summer. After protecting emigrants near Fort Klamath, Drew led his men east through Drews Valley to Goose Lake on a major exploring expedition to the Owyhee Country. Passing along the head and east side of Goose Lake, Drew and his men entered California and explored parts of the Fandango and Surprise valleys. They then returned to Oregon and passed through the Warner Valley. Turning southeast they entered the Pueblo Valley and moved on to Fort Boise (Bancroft, Vol. 2, 1888: 504-05).

The results of Drew's reconnaissance were assessed by Hubert H. Bancroft who wrote:

On his return march Drew avoided going around the southeastern point of the Warner Mountains, finding a pass through them which shortened his route nearly seventy miles, the road being nearly straight between Steen and Warner Mountains, and thence westward across the ridge into Goose Lake Valley, with a saving in distance of another forty miles... The military gain was the discovery of the haunt of Panina and his band at Warner Mountain [Hart Mountain], and the discovery of the necessity for a post in Goose Lake Valley (Bancroft, Vol. 2, 1888: 505).

In 1865 B. J. Pengra, the president of the Southern Oregon Military Road Company, commenced surveys through Klamath and Lake counties for the Oregon Central Military Road. The meandering route of this road, expedient for permitting the company to claim a bounty of rich pasture and farmland, came south into the Klamath Basin. Pengra and the surveyors then turned east through the Sprague River region, Drews Valley, northern Goose Lake Valley, Warner Valley, and into the Harney Basin (Shaver et al. 1905: 809-10; Huber and Maxwell 1904).
By the mid-1860's the era of exploration had ended. Many features of the region had been noted, mapped, and given new names. The lakes, valleys, and peaks had become familiar to many through the vivid, published accounts of Fremont, Williamson, and Abbot. The natural history and some of the cultures of the Indians had been discussed in technical government reports. Fur seekers, government explorers, botanists, military men on assignment, and road builders had all helped spy out the region and its resources.
TRANSPORTATION

Although whites had passed through parts of south-central Oregon east of the Cascades as early as the 1820's, the region was far distant from the major routes of travel in the territory. The Oregon Trail, which annually drew hundreds and then thousands of travelers by the late 1840's, was far to the north and east. The Oregon-California Trail which became a virtual freeway for gold seekers and travelers trekking back and forth from the mines in California and southwest Oregon in the late 1840's and 1850's was west of the Cascade Range. Only the Applegate Trail came near the region and it cut only through the far southwest corner of the Klamath Basin before it surmounted the Cascades and the Siskiyous to drop into the Rogue River Valley.

Yet, in spite of slow beginnings, by the 1860's and 1870's familiar traces began to appear on the land. The tracks of the howitzers mounted on wheels indicated where military expeditions had gone. Slowly wagon ruts showed where gold seekers and other travelers had hurried through the region on their way to the diggings on the John Day River, in the Blue and Wallowa Mountains, or in the gold fields of Idaho. Finally, in the 1870's, the ruts deepened as pioneer families carried in their household goods to set up their lonely ranches in Oregon's Great Basin and Klamath Basin. Soon, the hooves of their cattle and sheep cut into the hillsides and added to the signs of new presence and pulse in the region. Several early roads or trails, shown in Figure 20, contributed to the development of transportation in the area.

Although it is possible, on the basis of diaries and early maps, to plot the probable routes of travel of the explorers, the sites they passed did not necessarily become features along the region's eventual transportation routes. The explorations of Ogden, Reading, Fremont, and others, while of historical interest, did not necessarily have lasting consequence for the routes of travel, trade, and commerce of those settling in south-central Oregon in the latter part of the nineteenth century. Indeed, of the many traces upon the land only a few emerged as of consequence to transportation in the region. The original survey maps from the records of the General Land Office show in fairly accurate detail the major routes in the region which had emerged by the 1870's and 1880's. In many instances, the highways of the 1970's, follow these same traces established a century ago.

Oregon Central Military Wagon Road

This route of controversy was the product of an Act of Congress on July 2, 1864, which granted vast lands to Oregon to subsidize the
Figure 22. Major Trails and Roads on BLM Lands within the Lakeview District as Shown on Original General Land Office Survey Plats (Key, Table 6).
<table>
<thead>
<tr>
<th>Map Reference</th>
<th>Site Name</th>
<th>Site Type</th>
<th>Sources</th>
</tr>
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<tbody>
<tr>
<td>1</td>
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<td>Wagon Road</td>
<td>Bancroft, vol. 2, 1888</td>
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<td></td>
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<td>Anonymous, Jan. 18, Feb. 15, 1862</td>
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<td>General Land Office Original Survey Maps</td>
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<tr>
<td>2</td>
<td>Huntington's Wagon Road</td>
<td>Wagon Road</td>
<td>Stone 1964</td>
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<td>General Land Office Original Survey Maps</td>
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<tr>
<td>3</td>
<td>Yreka and Canyon City Wagon Road</td>
<td>Wagon Road</td>
<td>Shaver et al, 1905: 932</td>
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<td>Bancroft, vol. 2, 1888: 503</td>
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<td>General Land Office Original Survey Maps</td>
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<td>Lakeview-Prineville Road</td>
<td>Wagon Road</td>
<td>General Land Office Original Survey Maps</td>
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<td>Wagonlire Mountain-Abert Lake Road</td>
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<td>General Land Office Original Survey Maps</td>
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<td>6</td>
<td>Burns to Warner Valley Road</td>
<td>Wagon Road</td>
<td>General Land Office Original Survey Maps</td>
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<td>7</td>
<td>Warner Valley-Fort Bidwell Road</td>
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<td>8</td>
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<td>Wagon Road</td>
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<td>9</td>
<td>Fort Rock-Christmas Lake Wagon Road</td>
<td>Wagon Road</td>
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<tr>
<td>10</td>
<td>Abert Lake-Sheep Rock Wagon Road</td>
<td>Wagon Road</td>
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<td>11</td>
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<td>Lakeview-Adel Road</td>
<td>Wagon Road</td>
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<td>13</td>
<td>Wagon Road to Shirk</td>
<td>Wagon Road</td>
<td>General Land Office Original Survey Maps</td>
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</tbody>
</table>

**Note:** The Applegate Trail or Southern Emigrant Route is of importance to the history of South Central Oregon but is not of significance to Lakeview District BLM lands.

Huntington's Wagon Road, following much of the route of present Highways 97 and 232, is also removed from BLM lands.
construction of a military-wagon road from Eugene at the southern end of the Willamette Valley to Boise, Idaho. The route was to cross the Cascades via the pass on the Middle Fork of the Willamette River. Congress granted to the state alternate odd-numbered sections for three miles on each side of the proposed route. In September the Oregon Legislature conveyed to the Oregon Central Military Road Company all of the lands and right-of-way it had received from Congress with the following provisions (Bancroft, Vol. 2, 1898:651):

(1) The lands should be used to finance the construction of the road;

(2) The government should have free use of the road for postal and military needs;

(3) Upon the completion of ten miles of road in a continuous route, the company could sell up to 30 sections at one time;

(4) The governor of Oregon had to certify the successful building of each ten-mile road segment prior to land sales;

(5) The road had to be constructed within a five year period or the unsold lands would revert to the United States.

The pressure for such a road had mounted in Jacksonville in the Rogue River Valley as Charles Drew and others envisioned a direct linkage between their mining community and the mines of western Idaho. As early as July, 1862, the Jacksonville Oregon Sentinel had editorialized about the desirability of such a route. The arguments suggested that the agricultural products of the Rogue River Valley would be readily marketable in the mines along the Salmon River in Idaho, that the route would open vast cattle ranges, and that such a road would stimulate population growth. Within a month the support for such a route had so grown in the Rogue Valley that Crescent City on the northern coast of California was touted as a logical terminus and port of entry for commerce over such a road. Further, the Sentinel editor saw that this road would stave off possible bankruptcies in Jacksonville. To the merchants of a community whose placer gold had been largely exploited, a road through south-central Oregon seemed an alluring possibility (Anonymous, Jan. 18, Feb. 15, 1862).

The ardor with which Charles Drew used his military forces in the summer of 1864 to spy out a possible route across the southern part of the state reflected the commitment of his home community to securing connections with the new gold fields of Idaho and eastern
Oregon. Somewhat ironically, the Oregon Central Military Road Company, however, seized the initiative, secured the grant from the legislature, and with Eugene as the western terminus began in 1865 the surveys of the new road. Since the company was to receive 1,920 acres for every mile of road which it built, the more circuitous the track that it laid out, the more land it might receive. Further, since the lands were to be in sections three miles distant on either side of the road, it was highly desirable for the road surveyors to make certain that their route passed through the most productive lands as possible (Bancroft, Vol. 2, 1888: 652-53).

By the fall of 1867 the road had been cut through the Cascades. Rather than moving directly east across the state to Idaho, however, the road surveyors turned almost due south and took their route down the eastern flank of the Cascades through the lush watershed of the Williamson River and then turned east through the equally attractive region of the Sprague River. Since the land along the first twenty miles of the road in the Willamette Valley had nearly all been claimed by early settlers in Lane County, the road company directors persuaded Congress to permit them to select lieu lands in the well-watered valleys east of the Cascades. Road building held the possibilities of immense profit! (Bancroft, Vol. 2, 1888: 652).

The road company continued farther east with its route, passing down Drews Creek, moving through the north end of the Goose Lake Valley, passing through the Warner Mountains and entering the Warner Valley just west of Crump Lake. The road then crossed the north end of Hart Lake, passed south of Mount Warner (Hart Mountain), and moved on east to eventually complete a 420 mile route to Fort Boise (Huber and Maxwell 1904).

This road, which was little used, created several problems. For one, its development was minimal and many knew it. Like the Willamette Valley and Cascade Mountain Wagon Road to the north or, like the Coos Bay Wagon Road through the Coast Range far to the west, the Oregon Central Wagon Road struck many as a fraud perpetrated to skim off vast tracts of land for personal gain and virtually no public benefit. In the case of the Oregon Central Military Wagon Road, yet another complication was the way in which the company's claim dismembered the Klamath Indian Reservation.

The Klamath had ceded their lands and agreed to a treaty designating a 2,000,000 acre reservation in 1864. A few months later Congress passed the act setting up the wagon road. The Indian treaty was ratified in 1870 and the certified completion of the wagon road finally occurred in 1872. The road company ended up claiming 110,000 acres within the reservation in alternate sections. When the government
began allotment of lands upon the Klamath Reservation at the end of the nineteenth century, the conflicting claims of Indians for their reservation lands and the holders of the wagon road lands became evident. The situation was further complicated because in 1873 the Oregon Central Military Road Company had disposed of its holdings to the Pacific Land Company of San Francisco. That investment group and the successor California and Oregon Land Company created considerable animosity with repeated refusals to dispose of the grant lands to settlers and cattlemen. The company won its rights to the Indian lands in a decision by Justice Oliver Wendell Holmes in 1904 (Bancroft, Vol. 2, 1888: 653; O'Callaghan 1952: 23-25).

The California and Oregon Land Company by the first decade of the twentieth century was controlled by the Booth-Kelly Lumber Company of Springfield, Oregon. Eager to gain a solid block of timberland, the lumber company agreed in 1908 to a government offer to relinquish 110,000 scattered acres it claimed on the Klamath Reservation for 87,000 acres of ponderosa pine. Congress offered the Indians $108,750 to sweeten this rather brazenly inequitable swap; reluctantly the Indians agreed. After two cases in the U.S. Court of Claims and fighting their case all the way to the U.S. Supreme Court in 1938, the Klamaths finally secured an award of $5.3 million as a conscionable settlement for the exchange of 1908. For both whites and Indians the dealings of the road company and the successor firms holdings its land were often unpleasant. Truly, the Oregon Central Military Wagon Road drew far more attention for its lands than for its attractions as a route from Eugene, Oregon, to Boise, Idaho. Nevertheless, portions of the route, especially through the valleys of the Williamson and Sprague rivers, became widely used highways in later years (O'Callaghan 1952).

Applegate Trail

Although the Applegate Trail or Southern Emigrant Route only passed through the far southwestern corner of the lands administered by the Lakeview District, this road was of consequence in the history of the region and especially of the Klamath Basin. Explored and first used in 1846, this road brought travelers, especially overland emigrants, from Fort Hall in eastern Idaho through the Humboldt Sink region of the Great Basin. The road then turned to the northwest and entered Oregon north of Tule Lake only to swing back into California to go around the eastern and southern sides of Lower Klamath Lake before climbing into the Cascades and Siskiyou (Helfrich 1971).

Although the volume of emigrant use of this road varied from
year to year, the impact on travelers in the 1840's and 1850's was perhaps of some consequence in the subsequent development of south-central Oregon. For one, emigrants on this trail saw the lush potentials of the Goose Lake Valley and the Klamath Basin. In the next generation the children of the pioneers of the Applegate Trail were sometimes among those homeseekers who became part of the eastward moving throng seeking new lands beyond the Cascades. Second, many of the emigrants on this route had ingrained into them a deep fear of the potentially troublesome Modoc Indians in the Tule Lake region. When some wagon trains were attacked, the general conviction quickly spread in much of Oregon that the Modocs were "savages" to be destroyed. The subsequent history of relations between those Indians and whites remained a tempestuous one until the defeat of the Modocs in the 1870's by the U. S. Army (Murray 1958).

_Huntington's Wagon Road_

In the fall of 1864 J. W. Perit Huntington, Oregon Superintendent of Indian Affairs, journeyed to the Klamath Basin to negotiate a treaty with the Klamath, Modoc, and Northern Paiute in that region. Securing supplies in The Dalles, Huntington had them carried by wagon south through the watershed of the Deschutes and down the Williamson River to Klamath Lake. The route that Huntington's packers traversed was probably an old Indian trail. It had been used by many travelers east of the Cascades. In 1855 the Pacific Railroad Survey party had mapped the area and made a detailed reconnaissance of the region. Peter Skene Ogden and his men had used the route as early as the 1820's. In May, 1860, the naturalist John Keast Lord of the British crew surveying the boundary between the United States and Canada, had driven 81 mules over this route on his way between San Francisco and The Dalles (Williamson and Abbot 1855; Davies and Johnson 1961; Lord, Vol. 1, 1866: 271-76).

To refer to this route of travel as Huntington's Wagon Road is perhaps inappropriate, for Huntington's use of the road was a single event in 1864 to bring supplies for the treaty negotiations with the Indians of the Klamath Basin. Yet, as surveyors carried out the first township mapping in Central Oregon for the General Land Office in the 1870's, they several times noted this trace on their maps and in their field notes as the Huntington's Wagon Road (Meldrum 1872, 1879; Neuman 1871).

_Yreka and Canyon City Wagon Road_

The discovery of gold at Canyon City and at other locations in eastern Oregon and in Idaho in the 1860's drew many prospectors from California. Writing about this route, the authors of the _Illustrated_
History of Central Oregon noted:

During 1861 and 1862 several different parties went from California to the mining district in the north, driving stock and taking in provisions and mining utensils by means of pack trains. Their route through the territory was by way of Tule Lake, Lost River, Sprague River, Sican Marsh, Silver Lake and thence to the north (Shaver et al. 1905: 932).

This route appears from time to time in the General Land Office original survey maps of south-central Oregon. For example, in the Bonanza Unit, T38S, R11E, the surveyors Howard and Huffer noted in 1875 that the route was the "Road from Lost River to Goose Lake." In this township the road made an abrupt turn to the east along alternative routes in sections 22 and 25. Proceeding on to the north from section 22 was the "Lost River and Yainux Trail" (Howard and Huffer 1875). This road probably continued on to the northeast to the site of the later Keno Guard Station and Royston Spring. Eventually it joined the later route of the Oregon Central Military Wagon Road which ran east through the Sprague River valley toward Goose Lake.

Travelers not electing to enter the Goose Lake Valley turned to the northwest, traversed Sycan Marsh and emerged in the Silver Lake region. From the east side of Silver Lake this road took a strong northeasterly course. The General Land Office records refer to the route as both the "Canyon City Road" and the "Lakeview-Prineville Road." The latter name, of course, referred to the road when it was north of Silver Lake. Travelers not going via Sycan Marsh could have turned south to Lakeview via Summer Lake, Chewaucan Marsh, and Abert Lake.

The challenges of the road between Yreka and Canyon City were many in the 1860's. This route was little developed. Sandy sections bedeviled those attempting to pull wagons over it. Indians sometimes threatened the trespassers on their lands. One party in 1864 encountered just such an experience. Having come north via Klamath Lake, the Sprague River, and Silver Lake on their way to the mines on the John Day, these gold seekers were attacked on June 23 near Silver Lake. The party included 15 men, several women and children, and seven wagons. The Indians stole seven oxen, 3,500 pounds of flour, and wounded three of the party before escaping (Bancroft, 1888, Vol. 2, 503).

Lakeview-Prineville Road

By the 1870's the Lakeview-Prineville Road ran almost due north and south through ranges 15-16E. The route, which began west of
Prineville, came south into the Christmas Lake-Fort Rock Valley area. This route split into an eastern and western segment in T23S, R16E near Squaw Butte (Meldrum, July 16-22, 1882). The eastern section went south to Alkalai Flat before turning southwest to the east shore of Silver Lake. The western segment, often labeled the "Old Stage Road from Prineville to Silver Lake," passed along the east side of Cougar Mountain and came over the Connley Hills in a southwesterly direction to Paulina Marsh to the community of Silver Lake (E. P. and H. A. Rands, May 24-June 19, 1910).

At the south end of Silver Lake the two segments became one road again and continued on through Picture Rock Pass to Summer Lake, the Chewaucan Marsh, and to near the south end of Lake Abert. From near the base of Abert Rim the road moved on south to Goose Lake Valley and Lakeview.

**Wagontire Mountain-Abert Lake Road**

A wagon road which ran between Wagontire Mountain and Lake Abert consisted of two nearly parallel traces approximately six miles apart. The western segment had its origins in T32S, R21E at the northern end of Lake Abert where the route turned almost directly west to Paisley (John A. McQuinn April 21-30, 1895). This western segment was known variously as the "Road from Abert Lake to Alakai Lake" or the "Wagon Road from Abert Lake to Wagontire Mountain." In T29S, R23E this route made a junction with the road to Juniper Mountain which led to the east (Fred Mensch, Aug. 18-Sept. 6, 1916).

The eastern segment of the Wagontire Mountain-Lake Abert road did not lead directly through the Alkali Lake area as did the western segment. Instead, this route, commencing in T32S, R21E at the northern end of Lake Abert, turned east toward the Commodore Ridge before moving northeasterly toward Wagontire Mountain. The road was a mile to two miles east of the present Lakeview-Burns Highway. This eastern segment was variously known as the "Wagon Road from Lake Abert to Juniper Mountain" and the "Road from Juniper Mountain to Wagontire Mountain" (James L. Rumsey, Nov. 1-15, 1883). The eastern and the western segments of this road probably met in T26S, R24E.

**Burns to Warner Valley Road**

By the mid-1860's a wagon road had been established from the Harney Basin southwesterly to the Warner Valley. The establishment of second Camp Warner in the watershed of Honey Creek was a major factor in leading to the use of this route. The road ran from the Warner Valley in a northeasterly direction along the bottom of the valley past the western sides of Flagstaff Lake, Campbell Lake, and Bluepoint Lake to the vicinity of Mud Springs (T31S, R27E) (William
C. Elliott and George S. Nickerson, Sept. 21-30, 1900). The General Land Office township survey maps indicate that the route branched into an eastern and western segment in this township but joined again in T28S, R28E and continued on toward Burns (Moore & McCown, Aug. 9-15, 1902).

The most extensive use of this road in its earliest period came during the occupation of Camp Warner. U. S. Army forces resided at this site and engaged in reconnaissance and battles with the Northern Paiute at intermittent intervals between 1867 and the fall of 1873 (McArthur 1952: 95-96).

