

ARCHAEOLOGICAL INVESTIGATIONS OF THE SALT CAVE

LOCALITY: SUBSISTENCE UNIFORMITY AND

CULTURAL DIVERSITY ALONG THE

KLAMATH RIVER, OREGON

VOLUME I

by

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A DISSERTATION

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Title: Archaeological Investigations of the Salt Cave Locality:

Subsistence Uniformity and Cultural Diversity Along the Klamath
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Archaeological data gathered under the directorship of L.S. Gressman between 1961 and 1963 at the Salt Cave Locality along the Klamath River, Oregon, was analyzed in order to understand the nature and relationships of aboriginal cultures occupying the Salt Cave Locality at various times between 5000 B.C. and A.D. 1700. Particular attention was directed to the problems of settlement pattern, subsistence activities, technology, and cultural influences on the area from three major regions: the Northern Great Basin, the Northwest California-Southwest Oregon Coast and Northcentral California-Southcentral Oregon west of the Cascades.

The material from the archaeological sites in the Salt Cave Locality was abundant. There are large collections of stone and bone artifacts as well as pottery. Faunal remains were well preserved in all sites. The various artifact categories, which are functional (i.e. projectile points, cores, etc.), were divided into either types or form

classes. After the artifacts were classified, an analysis of the frequency of various form classes or types in each site and in each component or cultural unit (i.e. house or stratum) was performed. Patterns of frequency distributions were determined by inspection, then tested by calculations of chi square or standard deviation in order to assess their level of significance. The types and form classes were compared to those from archaeological sites located in the surrounding regions. Ethnographic, protohistoric, and linguistic data on tribes within these same regions are also referred to, primarily the ethnographic data for the Klamath, Modoc, Shasta, Takelma, and Achomawi.

The data recovered and analyzed from the Salt Cave Locality reveal aboriginal use of the area from 5000 B.C. to A.D. 1700 and provide the bases for several hypotheses herein proposed for future testing. The basic hypothesis proposes a cultural (i.e. tribal) boundary separating the sites downriver from Salt Cave from those upriver of the cave which appears to correspond to the boundary between the Klamath-Modoc and Shasta-Takelma. This boundary is not only evident in Late Prehistoric times but may well have antecedents dating back to approximately 3000 B.C. A second hypothesis, related to the first, proposes that the aboriginal culture of the area was heavily influenced by the cultures of the Northern Great Basin, Northwest California-Southwest Oregon Coast, and Northcentral California-Southcentral Oregon west of the Cascades. A third hypothesis proposes that the aboriginals of the Salt Cave Locality were generalized hunters and gatherers throughout the period of record, who took advantage of many microenvironments within the area. The evidence suggests that around A.D. 1200 semi-permanent villages were established, but generalized hunting and gathering economy persisted. A

fourth hypothesis proposes that the presence of pottery in the downriver site indicates Takelma occupation of the area in Late Prehistoric times. This pottery has also been found in the Upper Rogue River drainage and is analyzed here and named Siskiyou Utility Ware.

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CHAPTER I

INTRODUCTION

Data recovered through archaeological investigations within the Salt Cave Locality of the Klamath River, southwestern Oregon, reveal aboriginal use of the area from 5000 B.C. to A.D. 1700 and provide the bases for several hypotheses herein proposed for future testing. The basic hypothesis proposes that the aboriginal culture of the area was heavily influenced by the cultures of the Northern Great Basin, Northwest California-southwest Oregon Coast and North-central California South-central Oregon west of the Cascades. A second hypothesis, related to the first, proposes a cultural (i.e., tribal boundary) separating the sites downriver from Salt Cave from those upriver of the cave which appears to correspond to the ethnographic boundary between the Klamath-Modoc and Shasta-Takelma. This boundary is not only evident in Late Prehistoric times but may well have antecedents dating back to approximately 3000 B.C. A third hypothesis proposes that the aboriginals of the Salt Cave Locality were generalized hunters and gatherers throughout the period of record, who took advantage of many microenvironments within the area. The evidence suggests that around

A.D. 1200 semi-permanent villages were established, but generalized hunting and gathering economy persisted. A fourth hypothesis proposes that the presence of pottery in the site farthest downriver indicates Takelma occupation of the area in Late Prehistoric times. This pottery also found in the Upper Rogue River drainage, is here formally described and named Siskiyou Utility Ware.

The Salt Cave Locality includes the area within a radius of 8 kilometers of Salt Cave (Map 1), which is approximately 24 kilometers downriver from the western edge of the Klamath Basin. Geographically and geologically this stretch of the Klamath River on the western edge of the Cascades is known as the Klamath Gorge. The elevations of the 11 archaeological sites reported here range between 853 and 975 meters above sea level, 9 of the 11 being located on the first or second terraces of the river.