Warner Valley-Fort Bidwell Road

The establishment of Camp Warner in the Warner Valley region in the 1860's led readily to the development of communications and transportation with Fort Bidwell to the south in California. Two roads developed in the Warner Valley on a north-south axis by the late 1860's. On the west side, primarily in R22-23E the "Fort Bidwell-Camp Warner Road" ran from Camp Warner in T36S, R22E, Sec. 33 south to the California border. This road crossed the Oregon Central Military Wagon Road in the vicinity of Twelvemile Creek and Drake Creek in T37-38S, R22-23E. The route passed west of the Sagehen Hills and along the east side of Big Valley (Byars and Gray, Sept. 24, 1879).

On the east side the "Road to Fort Bidwell" branched from the western segment in T41S, R23E, Sec. 20 and ran northeasterly into the South Crump region (Byars and Gray, Aug. 21, 1879). The route led directly through Adel and then along the west side of Crump Lake. North of Adel the route was known as the "Lakeview-Burns Road" or the "Wagon Road from Surprise Valley to Harney." This segment has been discussed in the Burns-to-Warner Valley Road section. Among the General Land Office survey maps indicating the route of this road are Byars and Gray (Aug. 28, 1879) and John H. Neil (Aug. 29-Sept. 6, 1887).

Guano Valley Wagon Road

The original survey maps of the General Land Office indicate that by the end of the nineteenth century the "Guano Valley Wagon Road" ran roughly in a north-south direction through the valley in R27-29E. The route entered Oregon from Washoe County, Nevada, near the base of Daughtary Rim and followed the west side of the valley through the later site of the Barry Ranch, along the west side of Guano Lake to Shirk Lake (Byars and Gray, Oct. 1880; Byars and Dickerson, July 30-Aug. 4, 1881, Aug.3-8. 1881).
The Guano Valley Wagon Road crossed the little-used Oregon Central Military Wagon Road in T36S, R29E and moved on to the northeast to the Catlow Valley (Rufus S. Moore and Malcolm S. McCown, Aug. 19-25, 1901).

Subsequent Roads

With white settlement in many places in south-central Oregon in the 1870's the early trails of travelers merely passing through the region took on more concrete appearance. The cutting of sagebrush, filling of ravines, bridging of creeks, and grading of some sections gave these routes permanence and utility. A number of east-west routes crossed the mountains and ridges of the region to provide connections for those not making the long north-south treks on the major roads. These more minor but early connecting roads included:

(1) Fort Rock-Christmas Lake Wagon Road, a route primarily in T26S, R14-17E;

(2) Abert Lake-Sheep Rock Wagon Road, a route primarily in T30-32S, R20-21E;

(3) Linkville-Lakeview or Goose Lake Road, a route passing through the Lost River watershed to Bonanza and then northeast to Mortar Prairie, Royston, and Sagehen Place to join the Oregon Central Military Wagon Road in the watershed of the Sprague River. This road was primarily in T37-39S, R9-14;

(4) Lakeview-Adel Road, a route crossing the Warner Mountains using part of the route of the Oregon Central Military Wagon Road in T38-39S, R20-24E;

(5) Wagon Road to Shirk, a route from the Warner Valley over Hart Mountain to the Flock Lake area in T33-34S, R27-28E.

In many instances the early roads of south-central Oregon became highways of the twentieth century. The extensive public commitment of a massive land grant to the Oregon Central Military Wagon Road, however, led to the survey and slight development of a route that, of the many roads in the region, probably played one of the least significant parts in the development of transportation.

Railroads

The completion of the Union Pacific-Central Pacific line at Promontory Point, Utah, in 1869 brought great excitement to America with the spanning of the continent with rails from sea to sea. To
many nineteenth century Americans the railroad was truly a symbol
for an age. The belching of smoke, the hissing of steam, the
thunder of the cars on the bridges spanning the nation's streams,
and the ease with which passengers and freight were whisked from
place to place gave testimony to the power and supremacy of a new
nation. Between 1865 and 1873 the U. S. doubled its railroad
mileage from 35,000 to over 70,000 miles of track. By the 1880's
the amount had grown to 93,000 miles; in 1890 the figure stood at
166,000 miles; and in 1900 the U. S. had over 200,000 miles of
track—more than that of all of Europe and Russia combined (Blum
et al. 1973: 419).

To many who lived in Oregon in this period the key to their
personal fortunes and the growth of the regions in which they
lived was, in their view, entirely dependent upon the extension
of rail facilities throughout the state. Those expectations began
to mount when in 1872 the Oregon and California Railroad pushed
its lines south through the Willamette and Umpqua valleys, intend-
ing to build on to California. Many residents east of the Cascades
eagerly looked forward to the construction of routes through the
mountain passes to link that road with lines at Boise, Idaho. The
construction of the Oregon Railway and Navigation Company line
along the south bank of the Columbia added to this excitement in
the 1880's as residents envisioned north-south feeder lines which
would pass through Central Oregon and into the Great Basin (Due
and Juris 1968).

High hopes and long frustrations, however, characterized the
history of railroad development in Central Oregon between the 1870's
and 1911. Many firms anticipated building through the region and,
in some instances, published maps of their expected routes. T.
Egerton Hogg created much expectation when in 1871 he secured
the control of the Willamette Valley and Cascade Mountain Wagon Road
land grant and planned to build the Corvallis and Eastern through
the Santiam Pass and east to Boise. Hogg even graded twelve miles
of right of way in the Malheur Canyon three hundred miles to the
east for his projected route. Although Hogg built west to Yaquina
Bay on the Oregon Coast and up the Santiam River, his finances were
shakey and his dreams had foundered by the 1890's (Due and Juris
1968).

Although the years of government largess in making enormous
grants of land to railroad and wagon road companies had passed,
the residents of Central Oregon still hoped that they might secure
rail connections by providing attractions to outside builders. In
1892 the residents of Klamath County were pressured to offer $100,000
in cash and land as an inducement to get the Southern Pacific Com-
pany, the successor to the Oregon and California Railroad lines
in the Willamette, Umpqua, and Rogue valleys, to build through the
Klamath Basin. Although the citizens of the area subscribed $10,153
and 2,497 acres, they did not meet the demands of the railroad and the Southern Pacific declined to construct the line (Shaver et al. 1905: 972).

The economic depression which beset America between 1893 and 1897 quashed railroad dreams for a short period. However, in November, 1899, residents of Klamath County, Oregon, and Siskiyou County, California, formed the Oregon Midland Railroad Company to build from Klamath Falls to a projected junction with the Southern Pacific at Klamath, California, a line of about sixty miles. Although stock was subscribed and surveyors examined much of the route, construction did not occur (Shaver et al. 1905: 972).

The first rails laid into the Klamath Basin were put down in 1901-02 when the Pokegama Lumber Company extended its line from Thrall, California, to Pokegama in the extreme southwestern part of Klamath County; the route was completed in May, 1903 (Anonymous 1966: 49-58). More direct action was taken toward a route to the Klamath Lakes when in 1904 the Weed Lumber & Railroad Company began surveying and laying track toward the Klamath Basin from northern California. Later known as the California & Northwestern Railroad, this firm was bought out by the Southern Pacific before it reached Klamath Falls. The Southern Pacific later extended this line north out of the Klamath Basin through the watershed of the Williamson River in the upper Deschutes Country and over Willamette Pass to Eugene, Oregon. Long known as the Cascade Line, this route provided a connection twenty-three miles shorter than the old main line over the Siskiyou and through the Rogue Valley (Culp 1972: 142).

The Columbia Southern, a branch line from the Oregon Railway & Navigation Company, reached Shaniko in the spring of 1900. Although many hoped the line would continue south to California, the project stopped. Hopes grew again, however, when the aggressive competition of the Hill and Harriman companies led to a wild race to build railroads up the Deschutes River Canyon between 1909 and 1911. By the fall of that latter year Central Oregon had its first rail connections to the outside world (Due and Juris 1968).

The positive thinking which underscored so many of Oregon's railroad projects appeared in 1913 in the publication of Clason's Guide Map of Oregon. This map showed Central Oregon laced together by the Oregon Eastern Railroad and the Goose Lake Southern Railroad. The Oregon Eastern ran southeast from Lapine to Fort Rock, Lake, Viewpoint, Buffalo, Ram's Rock, Egli, and on into the Harney Basin. The Goose Lake Southern turned south from Lake to the east of Paisley to Valley Falls and then moved south to Lakeview and New Pine Creek. To the ambitious homesteaders of Oregon's High Desert this map must have been reassuring. Neither line, however, was ever built (Anonymous 1913).
The residents of Lake County finally obtained rail connections in January, 1912, with the construction of the narrow gauge Nevada-California-Oregon Railway which originated at Reno, Nevada. Although this route was planned to extend on to The Dalles, its terminus was at the north end of Goose Lake. Known locally as the "Narrow, Crooked and Ornery," the NC & O nevertheless was an important development in the history of the region. The Lake County Examiner noted in 1976:

Through the early years the railroad proved invaluable to Lakeview and Lake County. Cattle, sheep and lumber were the freight mainstays of the railroad and stockmen soon grew to depend on the tiny line for shipping and supplies. In the wintertime, when snow covered the range lands and blocked the roads, hay for the cattle became an important item. The railroad, being the only operating link with civilization during the long winter months, became the lifeline of the territory it served (Anonymous July 4, 1976b:18-19).

Much of south-central Oregon was far removed from the railroad construction. In distant fertile valleys ranchers and homesteaders tended their stock, grew hay, and dreamed of the time when the rail lines might pass through their areas. Shaniko, Bend, Klamath Falls, and Lakeview were the points of shipping and receiving upon which they had to depend. Following World War I a few additional lines were built in the region. In 1919 the City of Prineville constructed its own, municipal railroad into the Crooked River Valley. By 1936 the Ewauna Box Company Railroad served Bly; the Pelican Bay Company Logging Railroad tapped that company's timberlands in the same area (Metsker 1936a:150-51; Due and Juris 1968). In sum, however, transportation remained poorly developed until the advent of automobile-truck facilities in the 1920's.

Water Transportation

Although far away from the ocean and not possessing navigable rivers, south-central Oregon had a period where water transportation played a role in the region's development. In the Goose Lake Valley this event developed in 1908-09 when the Oregon Valley Land Company built a steamboat to carry passengers across Goose Lake. The company, successor to ownership of the Oregon Central Military Wagon Road lands, actively solicited purchasers and encouraged groups investing in lands to send their representatives to Lakeview to examine the proposed sale tracts. Many of these would-be settlers journeyed by railroad to Alturas, California, came north to Goose Lake, and crossed the lake on the company's steamboat (Anonymous n.d.).

In the Klamath Basin the Klamath Indians had long used dugout
canoes for crossing the lakes in their region. As early as 1872 settlers began using a small sail boat on Klamath Lake to traverse that body of water. The boat, nearly forty feet long, was called the Mary Moody. By 1879 H. M. Thatcher and Sykes Worden had constructed the General Howard, a steam-driven vessel sixty-five feet long. This vessel was used for towing logs across Klamath Lake to the W. S. Moore sawmill on Link River. By 1902 tourist excursions on the boats on Klamath Lake had become popular. The Winema, the best known of these vessels, was launched in 1905. Measuring 125 feet in length, this ship carried passengers on outings through 1916 (Good 1941).
MILITARY AND INDIAN AFFAIRS

Indian-white relations in south-central Oregon produced a history of tense and sometimes bloody events. Although not residing in an area of intensive early white settlement or a gold rush, the Indians of the region were affected by those familiar events of the mid-nineteenth century. In fact, the future course of their history was shaped directly by actions taken without their knowledge by the government of the United States in the 1840's. Since 1819 Great Britain and the United States had been parties to a "joint occupancy" agreement to the Pacific Northwest. In 1845-46 President James K. Polk forced a termination of that understanding and helped lay the complex framework of events that would forever change the lives of the Northern Paiute and Klamath Indians.

The Oregon Treaty of 1846 secured for the United States the vast Oregon Territory reaching from the forty-second to the forty-ninth parallels, the land from northern California to Canada and from the Pacific Ocean to the crest of the Rockies. Although this decision of sovereignty directly involved the claims of the Indians of the region, none was consulted about this diplomatic settlement. In 1848, however, Congress passed the Organic Act which led in March, 1849, to the promulgation of Oregon Territory. Joseph Lane, a military hero of the Mexican War, came to the new territory to serve as Governor and as ex-officio Superintendent of Indian Affairs. Slowly the government's elements in the emergent course of military and Indian affairs was being set.

Other factors which influenced the course of those events were related to white activity in south-central Oregon. From time to time, even in the days of Ogden's fur trading, tensions had existed between whites and Indians in the area. Fremont had in 1846 lost three men in a battle with the Klamaths. Of much more consequence, however, was the opening of the Applegate Trail that year into the Klamath Basin and the passage of emigrants over the route. Carrying with them strong prejudices against the Indians as well as driving livestock and possessing material goods coveted by these people, the stage was set for troubles. The marked increase of emigrant use of that route with the California gold rush of 1849 added another ingredient. By 1853 the bloody encounters were fully underway as self-styled "volunteers" led by a notorious Indian-killer, Benjamin Wright, rode east from Yreka, California, to massacre the Modoc Indians in the Tule Lake region (Murray 1958).

The background of the open warfare with the Modocs in the early 1850's may have been, in part, the product of calamitous changes that were befalling Indians throughout the American West in the nineteenth century. Contact with whites in 1847 created a massive smallpox epidemic in the Great Basin. Many Modocs succumbed to this new illness.
Assessing the course of this event, Keith Murray wrote:

A catastrophe of this kind, coupled with the arrival of the more advanced civilization of the white settlers, almost completely changed the culture patterns of the Modocs. Hereafter, the young Indian men preyed upon the wagon trains about as any group of bandits might, since they lacked much of the capacity to survive in the old ways (Murray 1958: 18).

While the relations between whites and Indians grew more and more troubled near the point where the Applegate Trail turned north into Oregon, Joseph Lane as governor and later as territorial delegate to Congress, was busily establishing an Indian policy in the territory. Shortly after setting up the Oregon Superintendency of Indian Affairs in 1849, Lane appointed an agent for Middle Oregon. This position, held in the early 1850's by R. R. Thompson, brought an official of the government to The Dalles with an assignment to work out relations with the Indians of Oregon east of the Cascades. The future course of those events was clouded in 1850-51 by a strong determination in the territory to remove all of the Indians of the Willamette Valley and place them on a reservation somewhere in Central Oregon. That plan was not realized in part because of the adamant resistance of the Kalapuya in the Willamette Valley to such a removal and to the failure of Congress to ratify the treaties secured by the Oregon Indian Treaty Commission or by Superintendent Anson Dart (Mackey 1974).

The pattern of Indian policy in the American West since the 1830's had involved the massive cessions of lands and the removal of Indians to small, concentrated areas known as reservations. In 1855 the Oregon Superintendency secured a treaty with the Indians of the Confederated Tribes and Bands of Middle Oregon. These people included the following named groups:

- Taht or Upper Deschutes band of Walla Wallas
- Wyam or Lower Deschutes band of Walla Wallas
- Tenino band of Walla Wallas
- Dock-spus or John Day River band of Walla Wallas
- The Dalles band of Wascoes
- Xi-gal-twil-la band of Wascoes
- Dog River band of Wascoes

These Indians of the Columbia Plateau agreed to cede the bulk of their domain for the Warm Springs Reservation and the perpetuation of their rights to fish at "usual and accustomed places" (Kappler 1904; Shane 1950; Johansen 1967).

Although the treaty with the bands and tribes of Middle Oregon
was not ratified until 1859, most of these Indians removed to the Warm Springs Reservation before that date. These Indians signed a supplemental treaty in 1865 which relinquished many rights for hunting, fishing, and gathering and required them to obtain permits from the agent before leaving the reservation (Kappler 1904). The development of the Warm Springs Reservation was important to some of the Northern Paiute bands of central and southeastern Oregon. Knowing that the Indians on this new reservation had cattle, the Northern Paiute began a series of raids against these Indians and their property in the late 1850's (Clark 1932).

As early as the 1840's Americans in the Willamette Valley had come to know the Klamath who crossed through the Cascades to trade or, sometimes, to sell slaves. Not until 1854, however, did an official of the Oregon Superintendency visit Klamath Lake. That year Joel Palmer persuaded a Klamath chief that he met at Oregon City to assemble the Indians of the Klamath Basin for a council. Palmer, with an interpreter from the Columbia Plateau, journeyed up the Deschutes in August. Although the Indians from throughout the area did not assemble, Palmer met with the bands from Klamath Marsh, Agency Lake, and the Lower Williamson River (Stern 1966: 30-31).

The intense struggles with the Indians of the Rogue River watershed and in Washington Territory in 1855-56 precluded any further attention to working out relations with the Klamath. In 1857, however, G. H. Abbott, an agent, visited the Klamath and the Modoc to select a site for an agency headquarters. Between 1858 and 1860 the Oregon legislature repeatedly urged the government to secure treaties with the Indians of the Klamath Basin and to establish military posts in the region. The coming of the Civil War forced a delay in that project (Stern 1966: 33).

Coupled with these financial interests in lands in the region, provided the lands could be obtained from the Indians by a treaty or warfare, were the apparent machinations of Charles S. Drew. A leading advocate of extermination of the Indians in the Rogue River Valley during the war of 1855-56, Drew by the early 1860's was strongly suspected of harboring secessionist or pro-southern sentiments. His determination to carry out a reconnaissance and military patrols by the Oregon Volunteers in the area east of the Cascades may have been founded upon (1) his intense dislike of Indians and the possibility of finding ways to kill more of them, or (2) his desire to foment an Indian war that would divert U. S. soldiers from the conflict with the Confederacy and help set the stage for a secessionist movement in Oregon and northern California (Beckham 1971; Stern 1966: 35).

Prior to the establishment of a permanent military post in the Klamath Basin, the U. S. Army forces had entered the region on a few occasions. Fremont's explorations of 1843 and 1846 had been of
an official government nature. The Pacific Railroad surveys of Williamson and Abbot in 1855-56 were executed by members of the U. S. Army. In 1859 Lieutenant Alexander Piper and Company L of the Third Artillery journeyed from Fort Umpqua at the southern end of the Siletz Reservation in coastal Oregon to Camp Day near the confluence of Spencer Creek with the Klamath River (Piper 1968). Not until 1863, however, did the Army build a permanent outpost in the region when it established Fort Klamath between Wood River and Fort Creek (Stern 1966: 33; Stone 1964).

The previous year Drew and his Oregon Volunteers had entered the region and, using the allegation that the Indians had fomented troubles, had executed the two Indian leaders Captain George and Skookum John (Stern 1966: 36). The unsettled state of Indian affairs in the Klamath Basin led Lindsay Applegate, long involved in the emergent Indian policy in the region, to write in early 1864 to J. W. Perit Huntington:

I was visited a few days ago by Lake Indians who said that they had been instructed by their people, to learn of me, whether their country was to be taken from them or not without compensation, and if they were to be made slaves. They say Col. Drew has taken possession without their having any assurance that they would ever get anything for their country, and that it would shortly be overrun by settlers.

They complain bitterly of these things, [but] say they do not want war with the whites . . . (Stern 1966: 36-37).

Following a preliminary visit to the Klamath Basin in August of that year, Huntington returned in October and negotiated the Klamath treaty. This agreement involved 21 Klamath chiefs and headmen representing 710 Klamath Indians then present, four Modoc chiefs and headmen, representing 339 Modoc Indians, and two Paiute leaders who represented 22 members of the "Yahuskin band of Snakes." In a separate treaty in August, 1865, Panaina of the Walpapi Snakes, another Northern Paiute group, also signed a treaty. These agreements ceded to the government of the United States a vast tract of land from the Cascades on the west to Steens Mountain on the east and from roughly the northern edge of the Great Basin south to the California border. Reserved for the Indians was the watershed of the Williamson River, part of the watershed of the Sprague River, and lands bordering on Agency Lake (Stern 1966).

These treaties established a new era for the Indians of south-central Oregon. Determined by these agreements was the ultimate ownership of that vast region and also set was the stage for the government's program of "civilization," measures to turn these
people into farmers under the tutelage of the Bureau of Indian Affairs on the Klamath Reservation. The exact identity of all of the signatories of the treaties remains unclear. Erminie Wheeler-Voegelin has concluded that the Yahuskin Snakes of the 1864 treaty were a band of Northern Paiute from the Surprise-Warner valley area with whom Charles Drew had been in contact. Theodore Stern, in his ethnohistory The Klamath Tribe: A People and Their Reservation, suggested that the group may well, however, have been a band from the Silver-Summer-Abert lakes region who were living together with the Upland Klamath. In whatever case, changing times had truly come to the Indians of the region (Stern 1966: 288).

The treaties in the Klamath Basin came in the midst of a period of intense unrest and hostility between whites and Indians in much of Oregon east of the Cascades. Between 1859 and 1868 a series of conflicts broke out in that area. Some of the troubles mounted when in 1859 the Northern Paiute began steady raiding of the Warm Springs Reservation. Thomas L. Fitch, the agent at Warm Springs in 1859, took fifty-three Indian volunteers to the John Day River in April to attack a Paiute camp. He and his party killed all of the men, perhaps as many as ten. On August 10 Fitch reported that about 250 Northern Paiute had swept onto the reservation and had driven off 150 head of horses and head of cattle. They had also killed thirteen women and children. In October, 1863, the raiders struck again, stealing horses. In the spring of 1864 the Indians from Warm Springs retaliated by pushing south and capturing twenty horses and one Indian child (Shane 1950).

Deeming the actions of the Northern Paiute or Snake Indians, as they were commonly called, dangerous not only to the reservation but also to travelers to the mines in Grant County, the U. S. Army began a major offensive in 1864. Brigadier General Benjamin Alvord, commander of the Military District of Oregon, dispatched an expedition from Fort Walla Walla under Captain George B. Currey and another under Capt. John E. Drake from Fort Dalles. Drake, commanding men from the First Oregon Cavalry, left The Dalles on April 20, 1864. His 167 soldiers were augmented by 22 scouts from the Warm Springs Reservation (Knuth 1964).

In May, 1864, Drake established a depot in the Crooked River region and called the site Camp Maury. Other posts established in the area that year included Camp Gibbs and Camp Dahlgren (Knuth 1964; McArthur 1974). Through that summer nearly 400 soldiers and Indian scouts were in the field seeking the Northern Paiute. Frances F. Victor, writing for Hubert H. Bancroft's History of Oregon, summarized this campaign: "Few skirmishes were had, and not a dozen Indians killed from April to August." The wily Northern Paiute, nevertheless, continued their raids, driving off livestock on the John Day River. The
Paiute also attacked a contingent of miners passing Silver Lake on June 23. This action sparked military action in the Klamath Basin and the eastward expedition of soldiers from Fort Crook, California, that summer (Bancroft, Vol. 2, 1888). The expeditions during the summer of 1864 brought several bands of white men into the heart of south-central Oregon. When the survivors of the attack at Silver Lake retreated to Fort Klamath, they concluded to persist in their efforts to each Idaho. Under the protection of Charles Drew and his soldiers, this party, augmented by other travelers, moved east through the Sprague River watershed, down Drews Creek, and entered the Goose Lake Valley. There the group turned south into Fandango Valley, moved east to the Surprise Valley, and then came north into Warner Valley. Drew took the party around the southern end of Hart Mountain and into Pueblo Valley. The expedition reached Camp Alvord at the end of August (Bancroft, Vol. 2, 1888: 504-05).

Drew's military reconnaissance and escort duty took him as far east as Fort Boise. On his return he brought his men directly west from Steens Mountain over the Warner Mountains and into Goose Lake Valley. During his explorations Drew discovered that the Warner Valley was probably the place of residence of the Paiute leader Panina and his band. This likelihood helped persuade military officials to establish a permanent post in that region (Bancroft, Vol. 2, 1888: 505).

In 1865 other military men passed through south-central Oregon. In October of that year Capt. F. B. Sprague of the First Oregon Cavalry and eleven men journeyed west from Camp Alvord to Fort Klamath. Taking Drew's westward route of the previous year these soldiers passed through the Warner Valley but found no Indians. Convinced that Panina's band was to the south, perhaps in the Surprise Valley, the commander at Fort Klamath sent the party out again for Camp Alvord via Fort Bidwell. Again the men sighted no Indians. On an expedition north again into the Warner Valley, however, the soldiers found the Northern Paiute. Hubert Bancroft's History of Oregon described what occurred:

On the third day, going north, having arrived at Warner's Creek, which enters the east side of the lake [Hart Lake?] seven miles south of the crossing of the Drew road, without falling in with any Indians, Backus turned back to Camp Bidwell, and Sprague proceeded.

No sooner had this occurred than signs of the enemy began to appear, who were encountered, 125 strong, about two miles south from the road. While the troops were passing an open space between the lake and the steep side of a
mountain they were attacked by the savages hidden in trenches made by land-slides, and behind rocks. Sprague, being surprised, and unable either to climb the mountain or swim the lake, halted to take in the situation (Bancroft, Vol. 2, 1888: 516-17).

The commander charged the Indians who were behind him since he noted that they appeared to have only bows and arrows for arms. This quick action enabled the soldiers to escape and to return to Fort Bidwell (Bancroft, Vol. 2, 1888: 517).

The Indian tensions in southeastern Oregon, western Idaho, and the Northern Great Basin continued in 1865-66. Finally in that latter year, knowing that the Warner Valley was frequently used as the retreat and home of Panina's band of Northern Paiutes, the Army sent forces west from Fort Boise to establish Camp Warner. This strategic military site, atop lofty Hart Mountain, was named for Captain William H. Warner who had been killed in a conflict with the Indians in September, 1849, in Surprise Valley to the south. Winter atop Hart Mountain proved so formidable, however, that in 1867 George Crook, who visited the post during his inspection of the region, ordered the site abandoned and selected a new location in the watershed of Honey Creek on the west side of the Warner Valley (Bancroft, Vol. 2, 1888: 528; McArthur, 1974: 115-16; Crook 1960: 149).

Crook's party, which nearly perished in a blizzard atop Hart Mountain on its way to the camp, dropped down into the Warner Valley to pursue the Indians. Crook later described his actions in that region:

This lake was some seventy miles long and fifteen miles wide at the widest places, but opposite to where I was encamped it narrowed down to about three or four hundred yards in width. Here I commenced building a stone causeway across this narrow neck. At the edges the water was shallow, but in the center there were deep holes, with patches of a species of cane growing in the center on apparently firm ground. But after the weight of the rock remained on it for some time, it suddenly disappeared, rock and all. It seemed this ground was simply floating. After rocks enough were thrown in, the holes were filled up, but not in time to bring over Archie's party dry shod. This causeway was afterwards made wide enough for wagons to pass, which made a great saving in distance, besides being a great convenience (Crook 1960: 150-51).

Crook, a well-known military figure in the American West, carried out several expeditions in south-central Oregon. Following a trip to Fort McDermitt in Nevada, for example, Crook was returning to the new site of Camp Warner when he found a band of Indians on a small lake
probably at the south end of the Warner Valley. "These Indians had evidently been getting ammunition somewhere," noted Crook. "We killed a lot of them," he concluded. While his men constructed Camp Warner, Crook continued pursuing the Indians of the region. His explorations included the Goose Lake valley and the Pit River watershed of northern California. In October, 1867, Crook brought his wife to Camp Warner, as did some of the other officers. Living through the winter "in a log hut, with the cracks plastered with mud, no windows, and a tent fly for a covering," the military men and their families found life difficult. The shortage of supplies and snow drifts so beleaguered the outpost that by the spring of 1868 several of the soldiers had contracted scurvy (Crook 1960:156-57).

Crook's regular expeditions and the permanent presence of soldiers at Fort Klamath, Camp Warner, and Fort Harney in the Harney Basin, as well as the posts at Fort Bidwell and Fort McDermitt in Nevada, had their effect. In June, 1868, the Northern Paiute sought peace and assembled at Fort Harney. Crook recalled:

Soon after my return to Warner, word came from Camp Harney that the Indians had expressed an anxiety to make peace. I at once repaired to Harney and concluded a peace. I had much difficulty in conciliating the white men who came into Harney, as they had no faith in the Indians' promises. Many were feeling ill over wrongs at the hands of the Indians. Some had lost friends, relatives, and stock at the hands of the Indians, and were necessarily bitter, and had sworn vengeance against all Indians. But when I explained it was to all's interest to have peace so the citizens could develop the country, etc., that I had not made the peace out of friendship for the Indians, they finally agreed not to throw any obstacles in the way by committing any unlawful acts (Crook 1960: 159).

The future of the Indians of the region east of the Klamath Basin was not clearly defined by the truce of June, 1868, secured by George Crook. Not a believer in reservations, Crook had not established one in his negotiations. In November of that year, however, Alfred Meacham, Oregon Superintendent of Indian Affairs, held a council at Camp Warner with Otsehoe, the leader of the Northern Paiute in the region. As a result of this conference, Otsehoe's band agreed to settle on the Klamath Reservation. These people stayed there until June, 1870, when they returned to their old homes in the Warner Valley and at Goose Lake (Shaver et al. 1905: 814).

On December 10, 1868, other Northern Paiute signed a treaty at Fort Harney. The signatories included We-you-we-wa, Gasha-nee, E-he-gant, Ow-its, Chow-wat-na-nee, and Tash-e-go. This agreement was not ratified by the U. S. Senate, and these Indians were left without a reservation (Shane 1950). The situation for Indians in
the region became increasingly difficult with the outbreak of the Modoc War in the fall of 1872. The resistance of those Indians, hiding in their refuge of the Lava Beds in the Tule Lake region of northern California, created much tension and animosity throughout the area (Murray 1958).

In March, 1871, President Ulysses S. Grant created the Malheur Indian Reservation, a tract of 2,275 square miles in the Harney Basin, as a permanent home for the Northern Paiute of Oregon. No sooner was this reservation created, however, than white pressure mounted steadily for its being opened for ranchers and settlers. With the outbreak of the Bannock War in June, 1878, most of the Indians who had settled at the Malheur Reservation fled (Brimlow 1938; Shane 1950; Bancroft, Vol. 2, 1888: 553-54).

The scattered survivors of the war of 1878 included 510 Paiute who were removed to the Yakima Reservation in Washington. In 1883 the Malheur Reservation was abolished and in 1889 some of the Northern Paiute, feeling very little at home in Washington, moved to the Warm Springs Reservation to join some of their relatives who had settled there following the Indian wars. Commencing in 1883 other Northern Paiute settled as "squatters" near Burns and Lakeview. Some moved to the Surprise Valley of Nevada and others settled on the Klamath Reservation. The Indians of south central Oregon were widely dispersed as a result of the two decades of conflict and military actions in their region between the late 1850's and the late 1870's (Shane 1950; Bancroft, vol. 2, 1888: 554).

For both the Northern Paiute and the Klamath, the years after the mid-1860's were ones of increasing culture change. Sometimes the process was gradual; other times the acculturation was the direct product of government programs. The philosophy which undergirded much of these efforts was reflected in the advice which J. W. Perit Huntington wrote in November, 1867, to Lindsay Applegate regarding the direction of Indian affairs on the Klamath Reservation:

The design of the government is to segregate the Indians upon lands set apart for them, separate them from the pernicious influences which association with whites entails upon them, and to cultivate the good, moral, and intellectual qualities they may possess. These ends are not attained by promiscuous intercourse of whites with them, by impregnating them with the frailties, vices and diseases of the 'superior' race, but they are to be sought in cultivating industry, encouraging morality, and stimulating the acquisition of property. Your duty is to endeavor to make the Indian colony which is under your charge, strictly an Indian settlement, carefully guarding it against the contamination of white associations, and at the same time
imparting to it so much of the intelligence, enterprise and
stability of the Anglo Saxon Race as possible (Stern 1966:
44).

In his perceptive study *The Klamath Tribe: A People and
Their Reservation*, Theodore Stern made a close, historical study
of the agency, clothing, names, housing, economy, political changes,
social changes, education, and religion during the early years of
what he termed "Agency Domination" on the Klamath Reservation.
Professor Stern followed the Klamath through the period of allot-
ments and into the shifting influences and directions of the twen-
tieth century. Stern found "at Klamath a basic incongruity existed
between the individualization of Klamath society and the coercive
means sometimes employed to achieve that end." This situation was
a major source of stress in his view. Further, in spite of decades
of programs to foster assimilation, the Klamath remained Indian
(Stern 1966: 261-62).

While the Klamath differed from many other reservation Indians
in the American West in their ability to hold their tribal lands and
in the rapidly appreciating value of those lands because of their
timber resources, Stern found that the Klamath remained ambivalent
about the prospect of becoming loggers, mill workers, or managers of
timber enterprises. Among his concluding observations, Stern noted:
"Many Klamath, now that they possessed funds to secure their material
desires, lost incentive to strive. Lacking opportunities for training
in competence except that offered in youth at school or--peripherally--
in tribal government, many proceeded to demonstrate their unfitness to
handle their own affairs" (Stern 1966: 263).

Since World War II the Klamath have undergone many changes. Some
elected to leave the reservation and to find new lives in different
communities and environments. Others, as had many in the tribe, con-
tinued to marry outside of their cultural or genetic community. Per-
haps the most significant change came when in 1954 Congress enacted
Public Law 587 terminating the Klamath tribe. Interestingly, in the
years since termination, the Klamath have made more and more commitment
to pan-Indian activities. "Threatened with the loss of the tribal body
that had symbolized their collective heritage, they repaired to others
which enabled them to preserve their identity," wrote Stern
(1966: 251-52). Perhaps it is appropriate that among the pan-Indian
organizations functioning in the Klamath Basin in the 1970's is one
bearing the name "The Organization of the Forgotten American."
FEDERAL LAND POLICIES AND SETTLEMENT

The settlement and development of lands within the Lakeview District have been almost inextricably linked to the land policies of the federal government. The stimulus of pre-emption provisions, homestead acts, wagon road grants, desert land entries, stock-raising homestead laws, reclamation projects—all have served as precipitating factors on human activity in the region. In a similar way the creation of Indian reservations, national forests, and fish and wildlife preserves has also had impact on the region's development and economy.

As early as the 1850's parts of south-central Oregon began to attract whites. Those who had traveled over the Applegate Trail since 1846 had seen the lush meadows in the Goose Lake Valley, at Tule Lake in California, around Lower Klamath Lake, and on the eastern slopes of the Cascades. The discovery of gold along the Klamath River and in the Rogue River Valley in the early 1850's helped create a population boom that led to the first white exploitation of Klamath Basin lands. The hundreds of hungry miners overturning the bars of the Klamath, Shasta, Trinity, and Rogue rivers needed foodstuffs. The potential of grazing lands to the east of the mountains provided a means for those in the stock raising industry to meet those market demands (Beckham 1971; Helfrich 1967: 11-12).

In 1852 Wallace Baldwin, an emigrant of the Applegate Trail of 1846, brought 50 head of horses from the Rogue River Valley to graze on the meadows between the later sites of Keno and Klamath Falls. He remained in the Klamath Basin for nine months. During the winter of 1856 Judge F. Adams grazed 2,000 head of cattle in this same area. Adams was very successful in his venture—in the spring of 1857 he sold 1,000 head for $80,000 in Yreka. Mart Frain, a trader, set up a temporary camp near the later site of Klamath Falls in April, 1857. Frain exchanged beads for furs and secured 1,200 skins for his work. During the winter of 1858-59 Wendolen Nus, another cattle drover, brought his herds to the Klamath Basin (Shaver et al. 1905: 932; Helfrich 1967: 11-12).

Further explorations and the altering situation of the Indians east of the Cascades brought continued white interest in the region in the 1860's. In 1861 a large company of men from the Rogue River Valley explored the Klamath Lakes area while providing guard for the emigrants on the Applegate Trail. Lindsay Applegate, one of the leaders of this party, took twenty-two men around the east side of Klamath Lake and through the lush Wood River Valley during this visit (Shaver et al. 1905: 932).

The extensive military operations of the Oregon forces under
Charles Drew and the missions of U. S. Army regulars in the 1860's helped further to set the stage for white settlement. The establishment of Fort Klamath in 1863 and the treaty with the Klamath in 1864 ceding most of their lands to the United States were key events in persuading some whites that the time was ripe to stake claims in south-central Oregon. In 1866 Wendolen Nus returned to the region with cattle and located on the west side of Klamath Lake where he built a cabin and spent the winter. Nus sold beef to the soldiers at Fort Klamath and in 1867 moved to the east bank of the Klamath River about two miles south of the later site of Klamath Falls. He built a cabin and began operating a ferry (Shaver et al. 1905:938).

In the spring of 1867 George Nurse, who had served as post sutler at Fort Klamath, took a squatter's claim or pre-emption land rights at the point where Link River flowed into Lake Ewauna. The cabin which Nurse constructed, possibly in partnership with Alexander H. Miller, became the nucleus of Klamath Falls, Oregon. Nurse's claim was probably secured with his understanding that the Preemption Act of 1854 was applicable in the Klamath Basin. As early as 1800 Congress had started enacting laws which gave settlers preemptive rights to lands in the public domain. On July 17, 1854, the preemption laws were extended to allow settlers to file a claim on yet unsurveyed lands in Oregon. The new law was an expansion of a similar enactment for unsurveyed lands in California which had been passed in 1853 (Gates 1968:244).

Paul Gates assessed the impact of the preemption laws of the 1850's--measures which had important impact upon the settlement of Oregon east of the Cascades:

Not until 1862 was the right of preemption extended to settlers on unsurveyed lands in all states and territories. In that year, with the newly adopted homestead privilege available only on surveyed land and with the government officials following a general policy of not offering arable land suitable for farming at public sale, preemption took a new lease on life because it was the only route to ownership on unsurveyed land. For the next 30 years preemption was to be a major factor in moving land from government to private ownership in the Great Plains, in California, and in timbered regions of the Lake States and the Far West (Gates 1968:244).

Nurse was not the only settler who staked out a claim on Klamath Basin lands in 1867. Soldiers leaving active duty at Fort Klamath, ranchers, and at least one white couple--O. T. Brown and his wife--were among those taking lands. The cast of pioneers in the pivotal year 1867 included the following settlers listed in Table 7 (from Shaver et al 1905:938-39).
TABLE 7.
SETTLERS IN THE KLAMATH BASIN IN 1867

<table>
<thead>
<tr>
<th>Name</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>George Nurse</td>
<td>Klamath Falls (Linkville)</td>
</tr>
<tr>
<td>Alexander H. Miller</td>
<td>Klamath Falls (Linkville)</td>
</tr>
<tr>
<td>O. A. Stearns</td>
<td>West side of Klamath River, 7 miles southwest of Klamath Falls</td>
</tr>
<tr>
<td>Lewellyn Colver</td>
<td>West side of Klamath River, 7 miles southwest of Klamath Falls</td>
</tr>
<tr>
<td>O. T. Brown (&amp; wife)</td>
<td>Spencer Creek</td>
</tr>
<tr>
<td>Arthur Langell</td>
<td>East of Klamath Falls (later in Langell Valley)</td>
</tr>
<tr>
<td>Dennis Crawley</td>
<td>West side of Klamath River, 7 miles southwest of Klamath Falls</td>
</tr>
<tr>
<td>C. C. Bailey</td>
<td>Maylox</td>
</tr>
<tr>
<td>A. J. Burnette</td>
<td>East side of Link River at outlet of Upper Klamath Lake</td>
</tr>
<tr>
<td>William Hicks</td>
<td>On Langell claim</td>
</tr>
</tbody>
</table>

To the east the first settlers that same year began arriving in Lake County. In 1867 Joseph Ross constructed a dugout in the Goose Lake Valley just south of the Oregon-California border. David R. Jones, who had hauled supplies to Camp Warner, settled near that military post in the Warner Valley in September. Jones sold hay to the soldiers while they were in the area. In 1868 John O’Neil, a packer for George Crook, saw the region and in 1869 settled in the Goose Lake Valley. A. Snider settled in 1868 at Willow Ranch in the Goose Lake Valley in northern California (Shaver et al. 1905: 816).