The Salt Cave Locality borders 3 major cultural areas: the Great Basin, the Northwest Coast and California. Kroeber (1939) assigned the area to his California-Northwest Transition subarea of the California Culture Area (Ibid: 55), and Willey (1966) designates the area of central Oregon just west of the Cascades as within the Northwest Coast Culture Area. The boundaries of 4 ethnographic tribal groups (Klamath, Modoc, Shasta and Takelma) overlap the Salt Cave Locality, which cannot

clearly be identified as the territory of any particular prehistoric tribe. Various authorities draw the tribal boundaries within this area differently (Gatchet 1890, Dixon 1970, Sapir 1907, Spier 1930, Berreman 1937 and Holt 1947) Map 2. From historical and ethnographic evidence it seems that the Salt Cave Locality had no occupied villages by the 1800's and was, therefore, within the peripheral territory of these tribal groups. The archaeological evidence indicates the possibility that the Salt Cave Locality was always on the peripheral of various groups, and within Late Prehistoric times a boundary seemed to exist within the Salt Cave Locality. This boundary divides what was probably Modoc territory upriver from Salt Cave from Takelma territory which would be downriver of Salt Cave.

Previous Archaeological Work in the Area

No previous archaeological work has been conducted within the Salt Cave Locality proper. However, within a 24 kilometer radius of Salt Cave three archaeological projects have been conducted by researchers affiliated with the University of Oregon. They include the Iron Gate Project, 1960-1961, the Big Bend Project, 1958-1962, and the Keno Development Project, 1965. These and the Salt Cave Project were all salvage operations needed because of planned construction of dams and power plants

by the California-Oregon Power Company. The Iron Gate and Big Bend Projects were under the directorship of L.S. Cressman, while the Keno Development Project was under the directorship of D.L. Cole. The Salt Cave Project was begun under L.S. Cressman but finished with D.L. Cole as principal investigator.

The Iron Gate Project included an archaeological survey of the reservoir area of Iron Gate Dam, located about 22 kilometers downstream of the Salt Cave Locality. Three archaeological sites were recorded, and Iron Gate 2 was excavated in 1960 (Leonhardy 1961). The Iron Gate Site was a village, which probably represented the late phase of development of Shasta culture. Excavation was limited to 3 house pits, each of which was circular, with multiple superposed floors, having a central firepit. Radiocarbon dates placed the occupation around A.D. 1500 (Leonhardy 1961).

The field work for the Big Bend Project was completed in 1958. It included a survey of the reservoir area of Big Bend Dam, located about 6 kilometers upstream from the Salt Cave Locality, and test excavation of 2 rockshelters and 1 open site. Most of the artifacts and faunal remains came from the rockshelter, 35 KL 13. The data indicated intermittent use by small groups of hunters and gatherers, dated by cross dating of artifact types to between A.D. 1000 and A.D. 1800. Three pot sherds were

found in the upper half of the cave fill associated with Gunther Barbed and Desert Side-Notched points. Based upon the pottery and projectile point types, Newman and Cressman (1959) suggested the site had been used by people resembling the Klamath, with cultural influences from the west and south. As evidence presented in this paper will show, it is more likely that this site was used by at least 2 different cultural groups representing the Klamath or Modoc and Takelma or Shasta.

The Keno Development Project was a salvage excavation conducted during one week in 1965. Though 3 archaeological sites were discovered in the survey of the area, only one house pit village, 35 KL 28, was tested. The report has not yet appeared in final form (Cole n.d.).

Other archaeological investigations within a radius of 24 kilometers from the Salt Cave Locality include a powerline survey just north of the Locality (Follansbee 1975), and a survey and excavations downriver from the Locality. The Foster Site, Sis-262, was excavated in 1955 by A.B. Elsasser and J.A. Bennyhoff, but no published report has yet appeared. About 2 kilometers upstream from Bogus School on Bogus Creek, it consisted of what appeared to be the interment of a migrant trader and his wagon. The excavators recovered 3 human burials, 2 horse burials and a dog burial, as well as a wagon and a great many trade goods such as glass beads and buttons, metal

buttons, bracelets, thimbles, twinned basketry and pieces of metal and porcelain. The artifacts also included a few flaked stone projectile points, scrapers, used flakes and obsidian bangles or tinklers. The bulk of the material is stored at the Lowie Museum of Anthropology, University of California, Berkeley, the remainder at the Siskiyou County Museum in Yreka. From the surface of Sis-16, on a terrace of the Klamath River just downstream from Beswick, California, were collected projectile points, flakes, a hopper mortar fragment and a basalt core. From Site Sis-17, just south of Copco Lake at the confluence of Indian and Deer Creeks, were collected a basalt chopper, projectile point tip fragments and several flakes. These materials too are now stored at the Lowie Museum of Anthropology.

History of the Archaeological Investigation of the Salt Cave Locality

The Salt Cave Project was begun in March 1961 with an archaeological survey of the dam and pool area of a proposed reservoir to be constructed by the California-Oregon Power Company. Seven sites were located at that time, and a continuation of the survey during June located five others. Two of the sites were subsequently recognized as a single site, giving a final total of 11 sites, numbered 35 KL 16 through 35 KL 26. (In the original field

records these sites were numbered S.C. 1 through S.C. 12.) Three seasons of excavation were carried out by crews from the University of Oregon during the summers of 1961, 1962, and 1963. The work of each season was summarized in interim and preliminary reports (Cressman and Wells 1961, Cressman and Olien 1962 and Anderson and Cole 1963). The present paper constitutes the final report on the project as a whole.