As 1867 was a pivotal year in settlement in the Klamath Basin, 1869 became a landmark year for white entry into the Lake County region. The cast of pioneers that year included those listed in Table 8 (Shaver et al. 1905:816-18).

TABLE 8.
SETTLERS IN LAKE COUNTY IN 1869

<table>
<thead>
<tr>
<th>Name</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>John O'Neil</td>
<td>Goose Lake Valley</td>
</tr>
<tr>
<td>E. C. Mason</td>
<td>Goose Lake Valley</td>
</tr>
<tr>
<td>E. V. Coffer</td>
<td>Goose Lake Valley</td>
</tr>
<tr>
<td>Alexander Reed</td>
<td>Goose Lake Valley</td>
</tr>
<tr>
<td>M. McShane</td>
<td>Crooked Creek</td>
</tr>
<tr>
<td>Name</td>
<td>Area</td>
</tr>
<tr>
<td>--------------------</td>
<td>-------------------------------------------</td>
</tr>
<tr>
<td>A. Tenbrook</td>
<td>5-6 miles south of Lakeview</td>
</tr>
<tr>
<td>Samuel Crane</td>
<td>Crane Creek</td>
</tr>
<tr>
<td>M. Cogswell</td>
<td>Cogswell Creek</td>
</tr>
<tr>
<td>Alex Cooper</td>
<td>Goose Lake Valley</td>
</tr>
<tr>
<td>James Wardwell</td>
<td>Goose Lake Valley</td>
</tr>
<tr>
<td>Ben Warner</td>
<td>Goose Lake Valley</td>
</tr>
<tr>
<td>Oliver Shafter</td>
<td>Goose Lake Valley</td>
</tr>
<tr>
<td>Ira Cogswell</td>
<td>Goose Lake Valley</td>
</tr>
<tr>
<td>Frank Cogswell</td>
<td>Goose Lake Valley</td>
</tr>
<tr>
<td>Alex Contner</td>
<td>Goose Lake Valley</td>
</tr>
<tr>
<td>B. F. Lewis</td>
<td>Goose Lake Valley</td>
</tr>
<tr>
<td>John Clark</td>
<td>Goose Lake Valley</td>
</tr>
<tr>
<td>M. W. Bullard</td>
<td>Lakeview</td>
</tr>
<tr>
<td>William Greenman</td>
<td>Goose Lake Valley</td>
</tr>
<tr>
<td>Milton Brown</td>
<td>Goose Lake Valley</td>
</tr>
<tr>
<td>August Miller</td>
<td>Goose Lake Valley</td>
</tr>
<tr>
<td>D. A. Lambert</td>
<td>Warner Valley</td>
</tr>
</tbody>
</table>

A number of additional settlers located on lands in the Goose Lake Valley but south of the Oregon border. The subjugation of the Indians after several years of concentrated military action had opened a vast region to ambitious and venturesome pioneers.

Running directly parallel to these settlements in south-central Oregon were new, white claims filed in the Crooked River-Ochoco region in the central part of the state. In 1867 Elisha Barnes and five companions erected a cabin at the junction of Mill and Ochoco creeks. By 1870 the population of pioneers in the Ochoco District, known as the "East of the Deschutes Precinct," was 160 men, women, and children (Juris 1975; U. S. Census Bureau 1872).

The decade of the 1870's was one of growth with the establishment of post offices, settlements, and county governments in south-central Oregon. While the raising of cattle and sheep drew many to the region, in the winter of 1871-72 the prospects of mineral development stimulated a minor rush and the establishment of the Campbell Mining District on the west and north sides of Goose Lake and the Goose Lake District on the east side of the lake. So confident were the prospectors that they registered the districts in the far distant Jackson County courthouse in the Rogue River Valley and filed upon 33 claims (Shaver et al. 1905: 817-18).

The promise of these gold fields was delusive, but many staked their hopes in the mines of the Goose Lake District. Later known as the High Grade District, this area of mineral deposits was mostly located in Modoc County, California, with a few prospects in the hills east of New Pine Creek. A summary of production in 1916 stated: "Much prospecting has been done and one or more properties equipped with
small plants working upon comparatively narrow veins of ore on which the returns in 1915 are nearly $25 per ton for the few hundred tons treated" (Parks and Swartley 1916: 292). The Lost Cabin District (also known as the Coyote Hill or Camp Lofuts District, T35S, R23E) was located about ten miles north of Plush in 1906 by the Loftus brothers. Although this discovery produced a small rush, almost no gold was produced (Parks and Swartley 1916: 292; Brooks and Ramp 1968: 160-61).

Grazing lands were the major attraction for many of the nineteenth century settlers who moved into south-central Oregon. In a 40 year study of the range industry in the Pacific Northwest, J. Orin Oliphant examined trends and production records carefully. Of importance to the development of the area east of the Cascades was the trend which he perceived in the 1860's. "By 1867," wrote Oliphant, "the trade in livestock and cattle products from the Pacific Northwest to Nevada and California was entering a new period of boom" (Oliphant 1968: 135).

The conditions helping to stimulate settlement in the valleys of Goose Lake, Warner Lake, and the Klamath Basin were spelled out in part in an article on June 3, 1869, in the Portland Oregonian:

Many good horses have been purchased in Oregon for the California market, and we judge that not less than 30,000 head of cattle have been purchased in Western Oregon this spring and driven away. A Jacksonville paper says that fully 15,000 head have been driven through that place . . . . But it is becoming more difficult to obtain live stock, especially in the Willamette Valley; and probably soon it will be necessary to bring cattle from beyond the Cascade Mountains to supply the market of Portland (Oliphant 1968: 136).

While stock raising had been carried out in the Klamath Basin as early as the 1850's by seasonal operators, not until 1869 did August Miller establish one of the main herds in Lake County. Within a few years C. Hagerhorst brought in flocks of sheep. Rather quickly the enterprising settlers from the valleys of western Oregon and California rushed to the meadows of south-central Oregon to secure lands and build up their herds and flocks. By 1870 Winnemucca had become a major trading center for cattlemen driving their herds from as far north as Umatilla County and the Walla Walla country of Washington. The presence of the Central Pacific Railroad at Winnemucca and its connections with the San Francisco market catapulted that small community into economic significance for most of eastern Oregon through the 1870's and 1880's (Oliphant 1968: 136-38; Shaver et al. 1905: 817).
The booming market for livestock, eventually shipped both east and west from Winnemucca, created a scramble for lands in south-central Oregon after 1870. The Preemption Act of 1854 and the Homestead Act of 1862 were both important measures for settlers in the area. Under the Homestead Act individuals could secure 160 acres for $1.25 per acre or 80 acres for $2.50 per acre; preemption privileges allowed them to hold the claims until township surveys were made. "The Homestead Act breathed the spirit of the West, with its optimism, its courage, its generosity, and its willingness to do hard work," wrote Paul W. Gates. The measure provided free land, except for a filing fee, for those who met the act's residence and improvement requirements (Gates 1968: 394).

Stock raisers could secure additional lands in several ways. One, they could purchase school lands owned by the state of Oregon. The Organic Act of 1848 set aside for school purposes sections 16 and 36 in each township in the territory for the maintenance of schools. This measure gave the state a large land base for sale to settlers (Johansen 1967: 230). Additionally, in 1860, Congress extended to Oregon the Swamp Land Act of 1850. The original intent of this act was to transfer ownership of swamp and overflowed lands to the states to stimulate construction of levees and reclamation projects (Gates 1968: 321-22).

Not until 1870 did Oregon attempt to dispose of swamp lands; by that date the cattlemen of the region east of the Cascades were eager to locate additional lands which, they thought, might come to them through the Swamp Land Act. Among the problems, however, was that no record existed of what might have qualified as swamp lands when Congress passed the law in March, 1860. The stage was set for a wild dash for lands and for wholesale corruption in the filings. William J. Sparks, U. S. Commissioner of Lands, became enraged by 1885 with the filings in Oregon. Writing about the situation in that decade, Sparks said:

The most unblushing frauds have been practiced in the selection of alleged swamp lands by parties claiming as purchasers of swamp lands from the State. By means of false affidavits, fraudulent surveys, and bribery of agents, these parties have managed to obtain control of most of the lands bordering on lakes and water courses, shutting out intending settlers from access to water, and illegally monopolizing for pasturage thousands of acres of public lands, without payment of a dollar to the Government . . . (Gates 1968: 334).

The controversy over the swamplands not only involved the federal government officials who alleged that Oregonians and others were filing
fraudulent entries for vast parts of the public domain with no return to the United States, the confrontation also involved the actual settlers of the region in years of tedious litigation against the speculators who rushed to secure lands. The dimensions of what occurred were mirrored, for example, in the disputes over the lands in the Warner Valley. As soon as the Oregon legislature passed a law to dispose of the state's swamp lands which gave first preference to the earliest filers of claims, W. A. Owen, A. P. Owen, T. G. Reams, C. C. Beekman, and B. F. Smith filed on lands in the Warner Valley. These men were not actual settlers--Beekman owned and operated a bank in Jacksonville; Reams, his neighbor, owned a major mercantile outlet in the same town (Walling 1884: 524, 538).

The application of these men, which made no statement whatever about the reclamation of the property, included almost all of the Warner Valley (Shaver et al. 1905: 832). This application, though modified by later enactments of the state legislature in the 1870's, came back to haunt the actual settlers of the Warner Valley. In repeated renewals of their attempts to secure these "swamp lands," Owen and his partners claimed variously between 63,000 and 80,000 acres. Although the Warner Valley Stock Company emerged by 1892 as the successor owner to these claims, twenty-sevensettlers--most of them coming to the valley between 1885 and 1888--contested the company's rights to the land in court (Shaver et al., 1905: 833). The litigation over these lands continued well into the twentieth century.

For some in Oregon the Swamp Land Act brought an unparalleled opportunity to obtain lands. In many instances, however, the successful recipients were not settler families but outside speculators or cattlemen with voracious appetites for the public domain. John Catlow was one who secured lands under this measure; in 1877 he sold 47,000 acres he had obtained. That same year A. H. Robie and the Oregon and Nevada Stock Growers Association sold to Dr. H. J. Glenn, the father-in-law of Peter French, 43,360 acres of swamp lands (Oliphant 1968: 208). Altogether 286,108 acres of swamp lands were patented in Oregon under this law (Gates 1968: 325).

In the Klamath Basin the swamp lands controversy developed in much the same way as in Lake County. As one early historian assessed it: "No sooner had the ink dried on the governor's signature to the bill of 1870 than 200,000 acres of Klamath soil was filed upon. The bulk of this land was secured by Quincy A. Brooks, the author of the bill, A. J. Burnett, N. Owens and a few others" (Shaver et al., 1905: 968). As in the situation in the Warner Valley, years of litigation ensued. Many settlers eventually gave up and abandoned the homes, barns, and fences they had erected on lands which they thought were to be theirs. Fourteen or fifteen of the settlers who fought
their cases through the courts won their lands. The impact of these contests was, however, significant, for the uncertainty about the ownership of so much land discouraged settlement and development (Shaver et al. 1905: 968-69).

Also of significance in the federal land policies and settlement of the region was the act of Congress on July 2, 1864, granting lands to Oregon to aid in the construction of the Oregon Central Military Wagon Road. As amended in 1866 and 1869, this act granted to the state all odd numbered sections three miles on either side of the road. To the owners of the road company, investors from the Willamette Valley, this measure was truly generous. As one historian wrote:

It was a vast undertaking and months were consumed in arranging the preliminaries. In fact, more time was consumed in making sure of the grant than was spent in building the road (Shaver et al. 1905: 842).

The meandering route of the Oregon Central Military Wagon Road enabled the owners of the company building the road to claim much additional acreage. The careful locating of the route in valleys with lush meadows added to the potential value of the lands to be awarded for the project. The route was so poorly constructed that in 1867, for example, George Crook had to have his soldiers work for days to build a stone causeway across the narrows in the Warner Valley--on the very route of the supposed military wagon road. In spite of its many deficiencies, this company received certification of its land grant on July 2, 1870, by the governor of Oregon (Shaver et al. 1905: 842).

The road company even pushed matters farther. The owners knew that in many instances settlers occupied lands within the three mile corridor it possessed for selecting its odd-numbered sections. This was especially the case along the Middle Fork of the Willamette River. If the original grant stood, the company would not gain all of the lands it anticipated. Consequently in 1871 the company secured the approval of the Secretary of the Interior to double the corridor along the road, extending it from six to twelve miles in width so that it could select "indemnity" lands. In Lake County, alone, the road company secured 400,000 acres. Although settlers in several instances challenged this grant and pointed out the fraud in the alleged building of the route, they lost in every suit. In 1903 the lands passed to the California and Oregon Land and Livestock Company, a subsidiary of the Booth-Kelly Lumber Company. In 1906 this firm sold 500,000 acres of the wagon road lands east of the Cascades to the Hunter Land Company of Minneapolis for a reported $700,000. Martin and Borders of Kansas City then purchased 300,000 acres of the grant in Lake County (Anonymous, July 4, 1976a; Shaver et al. 1905: 842).
The Oregon Valley Land Company moved at once to dispose of its holdings and turn a profit. In April, 1908, the company announced that it would survey its lands into 11,992 parcels of 10-1,000 acres each and that with each parcel purchased would be a lot in Lakeview, Oregon. All parcels were to sell at $200 each, regardless of the acreage and sales could be closed with as little as $10 down payment. The plan called for no issuance of deeds until a land auction in Lakeview in 1909 would dispose of all shares in the company (Anonymous, July 4, 1976a).

To sweeten its advertising, the OVL Company announced that should bidders drive up the price of any of the parcels at the auction, the money above $200 per parcel would go into a fund which would be prorated back to the purchasers. Further, it announced plans to build dams on Drews and Cottonwood creeks to irrigate an estimated 75,000 acres in the Goose Lake Valley. The dreams for the future seemed to have no bounds: some envisioned 11,992 new families moving in; some saw Lakeview exploding in size with the sale of 11,992 new town lots. By early 1909 the salesmen for the company had been so successful that they had sold 14,000 parcels—compelling the company to purchase the 40,000 acre Herford Land and Cattle Company ranch and to survey it (Anonymous, July 4, 1976a).

An estimated 1,000 purchasers came to Lakeview in 1909 for the auction. To carry these people across Goose Lake the company had built the Lakeview, a sixty-five foot steamer. The auction began on September 10 and concluded on September 17 with the sale of 14,000 tracts of land. Prices ranged from $200 to as high as $3,000 for the parcels; most sold at the minimum price. For the purchasers, the promises of a ranch in the West were sometimes illusory. Much of the land was far from routes of transportation, towns, schools, and water. The projected irrigation systems required years of labor and the land company's Lakeview Irrigation and Power Company did not distribute water for free. Not until 1917 did water flow from its large dam on Drews Creek; the Cottonwood Dam, not as large as originally anticipated, was not completed until 1922. For many, the years of paying taxes on unproductive land were too much—they lost their properties for taxes. For others, irrigation was never feasible (Anonymous, July 4, 1976a).

The pioneer settlers of south-central Oregon in the 1860's and 1870's found that even the filing of a preemption claim, a mining claim, or a deed record was a major undertaking. The region was initially, at the time of white settlement, part of Jackson County with the seat of government at Jacksonville in the Rogue River Valley. To the east the Warner Valley was part of Grant County with the county seat far to the north in Canyon City. The Warner Valley was added to Lake County in 1885. Lake County itself was created in 1874 and began functioning as a government unit in February, 1875. When a
Figure 23. This remarkable photograph illustrates the rush to secure claims on 40,000 acres of land in the Lakeview District that was opened for settlement in 1907. Applicants appeared at the local land office in Lakeview, Oregon three weeks before the opening, and the numbers increased daily until the opening day when 224 were in line. Photograph courtesy of the Schminck Memorial Museum.
Figure 24. "Steamer" Lakeview owned by the Oregon Valley Land Company served for Two Years on Goose Lake from 1908-1909. The Lakeview was actually powered by Twin-Engine Gas Motors. Photograph courtesy of the Schminck Memorial Museum.
census was made that summer, 944 residents lived in the area. In 1876 Lakeview captured the county seat from Linkville (Klamath Falls), but in 1882 Klamath County became a separate unit with its new seat of government again in Linkville (Shaver et al. 1905:820-25). Throughout the period between 1870 and 1920 south-central Oregon exhibited slow but steady growth.

**TABLE 9.**

POPULATION GROWTH IN THE LAKEVIEW DISTRICT, 1870-1920  
(U.S. CENSUS DATA)

<table>
<thead>
<tr>
<th>County</th>
<th>1880</th>
<th>1890</th>
<th>1895</th>
<th>1900</th>
<th>1905</th>
<th>1910</th>
<th>1920</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lake</td>
<td>2804</td>
<td>2604</td>
<td>2197</td>
<td>2847</td>
<td>3084</td>
<td>4658</td>
<td>3991</td>
</tr>
<tr>
<td>Klamath</td>
<td>(1368)</td>
<td>2444</td>
<td>2318</td>
<td>3970</td>
<td>3836</td>
<td>8554</td>
<td>11,413</td>
</tr>
</tbody>
</table>

Several factors were undoubtedly at work in stimulating the noticeable population growth after 1900. These included the advertising, land sales, and promises of irrigation by the Oregon Valley Land Company in Lake County, an explosive and speculative rush of homesteaders to the High Desert region in the Fort Rock and Christmas valleys, and several extensive reclamation-irrigation projects in the southern part of the Klamath Basin.

**TABLE 10.**

PERCENT OF INCREASE IN POPULATION IN THE LAKEVIEW DISTRICT, 1880-1920 (U.S. CENSUS DATA)

<table>
<thead>
<tr>
<th>County</th>
<th>1880-90</th>
<th>1890-00</th>
<th>1900-10</th>
<th>1910-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lake</td>
<td>-7.0</td>
<td>9.3</td>
<td>63.6</td>
<td>-14.3</td>
</tr>
<tr>
<td>Klamath</td>
<td>78.7</td>
<td>16.0</td>
<td>115.5</td>
<td>33.4</td>
</tr>
</tbody>
</table>

The first irrigation project in Klamath County commenced in 1878 when the Linkville Water Ditch Company began irrigating town lots in Klamath Falls. By 1888 the Klamath Falls Irrigation Company had an eight mile canal irrigating perhaps as much as 4,000 acres. In 1882 the Van Brimmer brothers began building a ditch to provide water for 4,000 acres on the south and west sides of Lost River near Merrill; they completed their project in 1886, diverting water from Lower Klamath Lake Basin into the Tule Lake Basin. In 1886 J. Frank Adams and others built a canal from Lost River six miles to Adams Point; by 1904 this system included 22 miles of canals and reached around the north side of Tule Lake (Anonymous 1970a:14-15).
With the passage of the Reclamation Act on June 17, 1902, the federal government entered the draining and irrigating programs of the Klamath Basin. Slowly the Klamath Project emerged; it called for the draining of much of Tule Lake and Lower Klamath Lake, the building of Clear Lake and Gerber dams, the diversion of Upper Klamath Lake, and extensive canal systems. Gradually, as these construction and reclamation projects were completed, extensive new areas were opened for settlement and agriculture in the region (Anonymous 1970a:15-20): See Table 11 for irrigation information.

Illustrative of what occurred was the operating of the Lakeside Land Company which was incorporated in 1907. Owning approximately 6,500 acres of land near the north end of Tule Lake, this company was successful in carrying out one of the major colonization efforts in the Klamath Basin. The company's lands, which went on the market in 1908, were exactly what Bohemian immigrants residing in the Midwest were seeking. J. Frank Adams's land promotion met the needs of the Bohemians' "advance scouts," and, by the fall of 1909, 160 families had purchased all but a few parcels of the Lakeside Tract. The September 30, 1909, Klamath Republican described what was occurring:

The average amount of land taken by each individual is about fifty acres, and the price per acre is in the neighborhood of $40. The benefit to this county made possible by this colonization movement cannot be computed in dollars and cents, as it is just a starter.