During the seven week field season of 1961 three sites, 35 KL 20, 22 and 24 were test excavated, and 35 KL 18, known as Big Boulder Village, and 21, known as the Klamath Shoal Midden, were mapped and extensively excavated. Surface collections were also made at 35 KL 16, 18, 19, 20, 22, 23 and 25. A single test pit was excavated into Housepit 5 at 35 KL 22, Housepit 11 at 35 KL 20 was trenched, and two small test pits were excavated at 35 KL 24, Salt Cave. This first season of work was under the field supervision of John Wells.

The eight weeks of fieldwork during the 1962 field season were also supervised by John Wells, while Michael Olein supervised the laboratory work and wrote the interim report. Most of the work during this season involved further excavation of Big Boulder Village and the Klamath Shoal Midden, but 2 more test pits were excavated at Salt Cave, and further surface collections were made at 35 KL 19, 25 and 26. The total amount of fill excavated after 2

seasons of fieldwork at Klamath Shoal Midden was 73.1 cubic meters, and at Big Boulder Village 61.5 cubic meters.

In the summer of 1963 the focus of work shifted to the area downriver of Salt Cave. Adrian Anderson was the field director and was responsible for most of the laboratory work. All the excavation of this season was done at 35 KL 16, known as Border Village, and a small surface collection was made at 35 KL 26. In the 8 weeks of excavation at Border Village, Housepit 1 was completely excavated and two others, Housepit 2 and Housepit 16, were cross-trenched. The total fill excavated was approximately 100 cubic meters.

Field methods varied somewhat from site to site and from season to season, but there were several common basic steps. Each tested or excavated site was mapped with a transit and photographed with black and white and color slide film before excavation began. A grid system of 2 meter squares was superimposed on the sites to maintain horizontal control, and vertical measurements were made by a transit. Measurements were recorded to the nearest centimeter. The most common unit of excavation was a 2 meter square, 20-25 cm deep; however, there was considerable variation in the size of the excavation units. At Big Boulder Village, Housepit 3 was excavated using a combination of arbitrary levels and natural stratigraphy. First a 10 cm level was removed, then the next level included all

the "housepit fill"; the third level was the "floor fill." At Housepit 11, excavation was begun with a 10 cm level and then switched to a 20 cm level, ignoring stratigraphic divisions between house fill and floor fill. In Housepit 13 the same vertical system was used. The test pit excavation used the same method. In 1962 the Klamath Shoal Midden test pits were excavated with the vertical system of 25 cm levels used the previous season. The major excavation unit was done in 50 cm levels or by major strata or layers of strata. During the last season, at Border Village, houses were test trenched using 1 by 2 meter units, and the remainder of the house was dug in 2 by 2 meter squares. The vertical excavation unit varied from 10 cm to 20 cm, but stratigraphic breaks were noted. An attempt was made to excavate by floors in Housepit 1 after the first three weeks of the season. The same was done in Housepit 2 to a limited extent. In all 3 seasons, excavated cultural features were recorded on special "feature forms" and were photographed in either black and white or color. There are some features however that were not completely recorded. Each excavator was responsible for keeping a notebook record of daily finds, matrix changes and other pertinent data, but this was done with varying degrees of conscientiousness, often rather poorly. All of the artifactual material had been cleaned and labeled in the laboratory after the first 2 seasons, but only about two-thirds of

times. Several ethnographic studies of the Klamath-Modoc describe their cultural inventory as a mixture of Plateau, Basin, and Californian traits. In addition, trait comparisons have linked the Klamath and the Modoc more closely to the Shasta than any other group (Voegelin 1942 and Reetz 1949). It is clear that any attempt to designate sites on the upper Klamath River as belonging to Klamath, Modoc, Shasta or some other group must take into account the ethnographic work which indicates a blending of traits among these tribes. An interesting point is that according to Spier (1930) a joint fishing camp on the Klamath River was used by the Klamath and Shasta simultaneously. The location of the site, though not precisely placed on a map, is clearly within the Salt Cave Locality.

A related ethnographic problem concerns the Takelma, whose major settlements were in the Rogue River Valley. Details of their ethnography are almost unknown. Sapir (1907) recorded the language of the Lowland Takelma and gathered in the process some general cultural data. There is a short vocabulary list for the Upland Takelma but almost no cultural data (Drucker 1937). The boundaries, as known, for Upland Takelma indicate that the Salt Cave Locality may have been within their territory. Therefore, archaeological evidence from the sites in this locality may shed some light on the culture of this little-known tribe.

The author assumes that the archaeological data from the Salt Cave Locality may represent the cultural activities of any one or a combination of five "tribal" groups (Achomawi, Klamath, Modoc, Shasta and Takelma) in Late Prehistoric times. It is also assumed that throughout the approximately 7000 years of use the Salt Cave Locality may have been influenced directly and indirectly from at least 3 major cultural areas: the Great Basin, North-central California-South-central Oregon west of the Cascades, and Northwest California-Southwest Oregon Coast.

Procedures

The various functional artifact categories (i.e., projectile points, cores, etc.), were divided into either types or form classes. It is assumed that types have a time-space identity, which may be useful for ethnic identification. Form classes may or may not have a temporal or cultural reality, but it is here assumed that their form reflects possible associations to a particular time or space which present data are not complete enough to confirm or deny.