The land purchased by the Bohemians is all under irrigation, and with these thrifty people in control of it, doubtless in the near future it will be one of the 'show places' of the county. With the coming of these people and the colonization movements which are started in this direction or will start in the near future the nucleus of a large and prosperous population in this community is formed (Anonymous Sept. 30, 1909; Good 1941:137-39).

In the case of the Klamath Basin such predictions were true. The reclaimed lands proved to be immensely rich. The Bohemians of Malin helped establish an important agricultural commodity--potato raising--in the region. Other crops, the need for lumber for houses, the availability of new labor--many results came from the Klamath reclamation projects.

On Oregon's High Desert in the Fort Rock and Christmas valleys the colonization efforts were initially successful but unable to become economically viable undertakings. Part of the stimulus bringing the rush of settlers into the region prior to World War I was the result of the passage of the Carey Act on August 18, 1894. This
TABLE 11.
IRRIGATION IN KLAMATH AND LAKE COUNTIES, 1899-1919 (U.S. CENSUS DATA)

<table>
<thead>
<tr>
<th>Variable Data</th>
<th>Years</th>
<th>Klamath</th>
<th>Lake</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acreage Irrigated and Included in Projects:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carey Act</td>
<td>1909</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Cooperative</td>
<td>1909</td>
<td>10,215</td>
<td>15,190</td>
</tr>
<tr>
<td>Individual &amp; Partner</td>
<td>1909</td>
<td>16,340</td>
<td>41,888</td>
</tr>
<tr>
<td>Commercial</td>
<td>1909</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>U. S. Indian Service</td>
<td>1909</td>
<td>420</td>
<td>None</td>
</tr>
<tr>
<td>U. S. Reclamation</td>
<td>1909</td>
<td>20,000</td>
<td>None</td>
</tr>
</tbody>
</table>

| **Number of Farms Irrigated:**                               |       |         |       |
| 1899                           | 129   | 272     |
| 1909                           | 266   | 198     |
| 1919                           | 508   | 256     |

| **Approximate Acreage:**                                   |       |         |       |
| 1900-20                        | 3,839,360 | 5,068,600 |

| **Land in Farms:**                                         |       |         |       |
| 1899                           | 221,554 | 249,288 |
| 1909                           | 454,340 | 401,555 |
| 1919                           | 357,333 | 526,218 |

| **Improved Land in Farms:**                                |       |         |       |
| 1899                           | 72,239 | 95,826  |
| 1909                           | 176,564 | 104,413 |
| 1919                           | 152,742 | 183,396 |

| **Acreage Irrigated:**                                     |       |         |       |
| 1899                           | 23,911 | 51,995  |
| 1909                           | 46,975 | 57,078  |
| 1919                           | 90,993 | 99,220  |

| **Percent of Increase of Acreage Irrigated:**               |       |         |       |
| 1899-09                        | 96.5%  | 9.8%    |
| 1909-19                        | 93.7%  | 73.8%   |
measure transferred to states with identified desert lands title to tracts which they planned to irrigate. The states were to dispose of the land in parcels no larger than 160 acres within ten years to actual settlers (Gates 1968: 648). By 1908 several desert reclamation projects were brewing in the Deschutes River watershed.

Chief among the companies promoting the availability of Carey Act lands was the Deschutes Irrigation & Power Company. Its maps vividly showed the Central Oregon Canal serving the territory east of Bend. In 1909 the company's literature illustrated a new irrigation district in the Powell Butte area and showed the proposed route of the Corvallis & Eastern Railroad moving out across the High Desert east of Horse Ridge. Proposals even suggested that water from East and Paulina lakes in the Newberry Crater could be tapped and taken to farms on the High Desert (The Deschutes Irrigation & Power Company 1909a, 1909b).

Coupled to the potentials of reclamation water and land was the extremely optimistic writing of Israel C. Russell, a field geologist for the U. S. Geological Survey. In 1903 Russell studied the water and mineral resources of central Oregon. The publication of his studies in 1905 as U. S. Geological Survey Bulletin No. 252, Preliminary Report, fueled hopes for the area. While proceeding carefully in his statements about artesian water sources, Russell pointed out: "Paulina Lake is situated in an arid region, high above the flat lands of the Deschutes Valley, and is thus favorably located to serve as a reservoir for water to be used in irrigation" (Russell 1905).

Realtors and others were quick to jump to the opportunities. U. S. Dickey began running advertisements in the Silver Lake Leader which carried an optimistic assessment of the region. For example, his ad of June, 1909, stated: "We do a general locating business and can locate you on the choicest lands in the famous Fort Rock and Christmas Lake valleys which is the coming[sic] wheat producing section of Oregon. Here is an opportunity to get a home that will grow in value if you are wise, that you will not overlook" (Loy 1976). The Fort Rock Valley had a population of about twenty-five people in 1908; by 1916 an estimated 1,000 residents were struggling to survive in the region (Loy 1976; Jackman and Long 1964).

Reub Long, whose childhood was spent in the Fort Rock country during the years of trial for the home-seekrs who rushed in prior to World War I, recalled: "The homestead era was pathetic, I suppose, looking back on it, but at the time it didn't seem so. It was exciting and there wasn't anyone to tell those folks, licked before they started, that they were ill-fed, ill-housed, and ill-advised. They were all there on the desert with a common cause and they had
lots of fun." Long explained what he meant when he said: "Most of them were not much of anybody where they came from, but on the desert for the first time in their lives, they amounted to as much as the next fellow. They were proving up on some land and they were excited about it, and happy" (Jackman and Long 1964).

The filings for land of those who participated in the boom of the High Desert became evident in the flood of entries in the records of the General Land Office. Indeed, a "land office business" was underway as settlers moved into the region between 1910 and 1917 to file under the Homestead Act, the Desert Land Act, and the Enlarged Homestead Act. Part of the pace of settlement in the period 1910-20 was reflected in the explosive growth of new post offices in Lake County during those years (Landis 1969; Preston 1972; McArthur 1974).

TABLE 12.

POPULATION MOVEMENT IN THE LAKEVIEW DISTRICT

<table>
<thead>
<tr>
<th>Years</th>
<th>Towns and Post Offices Created</th>
<th>Towns and Post Offices Abandoned</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Klamath</td>
<td>Lake</td>
</tr>
<tr>
<td>1870-79</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>1880-89</td>
<td>9</td>
<td>3</td>
</tr>
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<td>1890-99</td>
<td>13</td>
<td>6</td>
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<td>1900-09</td>
<td>8</td>
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<td>1910-20</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>49</td>
<td>43</td>
</tr>
</tbody>
</table>

(Landis 1969; Preston 1972; McArthur 1974)

During the period of rapid growth between 1910-20 the postal records of Lake County show that nineteen new post offices were established. Many of these were on the High Desert to serve the homesteaders purchasing lands from the eager real estate developers. The "bust" in this period of "boom" was clear in that the figures showed 84.2% of the post offices established during the decade had gone out of business by the end of the decade (Landis 1969).

The conditions which spurred the rapid development of the High Desert and especially the Fort Rock Valley after 1908 were identified by James J. Buckles in his study of the historical geography of the region:

The depression of 1907 led to widespread unemployment.
The exodus of people from the city to homestead free farm land had been the usual means of fighting a depression in this country. By 1907, Oregon was one of a few areas that had a large block of land that could be homesteaded. The people that came to Oregon had to settle somewhere. A great deal of information about the Fort Rock Valley had appeared in various places and with varying shades of truth. To the homesteader the land in the Fort Rock Valley looked like a plum ripe for plucking (Buckles 1959: 62).

The quality of information that drew settlers to the Fort Rock Valley as well as to other parts of Lake County was highly dubious. As early as 1889 the "Business Men of Lakeview" had published Lake County, Oregon: Description of Its Climate, Soil, Resources and its Desirable Opportunities for Home-seekers and Those Seeking Profitable Investments. This tract, very much in tune with the pseudo-scientific theories of C. D. Wilbur that "rain follows the plow," added the equally enticing statement that with settlement even the frosts would decrease:

It is the history of all new countries in the temperate zone, however, that they are subject to summer frosts during their infancy, and that, with the progress of settlement and cultivation, the frosts disappear. This is well illustrated in the case of Iowa, Illinois, and Nebraska, they having been very much subject, during their early settlement, to summer frosts. Those States are now well settled and cultivated, and it is a well known fact that they are no longer subject to summer frosts, and furthermore, that the amount of rainfall therein has very materially increased. A marked change in this respect is already witnessed here, and these disadvantages will in time no doubt wholly disappear (Anonymous 1889: 11).

Sadly, for the settlers of the High Desert, the frosts did not disappear and the irrigation water did not appear. In 1908 the federal government owned 99 percent of the land in the Fort Rock Valley; the region had only five farms. By 1915 91.4 percent of the valley was privately owned. James Buckles found that private land ownership had increased from 1.25 square miles in 1908 to 191 square miles in 1915 (Buckles 1959). Between 1915 and 1936 private ownership dropped from 191 to 135 square miles in the valley; Lake County emerged as a major land holder (through foreclosure for unpaid taxes) with 49 square miles (Buckles 1959).


**TABLE 13.**

SETTLEMENTS OF THE HOMESTEADING ERA:

FORT ROCK VALLEY, CHRISTMAS VALLEY, AND SILVER LAKE VALLEY

(* post office)

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver Lake*</td>
<td>T28S, R14E</td>
<td>Rand, McNally 1903</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td></td>
<td>T28S, R14E</td>
<td>Rand, McNally 1895</td>
</tr>
<tr>
<td></td>
<td>T28S, R15E</td>
<td>Galvani 1889</td>
</tr>
<tr>
<td></td>
<td></td>
<td>McArthur 1974: 669-70)</td>
</tr>
<tr>
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<td>Anonymous 1913</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td>Egli</td>
<td>T25S, R24E, S1/2</td>
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</tr>
<tr>
<td></td>
<td>T25S, R24E, S1/2</td>
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<td>T25S, R24E</td>
<td>Cram 1910</td>
</tr>
<tr>
<td>Butte*</td>
<td>T26S, R24E</td>
<td>Heald, c. 1920</td>
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<tr>
<td></td>
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<td>T26S, R16E</td>
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<tr>
<td></td>
<td></td>
<td>McArthur 1974: 24</td>
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</table>

The records of the U. S. Post Office revealed the rise and decline of the homesteading period in northern Lake County. James Buckles, who made extensive use of postal materials in his study of the Fort Rock Valley, found that six of the seven post offices in the valley closed between 1915 and 1920 (Buckles 1959: 101). At work were a combination of factors which contributed to the rapid exodus of settlers from the northern part of the county:

1. The failure of dry farming techniques to create a viable cash crop in the region;
2. The remotesness of the region from main lines of transportation and the failure of the projected railroad lines.
to pass through the High Desert as planned;

(3) The realization that the abundant bunch grass had been the product of a few wet winters and was not a situation which would continue;

(4) The failure of proposed irrigation systems from artesian wells to reservoirs and canals;

(5) The growing conviction that speculators and real estate promoters had unscrupulously promoted the High Desert.

By the 1930's Congress and the New Deal administration of President Franklin D. Roosevelt were supporting new land laws that had impact on the Lakeview District. From the advent of stock raising in the 1860's in South-Central Oregon a growing pressure had developed on the grazing of both sheep and cattle on the public domain. J. Orin Oliphant assessed the changes which had come even in the nineteenth century. He found that competition had developed by the 1880's over the open ranges and that many owners of large herds had scrambled for private lands to have an adequate source of feed for their livestock (Oliphant 1968).

In the 1930's Congress took actions to develop a concrete program of administration of public grazing lands. From the 1870's the lands in the Lakeview District had been subject to the medley of federal land laws which encouraged the breaking up of range land into private parcels, the isolation of good grazing land from access to water, and the over-use of public land by sheep and cattle owned by private parties. On June 30, 1932, Oregon possessed 12.9 million acres of unappropriated and unreserved public lands used by livestock. An estimated 835,000 cattle and 2,820,000 sheep were on the lands under the jurisdiction of the General Land Office (Gates 1968).

Following experiments in grazing land management in Wyoming and Montana in the late 1920's, Congress was at last ready in the 1930's to pass laws to cope with issues of conservation, land management, and economic depression. The Taylor Grazing Act, named for Edward T. Taylor who had sponsored the Stock Raising Homestead Act, was enacted in 1934. The measure eventually placed 142 million acres of grazing lands under the management of the Department of the Interior. Although under intense pressure from stockmen's organizations and working with a limited budget, the Grazing Service began special management of lands in America (Gates 1968).

The Bankhead-Jones Act of July, 1937, was another federal measure which applied to lands in the Lakeview District. This law, providing loans for tenant farmers, made detailed provision for the "Retirement of Submarginal Land." Since some families yet held on to homestead era properties in the Fort Rock Valley that clearly met this law's guidelines of being "submarginal and not primarily suitable for cultivation," they were able through this law to sell, exchange, or lease.
their properties to the federal government. The General Land Office and its successor, the Bureau of Land Management, thus obtained additional relinquished lands under the functioning of the Bankhead-Jones Act (Gates 1968).

In the mid-1930's A. J. Burrier carried out an examination of the Fort Rock Valley to plan for possible federal government actions in the area. Burrier's findings were the following:

1. a great amount of erosion had occurred in the valley;
2. overgrazing was continuing in the valley;
3. the Taylor Grazing District had removed the last of the open range for the ranchers in the valley;
4. the area lacked transportation facilities and the ability to compete in the market place;
5. the area had a very low productivity record;
6. the remaining residents were willing to sell out and move away.

(Burrier 1936: 2-6)

James Buckles concluded: "These arguments, regardless of their validity, set the stage for the return of the Federal Government as a large land holder in the valley" (Buckles 1959: 107).

Under the Bankhead-Jones Act the government purchased 82 square miles of the Fort Rock Valley in the late 1930's. Through the Taylor Grazing Act the government controlled an additional 17 square miles. By 1941 the federal government owned 99 square miles; only 75 square miles remained in private ownership (Buckles 1959: 108).

In south-central Oregon the presence of the federal government was experienced in other land management activities. Some of these ventures, of course, involved the management of people, too. For example, the Bureau of Indian Affairs from the mid-1860's until the mid-1950's administered the Klamath Indian Reservation. The staff of the B.I.A. made decisions on timber sales and leases of Indian lands for grazing by non-Indians (Stern 1966). The Goose Lake Forest Reserve, later the Fremont National Forest, was one of many such national forest lands created early in the twentieth century to administer federal lands. In the Klamath Basin the Winema National Forest, successor to the Crater National Forest, was another federal land management agency.

In many ways the interplays between federal land laws and the settlement of white residents in south central Oregon were intimately related. Slowly the population grew. Silver Lake, Paisley, Plush, Adel, Lakeview, and New Pine Creek became centers of trade and social life in Lake County. In the Klamath Basin Klamath Falls, the county
seat, became the hub of economic and political activity. The town's important geographical location on the Link River and its connections by wagon road and by railroad helped its growth. Small settlements in the Klamath Basin sometimes reflected the interests and ethnic backgrounds of the region. Malin was clearly a Bohemian community replete with its own Slovakian Lodge Hall. Chiloquin, Beatty, Klamath Agency, and Fort Klamath had numbers of Indian residents. Bly was a logging town; Merrill and Keno were strongly oriented to the agriculture in their areas.

For many who came into south-central Oregon after 1867 the "good life" materialized. For some, however, the allurements of a homestead, of a land company's auctioned properties, or a "ranch" in the West were ephemeral. Those with shattered dreams packed up their scanty belongings and moved on. Remaining on the land were the shacks that they had called home. Their rusting farm equipment, abandoned windmills, and derelict barns lingered among the sagebrush in mute testimony to unrealized expectations.

Figure 25. A Contemporary Postcard Satirizing the Unscrupulous Practices of the Oregon Valley Land Co. Photograph courtesy of the Schminck Memorial Museum.
ECONOMIC PATTERNS

One of the earliest and most fundamental human enterprises in the Lakeview District was farming. The Americans who poured into that region in the 1860's and 1870's clearly testified to their faith in the dream of the West as a veritable "Garden of Eden." Their beliefs, many of which proved illusory, were in harmony with the millions of other Americans who thought that the American West was truly a place where free land and honest toil would produce virtuous people and a good life. Even the scholarly historian, Frederick Jackson Turner, attributed to the American West "that buoyancy and exuberance which comes with freedom." Turner might well have added that another essential part of the calculus of western energies was unrelenting toil, for farming was no easy pathway to wealth.

By 1900 the Klamath County Census showed 453 farms in operation in the Klamath Basin. Lake County had 397. By 1910 the early influence of the Enlarged Homestead Act, the Desert Land Act of 1877, and the Timber and Stone Act of 1878 were felt in the region. Perhaps of even greater consequence, however, were the reclamation projects. The number of farms in both Klamath and Lake counties had nearly doubled within a decade. Klamath had 926; Lake possessed 712 (See Table 15). During this period the number of irrigated farms had also risen steadily. By 1909 46,975 acres were irrigated in Klamath County, while in that same year 57,078 acres were irrigated in Lake County (See Table 11).

Among the most important products of farming, which often included stock raising, were wheat, cattle, and sheep. Wheat production in Klamath County jumped five times between 1900 and 1910 with a yield of 184,306 bushels that year. In Lake County cattle and sheep played a major role in the economy.

TABLE 14.

AGRICULTURAL PRODUCTION IN THE LAKEVIEW DISTRICT, 1880-1920

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<thead>
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<th>Product (bushels)</th>
<th>Year</th>
<th>Klamath</th>
<th>Lake</th>
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</thead>
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<td>Wheat</td>
<td>1880</td>
<td>-</td>
<td>10,475</td>
</tr>
<tr>
<td></td>
<td>1890</td>
<td>17,032</td>
<td>7,741</td>
</tr>
<tr>
<td></td>
<td>1900</td>
<td>38,380</td>
<td>12,150</td>
</tr>
<tr>
<td></td>
<td>1910</td>
<td>184,306</td>
<td>30,602</td>
</tr>
<tr>
<td></td>
<td>1920</td>
<td>107,695</td>
<td>85,967</td>
</tr>
</tbody>
</table>
Many who settled in the Klamath Basin and in Lake County were primarily raisers of stock. Farming, if engaged in at all, was incidental and in some instances was confined primarily to the production of hay and feed for livestock or a vegetable garden for the family. In parts of the region east of the Cascades vegetable growing was, at best, a chancy undertaking. With the possibility of frosts any night during the year, vigilance had to be maintained to assure that a garden could survive in order to be harvested.

J. Orin Oliphant has classed the livestock production of South Central Oregon in the "Winnemucca Province." To the north the producers of cattle and sheep, such as on the extensive Baldwin Sheep and Cattle Company's Hay Creek Ranch in present Jefferson County, drove their livestock or hauled their wool to rail connections tied to the Columbia River. As far south as the Crooked River region large operators such as Breyman and Summerville of Prineville with 5,000 head or Mays and Son with 10,000 by 1881 were also oriented to market outlets to the north. The stock raisers of Silver Lake, Summer Lake, Sycan Marsh, Warner Valley, Goose Lake Valley, and the Klamath Basin, however, turned to the south for their markets (Oliphant 1968).

The southerly direction of the export of livestock was a pattern set as early as the 1850's when in 1857 Judge F. Adams drove 1,000 head from the Klamath lakes region to Yreka for sale (Shaver et al. 1905: 932). This pattern became more firm with the establishment of rail connections at Winnemucca by 1870. The building of the Nevada, California, and Oregon Railroad into the Goose Lake Valley in 1912 secured that orientation (Anonymous July 4, 1976b).

Oliphant found that in south-central Oregon the scarcity of arable land mitigated against the building up of vast herds of the
TABLE 15.

FARM PROPERTY IN THE LAKEVIEW DISTRICT, 1900-1920

<table>
<thead>
<tr>
<th>Variable Data</th>
<th>Years</th>
<th>Klamath</th>
<th>Lake</th>
<th>Total</th>
<th>Decennial % of Increase</th>
<th>Percent of Increase 1900-20</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Farms:</td>
<td>1900</td>
<td>453</td>
<td>397</td>
<td>850</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1910</td>
<td>926</td>
<td>712</td>
<td>1,638</td>
<td>92.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1920</td>
<td>992</td>
<td>549</td>
<td>1,541</td>
<td>-5.9</td>
<td>81.3</td>
<td></td>
</tr>
<tr>
<td>Land in Farms:</td>
<td>1900</td>
<td>221,554</td>
<td>249,288</td>
<td>470,842</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1910</td>
<td>454,340</td>
<td>401,555</td>
<td>855,895</td>
<td>81.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1920</td>
<td>357,333</td>
<td>526,218</td>
<td>883,551</td>
<td>3.2</td>
<td>87.7</td>
<td></td>
</tr>
<tr>
<td>Improved Land in</td>
<td>1900</td>
<td>72,239</td>
<td>95,824</td>
<td>168,063</td>
<td></td>
<td>35.7</td>
<td></td>
</tr>
<tr>
<td>Farms:</td>
<td>1910</td>
<td>176,564</td>
<td>104,419</td>
<td>280,983</td>
<td>67.2</td>
<td>32.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1920</td>
<td>152,742</td>
<td>183,396</td>
<td>336,138</td>
<td>19.6</td>
<td>100.0</td>
<td>38.0</td>
</tr>
<tr>
<td>Average Acreage</td>
<td>1900</td>
<td>489.1</td>
<td>627.9</td>
<td>553.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per Farm:</td>
<td>1910</td>
<td>490.7</td>
<td>564.0</td>
<td>522.5</td>
<td>-5.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1920</td>
<td>360.2</td>
<td>958.5</td>
<td>573.4</td>
<td>9.7</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>Average Improved</td>
<td>1900</td>
<td>159.2</td>
<td>241.4</td>
<td>197.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acreage Per Farm:</td>
<td>1910</td>
<td>190.7</td>
<td>146.7</td>
<td>171.5</td>
<td>-13.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1920</td>
<td>154.0</td>
<td>154.0</td>
<td>218.1</td>
<td>27.2</td>
<td>10.3</td>
<td></td>
</tr>
<tr>
<td>Farms Operated by</td>
<td>1900</td>
<td>381</td>
<td>329</td>
<td>710</td>
<td></td>
<td>83.5</td>
<td></td>
</tr>
<tr>
<td>Owners:</td>
<td>1910</td>
<td>822</td>
<td>657</td>
<td>1479</td>
<td>108.3</td>
<td>90.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1920</td>
<td>834</td>
<td>492</td>
<td>1326</td>
<td>-10.3</td>
<td>86.8</td>
<td>86.1</td>
</tr>
</tbody>
</table>

(U.S. Census Data)
Figure 26. Shearing Sheep by Hand at the Turn-of-the-Century. Photograph courtesy of the Schminck Memorial Museum.

Figure 27. Branding at Foster's Ranch near Summer Lake. Photograph courtesy of the Schminck Memorial Museum.
Figure 28. Haying at Summer Lake. Photograph courtesy of the Oregon Historical Society.
dimension found in the Harney Basin to the east. Yet, some residents of the region qualified as minor "barons" in their ownership of cattle and sheep. William A. Currier of Summer Lake fell in this category. Born in Benton County in 1851, Currier settled at Summer Lake in 1875. By 1905 Currier owned 1,700 acres, 2,000 head of cattle, and was "considered one of the largest horse owners in central Oregon" with a herd of over 1,000 head (Shaver et al. 1905: 880-81). John David Elder who came to Lake County in 1886 became a major sheep owner by the early twentieth century. Possessing flocks which numbered several thousand head, Elder resided in Lakeview but owned 1,800 acres on his Keno Springs Ranch east of Bonanza (Shaver et al. 1905: 894). Christopher Walter Dent who settled in the county in 1885 later owned two ranches in the Warner Valley. By 1905 he was a major sheep owner, possessing "several thousand head of these animals" (Shaver et al. 1905: 902).

Farming remained a major economic force in south-central Oregon well into the twentieth century. Indeed, in some areas, it was the major source of income. In conjunction with stock raising—for which farming produced hay, alfalfa, and other feed—it grew steadily in importance down to 1920. Between 1900 and 1920 the improved land in farms grew from 95,824 acres to 183,396 acres in Lake County. In this same period parallel growth occurred from 72,239 acres to 152,742 acres in Klamath County. In most instances farms were operated by their owners. Eighty-four percent of the 992 farms in Klamath County in 1920 were owner-operated. Eighty-nine percent of the 549 farms in Lake County in 1920 were owner-operated (U. S. Census Data; See Table 15).

Logging and lumbering did not gain commercial importance in the economy of south-central Oregon until the establishment of railroad connections early in the twentieth century. The operation of sawmills had, of course, developed early as the need for sawn lumber led ambitious men to fell trees and cut them for the construction of the homes, barns, and business structures of the region. The first lumbering in the region occurred in 1863 when the soldiers assigned to the Klamath Basin began sawing boards and hewing logs for the construction of Fort Klamath. Their structures involved both box construction with lumber and hewn log crib structures (Stone 1964: 14). Similarly, the soldiers who erected Camp Warner may have sawn the first lumber in Lake County. Although George Crook recalled that he and his wife lived through the winter of 1867-68 "in a log hut, with the cracks plastered with mud, no windows, and a tent fly for a covering," some of the buildings may have been built of lumber after that first year of occupation (Crook 1960: 155).

In the 1870's and 1880's several small sawmills were in operation in Lake County to provide materials for the settlers moving into the region.
<table>
<thead>
<tr>
<th>Date</th>
<th>Owner</th>
<th>Type</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>c. 1872</td>
<td>Spaulding</td>
<td>water-powered</td>
<td>6 miles s.e. of south end of Goose Lake (in Calif.)</td>
</tr>
<tr>
<td>c. 1870's</td>
<td></td>
<td>muley-sash sweep horse-power</td>
<td>Franklin Creek, 4 miles s. of Davis Creek</td>
</tr>
<tr>
<td>1874</td>
<td>Hyronymous Russell</td>
<td>(32 foot wheel) water-powered</td>
<td>Lassen Creek</td>
</tr>
<tr>
<td>c. 1875</td>
<td>E. W. Joseph</td>
<td>steam</td>
<td>Mill Flat, 17 miles n. of Lakeview on mountain road to Paisley</td>
</tr>
<tr>
<td>1878</td>
<td>O. L. Stanley</td>
<td>steam</td>
<td>Camp Creek, ½ mile below George Stephenson summer home</td>
</tr>
<tr>
<td>c. 1879</td>
<td>'Flintlock' Smith</td>
<td>flutter wheel</td>
<td>Thomas Creek near Hammersly place</td>
</tr>
<tr>
<td>1879</td>
<td>J. M. Russell</td>
<td>2 ten-horse-power threshing machines; turbine water wheel</td>
<td>Cottonwood Creek, c. 3 miles west of Cottonwood Dam</td>
</tr>
<tr>
<td>1883</td>
<td>Fuller and Vince Snelling</td>
<td>steam</td>
<td>Headwaters of Cox Creek, c. 2 miles south of E. W. Joseph mill</td>
</tr>
<tr>
<td>1885</td>
<td>Snellings</td>
<td>steam</td>
<td>McShane Creek, 1 mile west of Crooked Creek</td>
</tr>
<tr>
<td>1888</td>
<td>Hawkins &amp; Snelling</td>
<td>steam</td>
<td>McShane Creek</td>
</tr>
<tr>
<td>1888</td>
<td>James Metzker</td>
<td>steam</td>
<td>7-Up Ranch</td>
</tr>
<tr>
<td></td>
<td>(Bach n.d.: 18-19)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The early mills of Lake County which produced the lumber to build the small towns and homes of the residents of the region were powered by various means: water wheels, water turbines, steam engines, horse power— all were employed. The production of these mills rarely exceeded 10,000 board feet per day. By 1905 the county had five small mills all of which were under 10,000 board feet production per day. The mills operated about six months each year. Not until 1911 was the first commercial sale made of timber from the Goose Lake Forest Reserve (Fremont National Forest). On July 1 of that year 'Judge' Wilshire, who operated a water-powered sawmill on Cottonwood Creek, purchased 25,000 feet B.M. of western yellow pine and 14,000 feet B.M. of sugar pine. He had one year in which to log these trees (Bach n.d.: 19).

In the Klamath Basin the pattern of early sawmill operation was very similar to that in Lake County. The greater population and more readily available timber resources, however, led to a far greater development of logging and lumbering than farther to the east.

**TABLE 17.**

**EARLY SAW MILLS IN KLAMATH COUNTY, 1863-1909**

<table>
<thead>
<tr>
<th>Date</th>
<th>Owner</th>
<th>Type</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1863-70</td>
<td>U.S. Army or private contractor (?)</td>
<td>steam</td>
<td>East side of Fort Creek</td>
</tr>
<tr>
<td>1870-ff.</td>
<td>U. S. Army</td>
<td>steam</td>
<td>West side of Fort Creek near Ft. Klamath Junction</td>
</tr>
<tr>
<td>1870-1912</td>
<td>Bureau of Indian Affairs</td>
<td>turbine</td>
<td>Klamath Agency, ½ mile down the stream from highway</td>
</tr>
<tr>
<td>1893-99</td>
<td>Bureau of Indian Affairs</td>
<td></td>
<td>Yainax</td>
</tr>
<tr>
<td>1877-1907</td>
<td>William S. Moore</td>
<td></td>
<td>West side of Link River below the falls</td>
</tr>
<tr>
<td>1895-1903</td>
<td>Jack Cottle</td>
<td></td>
<td>Head of Wood River</td>
</tr>
</tbody>
</table>

(Helfrich 1968: 31-34)
### TABLE 17 (continued)

<table>
<thead>
<tr>
<th>Date</th>
<th>Owner</th>
<th>Type</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1888-1892-93</td>
<td>Jesse O. Carr</td>
<td>steam</td>
<td>Bryant Mountain</td>
</tr>
<tr>
<td>1901-05</td>
<td>William Rhoads</td>
<td>steam</td>
<td>Bryant Mountain</td>
</tr>
<tr>
<td>1905-ff</td>
<td>Turner Bros.</td>
<td>steam</td>
<td>Stuckel Mountain &amp; 2 miles s. of Olene</td>
</tr>
<tr>
<td>1909-28</td>
<td>James Warlow</td>
<td>steam</td>
<td>Bryant Mountain</td>
</tr>
</tbody>
</table>

(Helfrich 1970: 35-38; 1969: 43-44)

The initial impetus for logging and lumbering in the Klamath Basin came from the U. S. government. The establishment of Fort Klamath created in 1863 an immediate need for lumber. The steam mill established on the east side of Fort Creek that year had a capacity of 2-3,000 board feet per day. Under the terms of the Klamath Indian treaty of 1864 the government was for twenty years to build and operate a sawmill to supply the Indians with lumber. The mill at Fort Klamath served that purpose from 1863 to 1870. In that latter year the Bureau of Indian Affairs established a sawmill at Klamath Agency which was operated until 1912. An additional B.I.A. mill operated at Yainax from 1893-99 (Helfrich 1968: 31-34).

Although private contractors may have operated the circular saws at Fort Klamath as early as the mid-1860's, the first commercial sawmill of importance was that established by William S. Moore (and possibly his partner George Nurse) in 1877 on the west side of Link River below the falls. This mill, which operated until 1906 or 1907, provided much of the lumber for construction of buildings in the Upper Klamath Lake area. In 1880 this mill provided lumber for new buildings at Fort Klamath (Helfrich 1968: 32).

By 1908 timber from the Crater National Forest was available to lumbermen. Burns and Utter began those enterprises in 1909 in their sawmill on Annie Creek. Between July and December of that year their saws turned out nearly 1,000,000 board feet of lumber. For 1910 this firm had advance sales contracts of 1.5 million board feet of which 400,000 board feet were to be shipped East. Burns and Utter, as did other mill owners, grasped the ready potential of timber resources in the Klamath Basin with the arrival of railroad connections to Klamath Falls in 1909. They met this opportunity by bidding on government timber and building outside markets. Their mill finally burned in 1927 (Good 1941: 132; Helfrich 1968: 33-34).
In the Merrill-Malin area the sawmills, most of them of very small capacity, cut fence posts and lumber for the settlers. Jesse D. Carr, one of the large land holders in the Tule Lake area, built a mill in 1888 on Bryant Mountain. His plant, operated by Rogers and McCoy until about 1892-93, was a steam-operated, circular sawmill. W. W. Lamm assessed the limited sales potentials of such an operation and said that by the mid-1890’s Carr’s mill "had flooded the very limited market of a few stock ranchers in that district" and that unsold lumber was still piled on the Carr ranch in 1900 (Helfrich 1970: 35).

The new opportunities for sawmill operators in the Merrill-Malin area came in 1908-09 with the massive reclamation projects and the arrival of the railroad. New settlers needed housing and lumber for barns. The railroad afforded means of exporting lumber. James Worlow was one who seized these opportunities. Purchasing equipment in Portland, Worlow shipped it to Klamath Falls by rail and hauled it by horse team to Bryant Mountain to build near the site of the old Carr mill. Worlow’s mill began cutting perhaps as early as late 1909. Eventually with a crew of 17 and a daily capacity of 30,000 to 40,000 board feet, this mill provided the lumber for settlers at Malin, Poe, and Langell Valley. The Worlow Mill operated until 1928 (Helfrich 1970: 36).

Large scale lumbering and logging operations eventually came to the Klamath Basin by World War I. Some firms such as the Ewauna Box Company and the Pelican Bay Company built their own railroads east into the Bly Mountain region (Metsker 1936: 150-51). The lumber industry assumed greater and greater importance in providing jobs. Many of the firms, however, were controlled by corporations whose stockholders lived outside the Klamath Basin. In a sense the lumber economy of the region fell increasingly captive to the colonialism of external capital.

**TABLE 18.**

**LOG PRODUCTION IN KLAMATH AND LAKE COUNTIES, 1925-70**

<table>
<thead>
<tr>
<th>Year</th>
<th>Klamath</th>
<th>Lake</th>
<th>Year</th>
<th>Klamath</th>
<th>Lake</th>
</tr>
</thead>
<tbody>
<tr>
<td>1925</td>
<td>405,987</td>
<td>5,072</td>
<td>1935</td>
<td>495,480</td>
<td>129,888</td>
</tr>
<tr>
<td>1926</td>
<td>433,682</td>
<td>10,219</td>
<td>1936</td>
<td>616,304</td>
<td>137,190</td>
</tr>
<tr>
<td>1927</td>
<td>368,770</td>
<td>12,027</td>
<td>1937</td>
<td>657,927</td>
<td>139,571</td>
</tr>
<tr>
<td>1928</td>
<td>484,999</td>
<td>21,470</td>
<td>1938</td>
<td>462,513</td>
<td>140,748</td>
</tr>
<tr>
<td>1929</td>
<td>547,733</td>
<td>30,559</td>
<td>1939</td>
<td>641,797</td>
<td>211,574</td>
</tr>
<tr>
<td>1930</td>
<td>443,889</td>
<td>14,365</td>
<td>1940</td>
<td>678,267</td>
<td>129,429</td>
</tr>
<tr>
<td>1931</td>
<td>371,044</td>
<td>7,918</td>
<td>1941</td>
<td>646,361</td>
<td>275,626</td>
</tr>
<tr>
<td>1932</td>
<td>196,591</td>
<td>20,330</td>
<td>1942</td>
<td>740,239</td>
<td>210,469</td>
</tr>
<tr>
<td>1933</td>
<td>304,586</td>
<td>51,750</td>
<td>1943</td>
<td>548,332</td>
<td>287,357</td>
</tr>
<tr>
<td>1934</td>
<td>318,448</td>
<td>49,974</td>
<td>1944</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
TABLE 18 (continued)

<table>
<thead>
<tr>
<th>Year</th>
<th>Klamath</th>
<th>Lake</th>
</tr>
</thead>
<tbody>
<tr>
<td>1945</td>
<td>477,765</td>
<td>72,401</td>
</tr>
<tr>
<td>1946</td>
<td>432,479</td>
<td>136,718</td>
</tr>
<tr>
<td>1947</td>
<td>403,892</td>
<td>95,550</td>
</tr>
<tr>
<td>1948</td>
<td>342,726</td>
<td>89,942</td>
</tr>
<tr>
<td>1949</td>
<td>284,525</td>
<td>52,892</td>
</tr>
<tr>
<td>1950</td>
<td>290,937</td>
<td>86,756</td>
</tr>
<tr>
<td>1951</td>
<td>261,280</td>
<td>102,345</td>
</tr>
<tr>
<td>1952</td>
<td>211,155</td>
<td>124,227</td>
</tr>
<tr>
<td>1953</td>
<td>231,156</td>
<td>158,625</td>
</tr>
<tr>
<td>1954</td>
<td>207,298</td>
<td>134,430</td>
</tr>
<tr>
<td>1955</td>
<td>321,676</td>
<td>156,622</td>
</tr>
<tr>
<td>1956</td>
<td>198,205</td>
<td>252,831</td>
</tr>
<tr>
<td>1957</td>
<td>194,731</td>
<td>163,966</td>
</tr>
<tr>
<td>1958</td>
<td>217,700</td>
<td>168,347</td>
</tr>
<tr>
<td>1959</td>
<td>264,698</td>
<td>185,079</td>
</tr>
</tbody>
</table>

*(Wall 1972: 40-41)*

* Thousand board feet

The sources of logs for the mills in south-central Oregon have included both private and federal lands. In the Klamath Basin the federal lands which have had contract or bid sales have included the Fremont National Forest, the Bureau of Indian Affairs, and the Bureau of Land Management. Very small sales of timber from state lands have occasionally occurred since World War II (Wall 1972).

TABLE 19.

LOG PRODUCTION FROM PRIVATE, BLM, U. S. FOREST SERVICE, AND BUREAU OF INDIAN AFFAIRS LANDS IN KLAMATH COUNTY, 1940-1970

<table>
<thead>
<tr>
<th>Year</th>
<th>Private</th>
<th>BLM</th>
<th>U.S. Forest</th>
<th>U.S. B.I.A.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1949</td>
<td>141,623</td>
<td>411</td>
<td>43,448</td>
<td>98,440</td>
</tr>
<tr>
<td>1950</td>
<td>126,924</td>
<td>3,848</td>
<td>78,645</td>
<td>81,320</td>
</tr>
<tr>
<td>1951</td>
<td>111,042</td>
<td>4,640</td>
<td>39,376</td>
<td>105,930</td>
</tr>
<tr>
<td>1952</td>
<td>96,573</td>
<td>9,377</td>
<td>44,726</td>
<td>60,350</td>
</tr>
<tr>
<td>1953</td>
<td>93,509</td>
<td>10,450</td>
<td>60,134</td>
<td>67,063</td>
</tr>
<tr>
<td>1954</td>
<td>117,752</td>
<td>7,149</td>
<td>37,450</td>
<td>44,947</td>
</tr>
<tr>
<td>1955</td>
<td>206,776</td>
<td>6,829</td>
<td>41,363</td>
<td>66,708</td>
</tr>
<tr>
<td>1956</td>
<td>58,003</td>
<td>5,565</td>
<td>53,821</td>
<td>80,816</td>
</tr>
<tr>
<td>1957</td>
<td>97,334</td>
<td>14,788</td>
<td>72,974</td>
<td>9,619</td>
</tr>
<tr>
<td>1958</td>
<td>103,180</td>
<td>11,832</td>
<td>61,616</td>
<td>41,072</td>
</tr>
<tr>
<td>1959</td>
<td>172,425</td>
<td>17,360</td>
<td>71,264</td>
<td>3,649</td>
</tr>
<tr>
<td>1960</td>
<td>145,206</td>
<td>29,416</td>
<td>85,465</td>
<td>-</td>
</tr>
<tr>
<td>1961</td>
<td>87,732</td>
<td>11,431</td>
<td>94,019</td>
<td>-</td>
</tr>
<tr>
<td>1962</td>
<td>145,464</td>
<td>7,883</td>
<td>112,778</td>
<td>-</td>
</tr>
<tr>
<td>1963</td>
<td>134,450</td>
<td>14,193</td>
<td>109,889</td>
<td>-</td>
</tr>
<tr>
<td>1964</td>
<td>134,126</td>
<td>21,324</td>
<td>153,759</td>
<td>-</td>
</tr>
<tr>
<td>1965</td>
<td>237,650</td>
<td>8,291</td>
<td>198,164</td>
<td>-</td>
</tr>
<tr>
<td>1966</td>
<td>234,088</td>
<td>27,709</td>
<td>190,888</td>
<td>-</td>
</tr>
</tbody>
</table>
TABLE 19 (continued)

<table>
<thead>
<tr>
<th>Year</th>
<th>Private</th>
<th>BLM</th>
<th>U.S. Forest</th>
<th>U.S. B.I.A.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1967</td>
<td>134,086</td>
<td>10,978</td>
<td>154,936</td>
<td>-</td>
</tr>
<tr>
<td>1968</td>
<td>180,161</td>
<td>21,668</td>
<td>221,828</td>
<td>-</td>
</tr>
<tr>
<td>1969</td>
<td>280,035</td>
<td>16,587</td>
<td>211,445</td>
<td>-</td>
</tr>
<tr>
<td>1970</td>
<td>245,189</td>
<td>7,134</td>
<td>207,201</td>
<td>-</td>
</tr>
</tbody>
</table>

(Wall 1972: 68-89) *Thousand board feet

In Lake County sawmills found similar sources of timber. The production figures reveal that private and federal government lands yielded upward to as much as 420,000 thousand board feet a year.