Classification of almost all categories of artifacts facilitated comparisons between the Salt Cave Locality sites as well as comparisons to other archaeological and ethnographic data. Many of the types and form classes used were basically developed by other researchers in surrounding

areas. It was felt that the general region was amply supplied with rational classification systems, and rather than add additional classification systems to an area already overburdened with them, the author attempted to use ones already published.

Classification systems used had to meet one of three criteria. The system either had to have been used extensively with a great deal of archaeological data, including radiocarbon dates, to prove its usefulness in separating either temporal or spatial units, such as the projectile point typology used in the western Great Basin (Hester 1973), or it had to have been used in a research project which indicated it had strong possibilities in use for ethnic identity such as Trygg's ground stone tool typology (Trygg 1971), or it had to have been constructed using well defined and consistent criteria such as the systems used by Fagan (1974) for scrapers and cores and those used by Cole (1954) for drills and gravers. In addition, all the classification systems used had been developed on data from the tribal groups or culture areas involved in the present set of comparisons. In some cases it was necessary for the author to add types or form classes to these systems to better describe the material from the Salt Cave Locality. Occasionally, it was also necessary to define an extent type more precisely.

After the artifacts were classified, an analysis of the frequency of various form classes or types in each site and in each component or cultural unit (i.e., house or stratum) was performed. Patterns of frequency distributions were determined by inspection, then tested by calculations of chi-square or standard deviation in order to assess their level of significance. In some cases, simple presence or absence of cultural elements was deemed as interpretively important as high or low frequency.

Artifacts from the Salt Cave Locality are compared to those from archaeological sites of the Klamath Basin, the Northeast Plateau of California, North-central California, the Northwest California Coast, the Southwest Oregon Coast and the Rogue River Valley. Projectile points are additionally compared to collections from sites in the Willamette Valley, the Northern Great Basin, the Columbia River Plateau, the North-central Sierra Nevada, and the North Coast Range of California. Pottery is compared to collections from the above areas as well as the Great Basin and the northwestern intermountain region. These comparisons were made on the basis of the illustrations and plates from archaeological reports, as well as examination of some museum collections. Ethnographic, proto-historic and linguistic data on tribes within these same regions are also referred to, primarily the ethnographic data for the Klamath, Modoc, Shasta, Takelma, Achomawi,

Atsugewi, Karok, Applegate and Galice Creek Athabascans, Wiyok, Wintu, Maidu and the New River Shasta. Ethnographic analogy was used to attempt to identify the tribal identities of the inhabitants of Border Village and Big Boulder Village at A.D. 1400.

The material from the archaeological sites in the Salt Cave Locality was abundant. There are large collections of stone and bone artifacts as well as pottery. Faunal remains were well preserved in all sites and some plant remains were also recovered. This mass of data provide a substantial base from which the proposed hypothesis were formulated.

Data Organization and Presentation

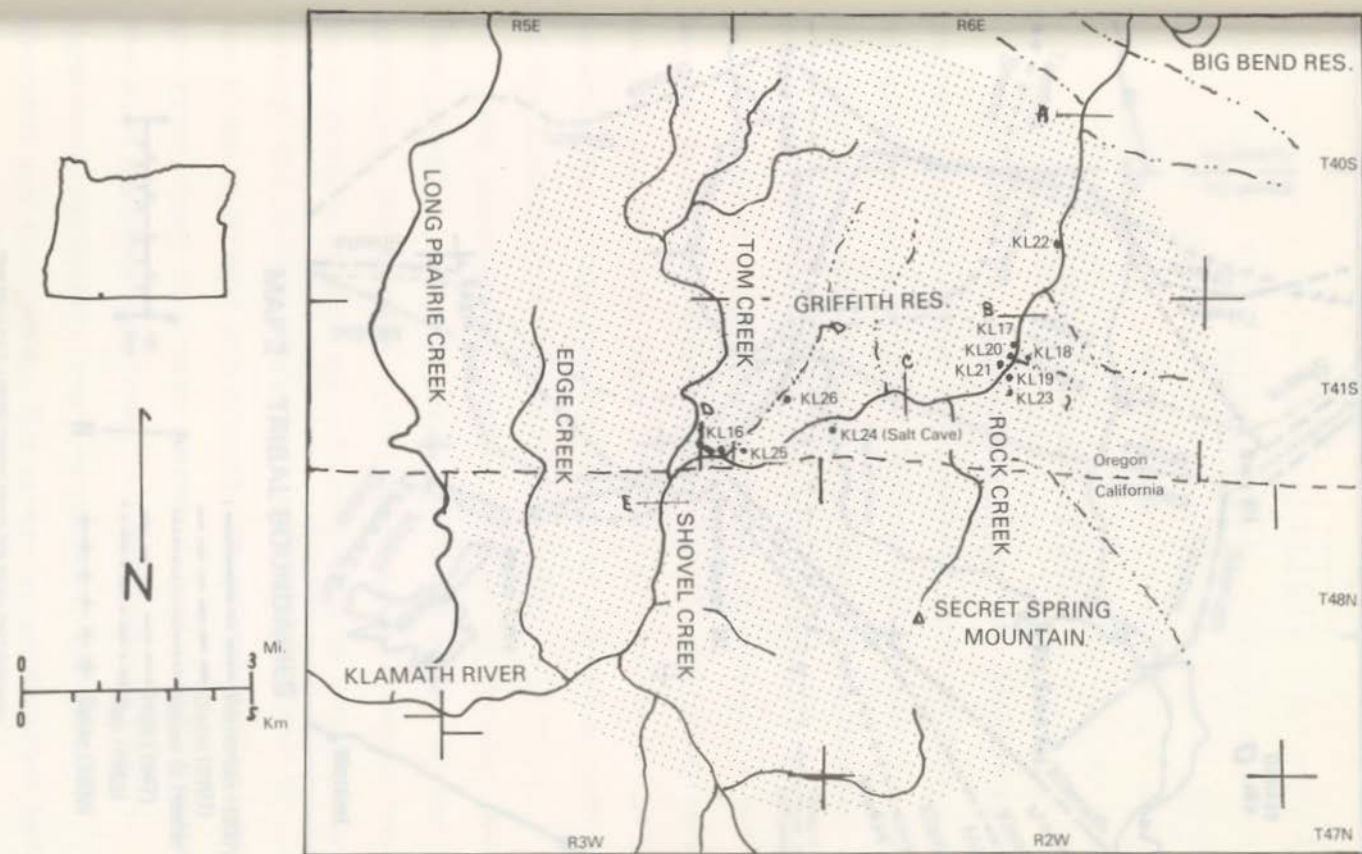
The material presented is organized in the following manner. Following this Introduction, Chapter II discusses the physical setting of the Salt Cave Locality. It includes such information on the geology, fauna, and flora of the area as is relevant to an understanding of the natural factors affecting the human inhabitants.

Chapter III includes locational information and a brief description of each site. All excavated sites are discussed in detail as to the methods of excavation and the resulting stratigraphy, as well as the cultural features located. In discussing the stratigraphy of each site, the strata are numbered in order from bottom to top,

as they were presumably deposited.

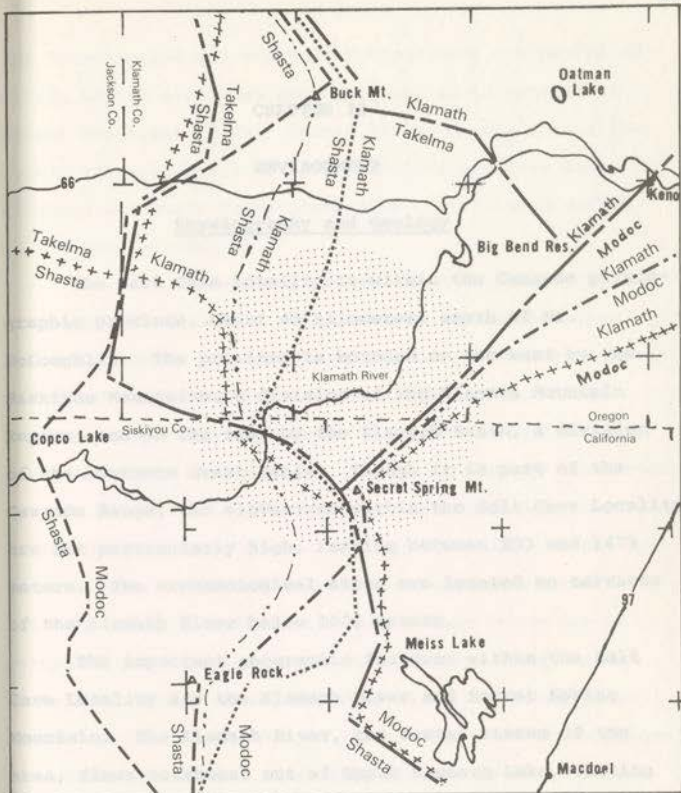
Chapters IV through VIII deal with the following artifact categories: ground stone, ceramics, bone and shell, basketry, and flaked stone. Each chapter begins with a description of the artifacts, organized by type or form class and this is followed by comparisons with archaeological sites and ethnographic data from the surrounding area.

Chapter IX is the discussion and conclusions. This chapter ties all the material data and inferences presented in the previous chapters together as well as the faunal analysis, which is presented in the Appendix. It includes a summary of all the conclusions made from the data, which lead to the formation of several hypotheses. It particularly addresses the problem of cultural uniformity versus cultural diversity within the Salt Cave Locality and possible changes through time. Because this dissertation analyzes a tremendous amount of material in detail, the reader interested primarily in the general information and the conclusions should read Chapters I, IX and the conclusions to Chapters IV through VIII.

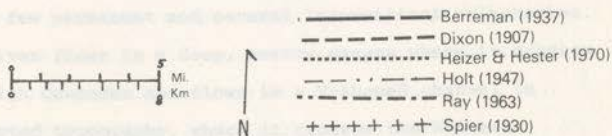


Base Map from Anderson and Cole (1963)

MAP 1 SALT CAVE LOCALITY



MAP 2 TRIBAL BOUNDARIES



(Base Map U. S. G. S. 1:250,000: Medford, Klamath Falls, Alturas, Weed Quadrangles)

CHAPTER II

ENVIRONMENT

Physiography and Geology

The Salt Cave Locality is within the Cascade physiographic province, about 48 kilometers south of Mt. McLoughlin. The province is bounded on the west by the Siskiyou Mountains, a division of the Klamath Mountain Region, and on the east by the Klamath Basin, a division of the Northern Great Basin. Though it is part of the Cascade Range, the elevations within the Salt Cave Locality are not particularly high, ranging between 853 and 1479 meters. The archaeological sites are located on terraces of the Klamath River below 1036 meters.