TABLE 20.

LOG PRODUCTION FROM PRIVATE, BLM, U. S. FOREST SERVICE, AND BUREAU OF INDIAN AFFAIRS LANDS IN LAKE COUNTY, 1940-70*

<table>
<thead>
<tr>
<th>Year</th>
<th>Private</th>
<th>BLM</th>
<th>U.S. Forest</th>
<th>U.S. B.I.A.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1949</td>
<td>28,455</td>
<td>863</td>
<td>13,605</td>
<td>-</td>
</tr>
<tr>
<td>1950</td>
<td>-</td>
<td>300</td>
<td>86,456</td>
<td>-</td>
</tr>
<tr>
<td>1951</td>
<td>27,017</td>
<td>-</td>
<td>75,221</td>
<td>-</td>
</tr>
<tr>
<td>1952</td>
<td>51,146</td>
<td>-</td>
<td>73,081</td>
<td>-</td>
</tr>
<tr>
<td>1953</td>
<td>67,247</td>
<td>-</td>
<td>91,378</td>
<td>-</td>
</tr>
<tr>
<td>1954</td>
<td>42,329</td>
<td>4,147</td>
<td>87,954</td>
<td>-</td>
</tr>
<tr>
<td>1955</td>
<td>43,842</td>
<td>10,452</td>
<td>82,698</td>
<td>19,630</td>
</tr>
<tr>
<td>1956</td>
<td>58,003</td>
<td>2,024</td>
<td>90,308</td>
<td>50,378</td>
</tr>
<tr>
<td>1957</td>
<td>62,511</td>
<td>-</td>
<td>101,436</td>
<td>19</td>
</tr>
<tr>
<td>1958</td>
<td>49,213</td>
<td>-</td>
<td>119,134</td>
<td>-</td>
</tr>
<tr>
<td>1959</td>
<td>40,496</td>
<td>884</td>
<td>143,699</td>
<td>-</td>
</tr>
<tr>
<td>1960</td>
<td>137,003</td>
<td>2,531</td>
<td>73,609</td>
<td>-</td>
</tr>
<tr>
<td>1961</td>
<td>87,732</td>
<td>11,431</td>
<td>94,019</td>
<td>-</td>
</tr>
<tr>
<td>1962</td>
<td>78,701</td>
<td>-</td>
<td>100,045</td>
<td>-</td>
</tr>
<tr>
<td>1963</td>
<td>74,889</td>
<td>-</td>
<td>109,889</td>
<td>-</td>
</tr>
<tr>
<td>1964</td>
<td>107,864</td>
<td>-</td>
<td>169,060</td>
<td>-</td>
</tr>
<tr>
<td>1965</td>
<td>63,597</td>
<td>-</td>
<td>121,017</td>
<td>-</td>
</tr>
<tr>
<td>1966</td>
<td>97,070</td>
<td>-</td>
<td>179,439</td>
<td>-</td>
</tr>
<tr>
<td>1967</td>
<td>36,682</td>
<td>2</td>
<td>218,494</td>
<td>-</td>
</tr>
<tr>
<td>1968</td>
<td>263,817</td>
<td>-</td>
<td>160,034</td>
<td>-</td>
</tr>
<tr>
<td>1969</td>
<td>205,318</td>
<td>3</td>
<td>139,095</td>
<td>-</td>
</tr>
<tr>
<td>1970</td>
<td>176,886</td>
<td>-</td>
<td>100,559</td>
<td>-</td>
</tr>
</tbody>
</table>

(Wall 1972: 68-89) *Thousand board feet
Although mining has been of importance in the history of public lands in many parts of Oregon, it has had but a very limited significance in the human activity in south-central Oregon. Gold created some excitement in the Goose Lake Valley in the 1870's. Prospectors established mining districts on both the east and west sides of the lake and staked at least thirty-three claims (Shaver et al. 1905: 817-18). The High Grade District, primarily located in Modoc County, California, extended a short distance into Oregon in the area east of New Pine Creek. Between 1909 and 1934 the estimated total production of this district—as a whole—was about $85,000 (Peterson and McIntyre 1970: 51).

The Brattain District, located on the east side of the Paisley hills about five miles south of Paisley, was reportedly discovered as early as 1875. Development work was carried out by a man named Gaylord about 1900. Reportedly Gaylord, who dug a tunnel and several shafts, supported his family with the yield from this mine. The Gaylord Mine is located in T34S, R18E, Sec. 11, NE3 (Peterson and McIntyre 1970: 51).

The Lost Cabin District (also known as the Coyote Hill or Camp Loftus District) was located about ten miles north of Plush in 1906 by the Loftus brothers. Situated in T35S, R23E, this mining district stimulated a small rush, but almost no gold was produced (Parks and Swartley 1916: 292; Brooks and Ramp 1968: 160-61).

In the 1950's uranium mining became an important mineral activity in Lake County. The White King and Lucky Lass mines both yielded U3O8 which was mined, processed, and sold. The White King Mine is located in T37S, R19E, Sec. 30 and has produced 115,000 tons of ore. The Lucky Lass Mine is located in T37S, R18E, Sec. 25 and has produced about 5,000 tons. From these two mines has come a total of nearly 400,000 pounds of uranium. Much of the ore was processed at a plant erected in Lakeview in 1958 (Peterson and McIntyre 1970: 45-47).

Among the other mineral products of Lake County has been mercury. The Angel Peak Mine, located in T37S, R17E, Sec. 32, W1/2, produced 34 flasks of quicksilver between 1956 and 1959. The material was processed in a thirty inch furnace (Peterson and McIntyre 1970: 49-51).

Throughout south-central Oregon another economic pattern has occurred in terms of general trade, commerce, and services. By the 1880's several of the towns where such activities would occur had already grown in inhabitants. In Lake County New Pine Creek, Lakeview, Paisley, and Silver Lake took the lead in possessing schools, general merchandise stores, fraternal lodges, and, in some instances, newspapers. Smaller settlements such as Adel, Plush, and Summer Lake existed because of a general store. Other nascent communities
Figure 29. A Turn-of-the-Century Photograph of an Unidentified Sawmill in South-Central Oregon. Photograph courtesy of the Schminck Memorial Museum.

Figure 30. The Camp Creek Sawmill circa 1908. Photograph courtesy of the Schminck Memorial Museum.
Figure 31. Gaylord's Mining Camp, Chewaucan Hills, 1908. "Got a woodrat for dinner."
Photograph courtesy of the Oregon Historical Society.
such as Shirk, Warner, Egli, and Wastina emerged as post offices or settlements during the homesteading era of the late nineteenth and early twentieth centuries. Most of these sites had a very transitory existence (Shaver et al. 1905; Buckles 1959; McArthur 1974).

In the Klamath Basin communities such as Linkville (Klamath Falls), Keno, Merrill, Malin, Fort Klamath, Beatty, Bly, and Chiloquin were established by 1910. Routes of transportation, the needs of a local community of settlers, the location of government offices or services, and the presence of commercial outlets helped create the base for these communities. Schools, churches, lodges, and newspapers provided additional elements of the fabric holding such centers together (Shaver et al. 1905; Good 1941).

In one instance in 1961-62 an entirely new community emerged in Christmas Valley. Purchasing 82,000 acres in an area where homesteaders dreams had founderd prior to World War I, the M. Penn Phillips Company of Azusa, California, began a whirlwind subdivision and real estate promotion effort. Within months, by 1962, the company had sold 52,000 acres to 1,800 purchasers, most of them from California. To attract would-be land purchasers, the company constructed a 5,100 foot airfield, a lodge, a motel, and announced plans for a nine hole golf course and a 3,000 foot long artificial lake. Indeed, to prove that farming could occur in the region, the company set aside 40 acres for a model farm. The firm's Christmas Valley Mutual Water Improvement District began drilling wells (Shaw 1962). By 1963 Christmas Valley had 25 houses, a trailer park, a church, and approximately 350 residents (Morehouse 1963).
SUMMARY

The history of white activity in south-central Oregon has within it many of the familiar elements of the history of the American West. From the wandering explorations of fur seekers in the 1820's to the shattered dreams of homesteaders early in the twentieth century, the region has drawn a familiar cast of characters. Indians, fur seekers, government explorers, scientists, soldiers, overland emigrants, cattle drovers and shepherders, settlers, shopkeepers, loggers and lumbermen, and miners—all have played parts in the development of the region.

The limited population and the vastness of the land have played an important part in shaping the region's history. In the Klamath Basin, better watered and more forested, the course and tempo of development have been the more intense. In Lake County the difficulties of transportation for decades discouraged many forms of economic enterprise beyond the raising of livestock. The distances between resources and markets were often more than the "traffic would bear." The obstacles of determined Indians, sandy and rutted roads, lack of water (except in a few lush and very productive areas), cost of irrigation systems, and the holding of extensive tracts by land companies also shaped the course of human events in the region.

For much of its first seventy years of settlement by Americans, south-Central Oregon was "out back of beyond." That insularity and isolation broke down but slowly. The arrival of rail connections in the Klamath Basin in 1909 and into the Goose Lake Valley in 1912 stimulated the changes. The construction of highways after the creation of Oregon's Highway Commission in 1917 helped even more. Yet, the untoward experiences of homesteaders on the High Desert, the often disillusioned purchasers of the Oregon Valley Land Company's holdings, and the harsh realities of life east of the Cascades acted in many instances as deterrent to development. Another important factor too, was the millions of acres in the region owned and managed by the federal government. The challenges of complying with government guidelines on timber sales, mineral claims, geothermal site exploration leases, grazing acts, erosion control programs, and other management activities all came increasingly to be factors in the course of the history of the area.
CHAPTER V

CULTURAL RESOURCE SYNTHESIS

The Lakeview District of the Bureau of Land Management is located east of the Cascade Range and includes parts of Lake, Klamath, and Harney counties in south-central Oregon. The district is situated within the northernmost extension of the Great Basin physiographic province of North America. The climate of the region is characterized by light precipitation, abundant sunshine, and extreme temperature ranges. Most of the area has variable relief and generally lies between elevations of 4000 and 8000 feet above sea level.

Paleoecological studies indicate that there was a climatic change at the end of the Pleistocene Epoch around 11,000 years ago coinciding with the retreat of continental glaciers. The climate underwent a trend from cool and moist to warmer and dryer conditions during the period from roughly 8000 to 11,000 years ago. In concert with these climatic changes, there was a change in vegetation from the lushier flora characteristic of moister conditions to the less rich environment of a more arid climate. Several animal species, including large browsers and grazers such as bison, camels, and horses became extinct. Subsequent climatic fluctuations within the last 8000 years were not as severe, but nevertheless also affected the distribution of flora and fauna, as well as human populations.

There is archaeological evidence for the presence of prehistoric peoples in the Northern Great Basin as early as 11,000 to 13,000 years ago. A radiocarbon date of 13,200± 720 BP from Fort Rock Cave in south-central Oregon documents the earliest dated human occupation in the Great Basin. The artifact collection associated with this early date, however, is quite scanty, and its exact relationships to other archaeological cultures remain unknown at this time.

The first widespread evidence for the presence of prehistoric peoples in the Great Basin is represented by the distinctive Clovis and Folsom projectile points of the Fluted Point Horizon. Although none of the fluted points so far found in the Great Basin have been directly dated, a time range from 11,500 to 10,000 BP has been assigned to the Fluted Point Horizon elsewhere in North America. From a time overlapping with and subsequent to the Fluted Point Horizon a series of similar lithic complexes occurs throughout western North America. In the Great Basin this early cultural manifestation is locally referred to as the San Dieguito Complex or the Western Pluvial Lakes Tradition. Artifact assemblages representative of these archaeological cultures commonly occur along the shorelines of now-dry pluvial lakes, and apparently relate to a time when the lake levels were fairly high around 8000 to 11,000 years ago.
After about 8000 years ago the archaeological record in the Great Basin becomes more complex, as specialized adaptations to locally available resources began to develop in each area. The variety of locally adapted cultures which begin to appear at this time can be subsumed within the Desert Culture or Great Basin Archaic way of life, which involved the intensive exploitation of the resources found in the variety of environments occurring in the Great Basin. In the Northern Great Basin locally adapted cultures representative of the Archaic way of life persisted up to historic times.

The principal occupants of the Northern Great Basin in south-central Oregon in ethnographic times were the Northern Paiute and the Klamath-Modoc. The Molala of the Cascades claimed a bit of territory in the northwestern corner of today’s Lakeview District. Other neighbors with whom these peoples interacted were the Takelma, the Shasta, and the Achumawi.

With the exception of the Klamath, little is known of these peoples because they were rapidly decimated due to factors such as disease, wars, and famine which resulted from contact with Euro-Americans. The available ethnographic information indicates that the Klamath-Modoc and the Northern Paiute shared many basic cultural traits in common. Both followed a semi-sedentary subsistence pattern. Settlements tended to be seasonally inhabited, with groups generally returning repeatedly to the same village sites and camping spots. Food resources were utilized on a seasonal basis whenever and wherever they occurred. Due to differences in the environments inhabited by the two groups, the Northern Paiute emphasized hunting and seed gathering, while the Klamath-Modoc relied more on fishing and root and wokas gathering. Neither group had a well-developed sociopolitical organization. The Northern Paiute were much more flexible and loosely organized, however, than the Klamath-Modoc.

Drastic changes in the native lifeways occurred with the arrival of white settlers and their domesticated plants and animals. In a few short years, the settlers altered the natural vegetation of the land to such an extent that the traditional means of subsistence soon became no longer viable for the native peoples and many starved. Whites and Indians competed to survive, but the military strength and sheer numbers of the whites soon overpowered the Indians who did not give up without a struggle.

The history of white activity in south-central Oregon features many of the familiar elements in the history of the American West. From the wandering explorations of fur seekers in the 1820’s to the shattered dreams of homesteaders early in the twentieth century, the region has drawn a familiar cast of characters. Indians, furtrappers, government explorers, scientists, soldiers, overland emigrants,
cattle drovers and shepherders, settlers, shopkeepers, loggers, and miners have all played parts in the development of the region.

The vastness and isolation of the land have played an important part in shaping the region's history. In the Klamath Basin, better watered and more forested, the course and tempo of development have been more intense. In Lake County the difficulties of transportation for decades discouraged many forms of economic enterprise beyond the raising of livestock. The obstacles of determined Indians, sandy and rutted roads, shortage of water in most areas, cost of irrigation systems, and the holding of extensive tracts by land companies also shaped the course of human events in the region.

For much of its first seventy years of settlement by Americans, south-central Oregon was very much isolated, and this situation changed only very slowly. The completion of rail connections in the Klamath Basin in 1909 and into the Goose Lake Valley in 1912 helped to stimulate economic development. The construction of highways after the creation of Oregon's Highway Commission in 1917 helped even more. Yet, the harsh realities of life east of the Cascades experienced by homesteaders acted in many instances as a deterrent to development. Yet another factor was the millions of acres in the region owned and managed by the federal government. The challenges of complying with government guidelines on timber sales, mineral claims, geothermal site exploration leases, grazing acts, erosion control programs, and other management activities all came increasingly to be factors in the course of the history of the area.
CHAPTER VI

FUTURE MANAGEMENT OPTIONS AND RESEARCH DIRECTIONS

Over the years since archaeological research began in the Great Basin during the 1930's, the interests of archaeologists working in the region have undergone a substantial change (Fowler 1977; Aikens 1977). Most of the research conducted to date in the Great Basin has involved a general culture-history approach to archaeology, in which the principal task of archaeologists was to understand the distributions of specific artifacts, traits, and cultures across space and over time (Fowler 1977:4). Archaeologists using this approach frequently concentrated their attention on the excavation of caves and rockshelters. While these sites often contained long sequences of human occupation, a failure by archaeologists to investigate other types of sites in the Great Basin resulted in a somewhat biased interpretation of the archaeological record.

While studies focusing on the culture history of an area remain of interest to Great Basin archaeologists, the main themes of more current research programs tend to focus more on the nature of prehistoric societies and the way in which environmental change on both short- and long-term bases affected the adaptive poses struck by aboriginal groups in the Great Basin at different times in the past (Aikens 1977:211-212). In contrast to the site-specific studies of earlier archaeologists, these current research interests necessitate studies of societal organization and climatic fluctuations on a regional rather than a local scale. The regional scope of current research programs in the Great Basin places a heavy responsibility on federal land management agencies to protect a broad spectrum of cultural resources on the lands under their control.

All federal agencies are required by federal law to inventory, protect, and enhance resources of archaeological and historic significance on lands under their management. The rationale for these protective laws is that cultural resources are non-renewable in that once they are destroyed, the information pertaining to particular historic or prehistoric structures, sites, districts, or objects is lost forever. Due to the non-renewable nature of cultural resources, the federal government has passed legislation directed toward protecting and exploiting these resources to the maximum public interest. The Bureau of Land Management, like other federal agencies, is directed by federal law as follows:

(1) Executive Order 11593 of May 13, 1971, directs federal agencies to survey their lands and nominate to the National Register of Historic Places significant historic and archaeological sites on federal properties. The Federal Land Policy and Management Act of 1976 further requires that the Bureau of Land Management be responsible for preparing and maintaining "on a continuous basis an inventory
of all public lands and their resource and other values [including cultural resources]. Both laws require that a systematic inventory of federal lands be made in order to locate, protect, and enhance significant cultural resources.

(2) Several recent laws, including the National Historic Preservation Act of 1966 and the National Environmental Policy Act of 1969, require federal agencies to consider the impact of their proposed activities on cultural resources and to refrain from damaging or destroying significant historic or archaeological resources on their lands. This legislation also applies to the impact of federally-funded programs on cultural resources situated on non-federally owned lands.

At the time of this writing the Lakeview District of the Bureau of Land Management has made good progress toward compliance with federal policies regarding cultural resources. A full-time Cultural Resource Specialist has been employed by the Lakeview District for the past four years, and more archaeological sites have been recorded within the Lakeview District than in any other comparable area in Oregon.

But because the total area encompassed by the Lakeview District is so great (over 5200 square miles), and because the greater part of this area is open range land, the cultural resources of the Lakeview District are especially susceptible to destruction from a variety of sources. In some respects, then, the Lakeview District faces more complex problems in its management of cultural resources than any other Bureau of Land Management district in Oregon. The remainder of the Cultural Resource Overview discusses some of the issues and problems involved and presents some recommendations for the future management of the Lakeview District's cultural resources. Recommendations for the management of specific archaeological and historic sites in the Lakeview District are presented in the companion inventory volume accompanying this Cultural Resource Overview.