The important geographic features within the Salt Cave Locality are the Klamath River and Secret Spring Mountain. The Klamath River, the master stream of the area, flows southwest out of Upper Klamath Lake, cutting through the Cascade Range in the Salt Cave Locality. It has a few permanent and several intermittent tributaries. The river flows in a deep, narrow canyon where it crosses the High Cascades and flows in a V-shaped channel in dissected topography, where it crosses the Western Cascades and Siskiyou. The river was established before

the Pliocene and was maintained throughout the period of uplift of the Siskiyou and Cascades, as an antecedent stream (Williams 1949). Secret Spring Mountain is a low shield volcano, built up by a series of basaltic lavas in Pliocene and early Pleistocene time. It is much eroded at its margins (Map 1).

At the northeast edge of the Salt Cave Locality the river is incised into a steep, narrow canyon more than 244 meters deep. Southwestward the canyon widens slightly and there are narrow terraces along the river. Still farther downstream, just above the Klamath Shoal Midden Site, the walls of the canyon become less steep and farther apart. All the sites are located downstream from the steep, narrow canyon area. Figure 1 shows the change in the canyon's profile. Several unnamed intermittent streams flow into the river throughout its course, but there are no permanent tributaries in the steep canyon. Rock Creek, about 1200 meters downstream from 35 KL 23, flows from Secret Spring to the edge of the canyon. Tom Creek enters the north side of the river just 800 meters below Border Village, and Shovel Creek joins the Klamath River from the south just 800 meters further downstream. Springs are common and all the permanent and most of the intermittent streams have springs at their heads.

Within the Salt Cave Locality are the Western Cascades and the High Cascade geologic provinces. All the

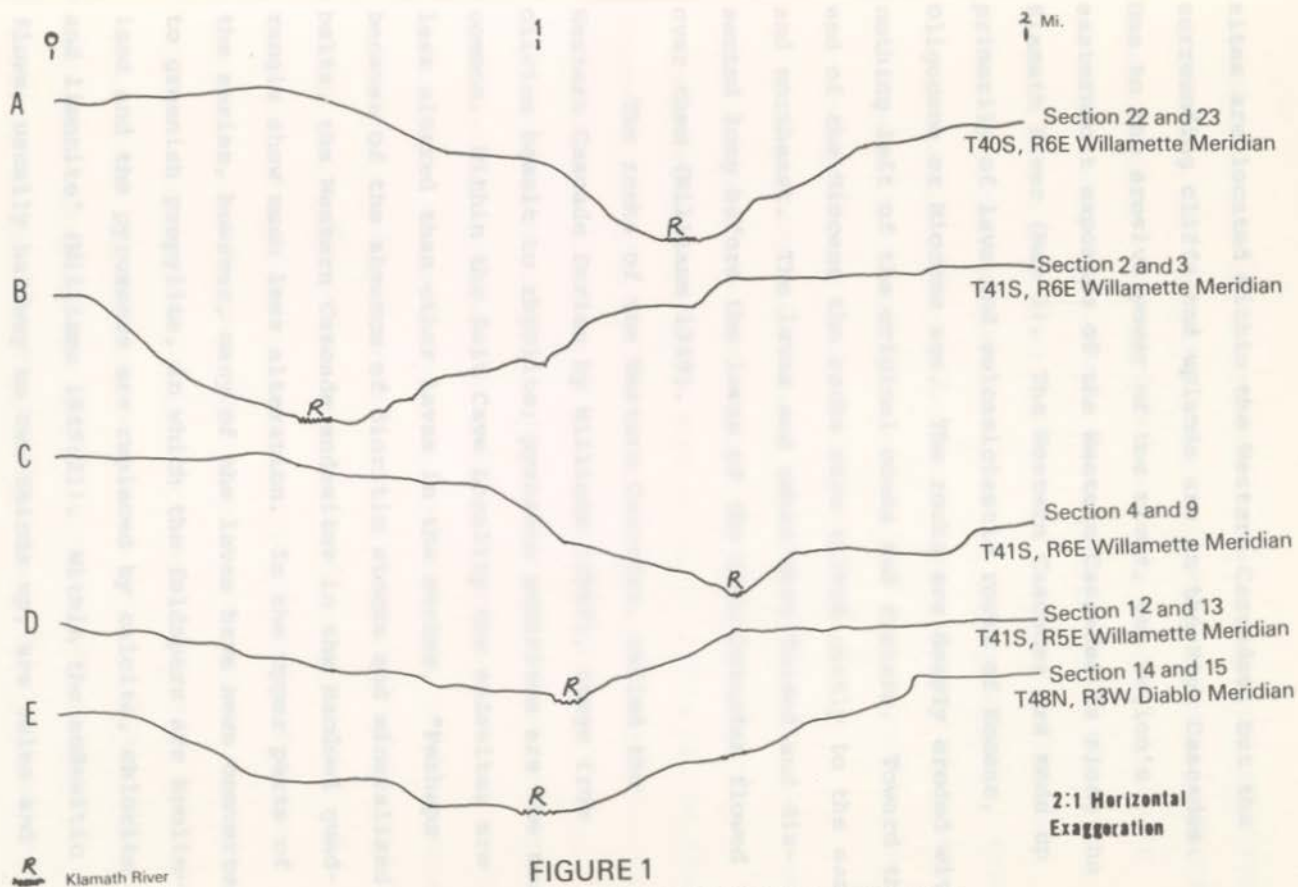


FIGURE 1
KLAMATH CANYON IN THE SALT CAVE LOCALITY

sites are located within the Western Cascades, but the surrounding cliffs and uplands are in the High Cascades. Due to the erosive power of the river, the region's easternmost exposure of the Western Cascades is along the Klamath River (Map 3). The Western Cascades are made up primarily of lava and volcanoclastic rocks of Eocene, Oligocene or Miocene age. The rocks are deeply eroded with nothing left of the original cones and craters. Toward the end of the Miocene the rocks were tilted gently to the east and northeast. The lavas and ashes were folded and dissected long before the lavas of the High Cascades flowed over them (Williams 1949).

The rocks of the Western Cascades, called the Western Cascade Series by Williams (1949), range from olivine basalt to rhyolite; pyroxene andesites are the most common. Within the Salt Cave Locality the andesites are less altered than other lavas in the series. "Perhaps because of the absence of dioritic stocks and mineralized belts, the Western Cascade andesites in the Macdoel quadrangle show much less alteration. In the upper parts of the series, however, many of the lavas have been converted to greenish propylite, in which the feldspars are kaolinized and the pyroxenes are replaced by calcite, chlorite and limonite" (Williams 1949:21). Within the andesitic flows, usually halfway to two-thirds up, are veins and nodules of opal and chalcedony. This may be the source of

the cherts which are so common in the archaeological sites of the Salt Cave Locality. Aside from the andesitic flows, there are also basaltic flows near the base of the rocks in the Klamath River area. Also just south of the Klamath River less than a kilometer downstream from the Salt Cave Locality there are beds of coarse andesitic tuff-breccias and lapilli-tuffs, which occur between the andesitic flows. There are also well-bedded lapilli-tuffs near the head of Shovel Creek (Williams 1949).

Toward the mid-Pliocene a broad north-south chain of large volcanos was formed along faults which cut the Western Cascades slightly west of north. This is the High Cascades. During the Pliocene and early Pleistocene, the volcanos were built up by flows of olivine basalt and basaltic andesite. The craters of these shield volcanos have been eroded, so only a few have patches of red scoria remaining. However, those in the Salt Cave Locality were never glaciated, so their surfaces are not greatly eroded, though the margins have been cut back by the action of streams and springs undercutting the softer underlying Western Cascade rocks. The typical lava of the shield volcano is a massive, pale gray basalt with many granules of olivine. Hypersthene is present in most flows, but in very small quantities. Augite occasionally is present as phenocrysts in a few flows. There are thin beds of reddish cinders which separate some of the flows of Secret

Spring Mountain (Williams 1949). All of these minerals are present in the clays used for ceramic artifacts found in the Salt Cave Locality.

Just north, northeast of the Salt Cave Locality, in T39S, R6E and R7E and T40S, R6E are outcrops of the Yonna Formation. The Yonna Formation is a sedimentary and volcanic-sedimentary zone between two sequences of basaltic lava flows in the High Cascades. It extends over much of the Klamath Basin in Oregon. There are two units within the formation. The upper unit is a basaltic lapilli-tuff, while the lower unit is much more varied, being made up of ashy diatomite, stratified sandstone, laminated siltstone, waterlaid volcanic ash, pumice and semi-consolidated gravel (Newcombe 1958). The volcanic sandstone used for shaft smoothers at Border Village and Big Boulder Village may be from these deposits.

West of the Salt Cave Locality the Klamath River flows through the Western Cascades. West of those rocks is found the Umpqua Formation. The Umpqua Formation is a sedimentary series with beds of tuffaceous material created by the volcanic activity to the east during the Eocene. Immediately adjacent on the west are narrow outcrops of the Hornbrook Formation. This is a sedimentary series of sandstone and conglomerate from the Cretaceous. Outcrops of these two formations separate the granitic and granodioritic rocks of the Siskiyou Batholith from the

Cascades (Map 4). Older pre-Cretaceous rocks include gabbros, cherts, quartzites and serpentinites. Emplacement of the batholith metamorphized the pre-Cretaceous sediments, creating meta-volcanic and meta-sedimentary rocks (Powers 1926). The various groundstone tools found in the Salt Cave Locality, particularly pestles, may have been made from rocks of the Siskiyou.

Climate

The average temperatures for the Salt Cave Locality are not severe, but the elevation makes January temperatures quite cold. The average minimum January temperature is between 20° and 24° F., and the average maximum January temperature is between 36° and 40° F. The July temperatures have a much greater range, with the average minimum between 44° and 48° F. and the average maximum between 84° and 88° F. (Loy 1976).