Recommendation 1: The Lakeview District should follow a methodical, well-defined, multi-stage program of study to improve the cultural resource data base required for administrative planning purposes.

As described in previous sections of this overview and in the accompanying inventory volume, archaeological and historic sites now known to exist in the Lakeview District occur in several characteristic geographical locations. Due to the highly unsystematic manner in which the existing site inventory has been amassed, however, it is not known whether the types of locations so far identified as high probability areas are in fact the only ones in which sites occur. A more adequate resource inventory, based on a larger and much better controlled sample of sites, is essential to establish a reliable means of predicting site locations.
IA. In order to accomplish this objective, it is necessary to establish a program of cultural resource survey incorporating the following three levels:

(1) clearance of specific ground-disturbing projects. These surveys are of the most immediate concern to the Bureau of Land Management, but can make only limited contributions toward developing the known cultural resource inventory.

(2) surveys in areas where there is a high potential for damage to cultural resources. These areas particularly include those localities easily accessible to the public, such as along highways and dirt roads, near recreational vehicle areas, near population centers, in favorite relic collecting spots, etc. These kinds of surveys have not yet been undertaken in the Lakeview District, and steps should be taken to begin such surveys immediately. These surveys will typically cover more extensive areas than specific project clearance surveys, and will provide a correspondingly greater amount of information on the cultural resources of the district.

(3) large scale, systematic surveys on remaining Bureau of Land Management lands. The Lakeview District has already initiated the surveys of this nature. These surveys must be based on a well-conceived research design, and should be conducted in areas representative of all the environments found in the district. Due to the high degree of ground visibility over most of south-central Oregon, rigorously systematic surveys may be easily implemented; the use of an unbiased sampling design will make a maximum contribution to the formulation of a predictive model for cultural resource site locations.

In accordance with Executive Order 11593 and the Federal Land Policy and Management Act of 1976, the surveys of (2) and (3) above should continue until all Bureau of Land Management land in the district has been inventoried. Surveys involving specific ground-disturbing projects (1) should continue as long as such projects continue to take place.

IB. The Bureau of Land Management should maintain a standardized system for inventorying the cultural resources encountered in the Lakeview District.

A standardized and detailed inventory system for recording cultural resources is essential for administrative planning purposes. A series of cultural resource survey forms is already in use by the Bureau of Land Management, but it must be stressed that these forms must be filled out accurately and completely in order to serve their intended purpose.
In addition to keeping adequate survey records, it is extremely important to maintain an accurate and current map record of all areas examined for cultural resources within the Lakeview District, whether or not any sites were actually found. Information as to where sites do not exist is as important as where they have been found, and both kinds of information can be useful in reconstructing aboriginal settlement patterns and in predicting the likely occurrence of sites. Notes on the intensity of the actual ground search, nature of the vegetation cover, soil types, nature of the terrain, and other conditions relating to the quality of coverage should be maintained with the map record.

In general, the Bureau of Land Management policy of not collecting artifacts during cultural resource surveys should be continued. The presence of cultural debris should be described in the site records, but artifacts should not be moved from their observed location within a site. The surface distribution of artifacts at a site contains important information on activity patterns carried on in the area; to the extent that the artifact distribution is disturbed, information is irrevocably lost. It is possible to gain information for planning purposes without making artifact collections (Lipe 1974: 226). To the maximum extent possible, sites should be located, protected, and left undisturbed. The only rationale for artifact collecting is for scientific research purposes or for mitigation of unpreventable impacts. Any collection of artifacts, for whatever purpose, should be systematic, controlled, and carefully carried out by professional archaeologists. After study, all cultural materials should be deposited at the Oregon State Museum of Anthropology at the University of Oregon, which is designated by Oregon state law as the official repository for antiquities recovered from private and public lands in Oregon.

IV. The Lakeview District should consider employing additional personnel in its cultural resource management program.

Each resource (timber, wildlife, recreation, etc.) on lands administered by the Bureau of Land Management has its own management program on the district level. But because a concern for cultural resources has only come about as a result of recent federal legislation, the program for managing cultural resources tends to be somewhat underdeveloped in comparison with other resource management programs.

The management of cultural resources basically consists of three activities: (1) specific project clearance—insuring that BLM projects will not harm cultural resources; (2) surveillance of cultural resources on BLM lands to protect them from destruction by the public; and (3) educating the public, and also other BLM employees, as to the value of cultural resources and the need to preserve them from destruction. Because the cultural resource management program
of the Lakeview District is a relatively new one, the one Cultural Resource Specialist employed spends the great majority of his time on specific project clearances; this leaves almost no time for either the surveillance or educational work required for a successful cultural resource management program.

As a result of this situation, it is recommended that the Lakeview District consider hiring additional personnel to assist the Cultural Resource Specialist in the performance of this work. Probably the most desirable option would be to hire an additional full-time employee for this purpose, and in this respect it is worth noting that since the present Cultural Resource Specialist has a background primarily in archaeology, employment of someone with a background in history would undoubtedly be advantageous. It would also be advantageous to hire personnel or to contract with local law enforcement agencies for the purpose of maintaining surveillance over cultural resources within the district.

Another way of increasing the number of personnel involved in cultural resource management in the Lakeview District would be to develop an intern program for students from colleges and universities in Oregon. These students could obtain academic credit while receiving training in cultural resource management through working with the district's Cultural Resource Specialist. The Oregon State Historic Preservation Office has conducted a successful student intern program of this sort for the last several years.

1D. Reports of large-scale cultural resource survey projects, and also the results of any archaeological salvage fieldwork, undertaken within the Lakeview District should be distributed in a technical publication.

South-central Oregon contains cultural resources—especially archaeological sites—which are of more than just local importance. They have produced information on past lifeways which is relevant to the studies of archaeologists, ethnographers, and historians (among others) located all over North America. The results of fieldwork involving cultural resources in this area should be made available to any interested members of the academic community. Probably the most efficient means of accomplishing this objective is to establish a technical series for distributing these reports. The Nevada Bureau of Land Management has recently initiated a series called "Contributions to the Study of Cultural Resources" which could be emulated as a model for the efficient, low-cost reproduction of cultural resource reports.

Because most reports will contain specific data on the location of cultural resources, popular circulation of this site-specific information would unnecessarily expose them to vandalism. Some other means of conveying important new information on cultural resources to the general public should be used (see Recommendation 5).
Recommendation 2: Assessment of the significance of cultural resources on the lands within the Lakeview District should continue to follow the standardized policy which has been established within the Bureau of Land Management for that purpose.

The significance of cultural resources must be assessed properly so that management decisions for the protection and enhancement of such resources, as required by federal law, may be made accordingly. The management procedures for various sites will of course vary with the significance of each site. Therefore, it is extremely important to establish and follow standardized criteria and procedures for determining the significance of cultural resources.

The significance of cultural resources may be evaluated from two perspectives--"scientific" and "community" importance. The scientific significance of cultural resources concerns the amount and kind of scientific information that they may contain. Community significance, on the other hand, relates to the status of a specific resource in terms of its meaning to the community in which it exists. A cultural resource may have both significant scientific and community values, or it may have little scientific importance while at the same time be of considerable community significance--for example, if it is related to an important person or local event (King and Hickman 1973:15).

Guidelines for assessing both community and scientific importance of cultural resources are presently in existence within the BLM administrative framework. The community importance of cultural resources is rated by the Bureau of Land Management partly in terms of sightseeing potential. The description and assignment of the significance of sites on this basis may be found in the recreation information section (RIS) of URA-3. Evaluation of sites according to this system is useful and should be continued, but additional perspectives on significance must also be assessed in evaluating cultural resources.

Procedures for evaluating cultural resources in terms of the actual or potential way in which individual cultural resource sites or properties may be used have been recently set forth in the Cultural Resource Evaluation Guidelines proposed for incorporation into BLM Manual Section 811 regarding cultural resource inventory and evaluation. The proposed guidelines view the evaluation of cultural resources in the following terms:

(1) sociocultural use, both in regard to present-day Native Americans and non-Indian community significance;

(2) current scientific or research use;

(3) the identification of various impacts on cultural resources and the effectiveness of specific protection measures in maintaining the integrity of cultural resources;
(4) the need for preserving specific resources as determined by future research and management needs (see Aikens 1976);

(5) the potential of each cultural resource for scientific or research use; and

(6) the extent to which specific cultural resources fulfill current data needs.

Although the proposed guidelines set management needs apart from "sociocultural and scientific values" (IIIF), in our opinion the two can only be viewed as mutually reinforcing, as the pursuit of one necessarily contributes to a better understanding of the other.

It must be stressed here that cultural resource evaluations can only be most accurately made by a cultural resources professional who has had extensive training and experience in assessing historical and archaeological sites. Inaccurate or misguided evaluations will only impede the implementation of proper management measures for cultural resources, and can only result in problems (e.g., project delays, potential lawsuits) for the BLM if cultural resources are improperly managed. Consequently, it is in the best interest of the Bureau to insure that cultural resources will be assessed only by a qualified professional.

Recommendation 3: Studies of the various kinds of impacts affecting archaeological and historical sites should be made in order to obtain information to be considered in decisions regarding the short-term management of cultural resources.

In order to make proper management decisions regarding cultural resources, the Bureau of Land Management must be aware of the following:

(1) various activities or forces which may alter the integrity of a site;

(2) the effects of such impacts; and

(3) measures which may effectively mitigate the various impacts.

Until recently, little attention has been focused on the assessment of impacts affecting the cultural resource database. To date, no such experimental research has been undertaken by the BLM in Oregon. The resource management studies by Chance (1968) and Aikens (1976), based on cursory field observations, indicate the kinds of impacts which may be expected within the Lakeview District, and the measures which may be taken to protect cultural resources from these impacts.
The major classes of potential impacts indicated by them, with one additional, are discussed briefly below.

The first type of impact is the result of natural processes, such as wind and water erosion. Due to the open and exposed nature of cultural resource sites in eastern Oregon, many have been affected in this way.

The second kind of impact includes the effects of all projects which alter the surface of the land to any extent. Ground-disturbing projects which may destroy cultural resources are of several types: pipeline and powerline construction, recreational developments, chaining, fence construction, road construction, plowing, spring developments, and reservoir construction. Since much archaeological information can be gathered from the patterning of cultural debris on the surface as well as within the ground, disturbance of even the surface of a site results in a loss of information. This is especially the case with the many surface sites found in eastern Oregon.

The third type of impact is created by the activity of private individuals on Bureau-managed lands. Vandalism of sites by individuals who surface collect and excavate for artifacts in violation of the Federal Antiquities Act of 1906 presents the greatest danger to cultural resource sites in the Lakeview District. Unfortunately, these individuals may include some BLM personnel as well as members of the general public. The Bureau is thus faced with a dual problem of convincing its own employees, as well as the public it is intended to serve, to cease their destructive activities.

A fourth type of impact on cultural resources, one which plays a very minor role in terms of affecting the total cultural resource inventory of the Lakeview District, is the research activity of professional archaeologists. Such activities do not affect cultural resources in the same way that land disturbance, erosion, and relic collecting do; rather, controlled surface collections and excavations by professional archaeologists are simply a means of converting the information on previous cultures contained in a site into a more useable, more enduring, form. The eventual acquisition of the maximum amount of information from archaeological sites is the main objective of a cultural resource management program.

3A. There is no question that the cultural resources of the Lakeview District are subject to the various kinds of impacts mentioned above. As part of its regular cultural resource management program, the BLM in many cases is already attempting to mitigate the impact of the natural, and especially the project-related, impacts. It is sufficient here simply to stress that a site must not automatically be considered insignificant if a portion of it is disturbed in some way; such a decision must be left to the judgment of a
qualified archaeologist. Also, since not all sites are visible from the surface, it is recommended that a professional archaeologist be on hand during project operations if sub-surface disturbance of the area is involved. Specific mitigation procedures for project disturbance are discussed by Chance (1968), Lipe (1974), and Aikens (1976).

Short-term solutions to the vandalism of cultural resources on Bureau of Land Management lands include posting signs warning people of the illegal nature of artifact collecting on Federal lands, surveillance by knowledgeable BLM employees, backfilling and seeding sites excavated by amateurs, and prosecution of violators under the law. In the latter respect, it is noteworthy that attempts have already been made to prosecute violations of federal antiquities laws on lands within the Lakeview District (Grayson 1976). Relic collectors have been successfully prosecuted by the Medford District of the Bureau of Land Management as well.

Any negative feelings among the general public resulting from increased attempts to stop relic collecting on government land can be made up by positive public relations as proposed in Recommendation 5 below. Unless serious efforts are made to stop the destructive activities of relic collectors, a situation may develop in which Federal agencies devote great effort and expense to protect cultural resources from the effects of their own potentially destructive activities, only to lose them to looters.

3B. Since cultural resources are known to be frequently altered, and sometimes totally destroyed as a result of the impacts described above, it is strongly recommended that the Lakeview District develop a standing capability to conduct emergency operations to salvage information from archaeological and historical sites threatened with destruction. In theory, the salvage of cultural resources should be viewed as a last resort to be implemented only when all other attempts to mitigate impacts upon them have been exhausted. Realistically, however, it is simply impossible to avoid damage to cultural resources in every situation. This is especially the case in regard to the looting of archaeological sites by members of the general public.

As a result of this situation, it is strongly recommended that the Lakeview District create a reserve fund on a year-by-year basis which can be used in support of salvage operations. This fund would be used to contract with universities or professional research firms to conduct fieldwork at threatened sites on an emergency short-term basis. The salvage of threatened sites cannot wait several months or even years for funds to be allocated for this purpose through normal government procedures. The need for such a fund is underscored by the fact that a number of cultural resource sites where
salvage operations should be conducted are already known to exist, as indicated in the inventory volume accompanying this cultural resource overview.

Recommendation 4: The Lakeview District should draw up a specific program for the long-range management of cultural resources, of which this Class I inventory is the first step.

In addition to the short-term studies and mitigation measures mentioned in Recommendation 3, the BLM must consider preserving a part of its cultural resource data base for future use, in keeping with federal mandates to protect and enhance significant cultural resources for the purpose of public benefit. Since the public will reap more benefits from future research conducted on carefully preserved sites than from the destruction of these sites, a long-range program for selected site preservation is mandatory. (Some means for furthering the public benefit of cultural resource research studies are addressed in Recommendation 5.)

4A. As noted in Recommendation 2, management and research needs are interdependent, as each enhances the other. Consequently, one of the best means for assessing site significance and the need to preserve specific cultural resources, particularly archaeological sites, is by evaluating the future scientific importance of each cultural resource.

There are two criteria which should be used in determining which cultural resources should be preserved for future study. First, an adequate representative sample of different site types must be preserved. The variety of site types as well as the number of each type recorded within the Lakeview District must be known in order to determine the abundance or uniqueness of various types of sites. The second criterion for assessing which cultural resources should be preserved for future study is the analytic potential of each individual site. Some sites contain more information than others, due to their antiquity, depth of cultural deposit, degree of preservation, richness of content, and the like. Sites with more analytic possibilities will have higher significance ratings.

4B. A formal means for "banking" significant cultural resources has been provided to state and federal agencies in the form of the National Register of Historic Places. It is recommended that all sites deemed worthy of preservation according to the above two criteria of representativeness and analytic potential be nominated to the National Register.

Given the overall significance of the cultural resources—especially the archaeological sites—in the Lakeview District, the BLM should place a much greater emphasis on nominating sites to the Register than has been displayed in the past. It is suggested that
within the next decade, a very large number of sites (one to two hundred) should be nominated to the Register within the Lakeview District. Student interns may prove to be the most efficient means of nominating some of the many qualified sites to the Register. Specific archaeological and historic sites in the known cultural resource inventory which should be nominated to the National Register are listed in the inventory volume accompanying this Cultural Resource Overview.

Because of the legal provisions related to the protection of sites on the Register, nomination of sites to the National Register of Historic Places is one of the best means of assuring worthy sites top management priority for protection and enhancement. Nomination to the Register is also a way of making available additional funds for future research purposes. Guidelines for identifying appropriate sites can be found in a memorandum distributed by the Keeper of the National Register.

Recommendation 5: In an effort to communicate the importance of cultural resources, active attempts must be made to publicize both the results of BLM-sponsored CRM research and the management responsibilities of the Bureau concerning cultural resources so that such resources may be better appreciated and understood by the general public.

Although the importance of cultural resources and their management has long been recognized by archaeologists, historians, legislators in Washington, D.C., and a few other interested parties, very little has been done to demonstrate the import and relevance of cultural resources to everyday people. It is strongly recommended that the following steps be taken by the BLM to share with the public some of the more significant resources which are located within the study area. It is only by actively encouraging an appreciation and understanding of the use and long-term significance of cultural sites and materials that the Bureau will gain public cooperation in the management and protection of cultural resources.

5A. Special attention should be given to those members of the public residing within the Lakeview District. It is apparently commonly felt in the area that cultural resource specialists, particularly archaeologists, reap the research benefits of the region's resources, offering little in return. In order to rectify this situation and to help make people aware that cultural resources in their immediate vicinity are important and are worth protection or mitigation, the following courses of action should be considered:

(1) archaeological and/or historical interpretative displays. Such displays would ideally concern cultural resources in the immediate area of the communities in which they were placed and could be developed for placement in local community centers, town or city halls, schools, and museums.
(2) publications on archaeological and/or historical resources in the region which would be of interest to the public. These publications could take the form of pamphlets or books and could cover a wide range of information stressing the significance of the resources and the BLM's responsibility in protecting and managing these resources. The publication of this overview in some form for widespread distribution is one such possibility. Contracting firms, whether university or private, could be required to produce a short report or essay suitable for the public. The Lakeview District could then issue periodical collections of these essays to be made available for sale at local outlets, including museums and city halls, as well as at the BLM offices.

5B. Members of the public who do not reside within the study area but who may travel and spend time within the district should also be a concern of the BLM as they have an impact upon cultural resources in the region. The means are the same as those mentioned in 5A above. The only difference to be noted is that displays, pamphlets, and publications should be placed in areas frequented by travelers such as information centers, city halls, and museums.

In order to reach people state-wide, the Bureau should consider a BLM-sponsored pamphlet illustrating "Archaeology in Oregon" and "Historical Places (or Sites) in Oregon" for distribution throughout the state. An excellent example of such a pamphlet has been put out on the archaeology of Washington State by the Office of Archaeology and Historic Preservation in Olympia, Washington. It is also suggested that museums and other BLM offices outside the Lakeview District be utilized for the further distribution of suggested publications. Publications and displays might stress the illegal nature of collecting cultural resources and punitive measures which may follow, in conjunction with discussing cultural resource importance and BLM management responsibilities.

5C. BLM employees who are not directly concerned with cultural resource management should also be better informed with regard to the import of cultural resources, related legislation and BLM responsibilities in managing cultural resources. Well-informed BLM employees may then aid in the protection rather than the destruction of cultural resources by reporting and not collecting any historic or aboriginal cultural items, such as arrow points and old bottles, encountered in the performance of duties not related to cultural resources. No doubt the BLM wishes to avoid the embarrassing position of having some of its personnel violating legislative mandates which other BLM personnel are seeking to enforce. Displays in BLM offices may serve to educate the public as well as BLM employees. Publication and distribution of pamphlets and larger volumes such as this overview are urged as another way of reaching BLM employees as well as the public.
It is further suggested that the Bureau implement an internship program through one or more state universities (as mentioned above in TC.) to be concerned in part with the public relations aspects of the BLM, including setting up and updating displays, speaking and giving demonstrations at local schools, and researching and writing pamphlets and other publications.

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In conclusion, the present cultural resource overview is but one step toward more effective management of the cultural resources within the Lakeview District. Other steps, as outlined above, remain to be further implemented if the Bureau of Land Management is to completely fulfill federal requirements regarding cultural resources. This cultural resource overview should provide a baseline from which the resource management program previously outlined may take shape. The close cooperation between BLM personnel at all administrative levels and the professional archaeological and historical community will ensure the success of an effective management program for the Lakeview District.
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