Life Zones

The Salt Cave Locality offers a great variety of both plant and animal life. This is best illustrated by discussing the life zones within and immediately adjacent to the Locality. The land along the Klamath River in southern Oregon is one of the few locales where the California Division of the Upper Sonoran Zone occurs in Oregon.

The other locales are along the Umpqua and Rogue Rivers. In the Klamath River Valley the zone is present on warm exposures at from 610 to 914 meters elevation. Such terrain is all downstream from the Klamath Canyon (Bailey 1936). Because the Klamath River Canyon and Valley are such a narrow area, there is a mixture of the plant and animal species of the Upper Sonoran and the Transition Zone in the Salt Cave Locality.

The Semiarid Division of the Transition Zone is present in the Salt Cave Locality. Again slope exposure is a factor in its location. On cool slopes in the Klamath River Canyon it is found down to 914 meters; on warm exposures its base may be as high as 1219 meters and its upper limit extends up to 1479 meters throughout the area. The major difference between the Semiarid Transition Zone and the Upper Sonoran in this locality is a slightly higher humidity in the Transition Zone, which allows different plants and animals to occupy the area (Bailey 1936). This situation gave the human inhabitants of the river terraces easy access to plant and animal resources from both zones, whether their villages were physically within the Upper Sonoran or Transition Zone.

The Canadian Life Zone, though present within the Salt Cave Locality, is found near the tops of surrounding hills less than 8 kilometers from the archaeological sites. The Canadian Zone in the southern Cascades is usually found

between 1479 and 2134 meters (Bailey 1936). The relative proximity of terrain at that elevation allowed inhabitants of the Salt Cave Locality relatively easy access to yet another resource zone.

The life zones each include microenvironmental subdivisions, but with one exception, the area has not been studied sufficiently to determine their character in detail. The exception is the microenvironment in which most of the archaeological sites are located, the alluvial terraces adjacent to the river. This microenvironment, whether it is physically in the Upper Sonoran or the Transition Zone, is characterized by open space. The river edge is bordered with a few willows and the terraces themselves are covered with grasses and herbaceous plants. There are usually a few scattered oaks as well. All 3 excavated sites occur in this kind of environment. There were a few sites however that were found in different microenvironments. Site 35 KL 20 is on a forested terrace, but it is not known whether the terrace was forested when the house pits were occupied. Sites 35 KL 25 and 26 are not on river terraces, but are located along a stream on old erosional surfaces of Western Cascade lava flows, which may or may not be old river terraces.

Flora

There is a great variety of plant species within the

Salt Cave Locality due to the interfingering of two major life zones there and the somewhat specialized microenvironment of the river's edge. Appendix A lists the species present in the zones, as determined by Bailey (1936). Each life zone has certain dominant species, which give it its main character. In the California Division of the Upper Sonoran Zone these include: deer brush (Ceanothus cunestus), white-leaf manzanita (Arctostaphylos viscida), bitterbush (Purshia tridentata), mountain mahogany (Cercocarpus betulaeifolius), Sierra plum (Prunus subcordata), silktassel bush (Garrya fremontii), skunk bush (Rhus trilobata), serviceberry (Amelanchier florida), rabbitbrush (Chrysothamnus nauseosus) and a great number of herbaceous plants and grasses. The general character of this life zone is treeless, with areas of brush and open grassland.

Very little of the brush flora of the Upper Sonoran Zone could have been economically important to inhabitants of this area. The berries of manzanita, skunk bush, Sierra plum and serviceberry are recorded as having been used ethnographically in northern California, but they were not of major importance. The wood of mountain mahogany, which is very hard, was probably preferred material for digging sticks and wedges, as it was ethnographically in northern California. This environment would be rated as good hunting land by Baumhoff (1963).

The dominant species of the Semiarid Transition Zone is Ponderosa pine (Pinus ponderosa). Other dominant trees are western tamarack (Larix occidentalis), western birth (Betula occidentalis) and willow (Salix sps.). The important shrubs are bitter brush (Purshia tridentata), squawcarpet (Ceanothus prostratus), buckbrush (Ceanothus velutinus), snowberry (Symphoricarpos acutus), bearberry (Arctostaphylos Uva-ursi) and creeping hollygrape (Berberis ripens). The pine is the most potentially important economic plant species in this zone. It could provide wood and bark for houses and dugout canoes, roots for basketry, and nuts for food and decoration. The willows, which are found along the river and streams, also could provide materials for house building and basketry. At the lower elevations of the Transition Zone in areas of warm exposure three species of oaks are found: Quercus chrysolepis, Q. garryana and Q. kelloggii. These are all important acorn producing species. The Shasta as well as most northern Californian tribes preferred the acorns of the tanbark oak (Lithocarpis densiflora), but this species is rare within the Semiarid Transition Zone, and acorns from the black (Q. kelloggii) and white (Q. garryana) oak were most commonly used. The maul oak (Q. chrysolepis) was only used when the other species did not produce (Baumhoff 1963).

The Canadian Zone is dominated by evergreen trees. The major species include the lodgepole pine (Pinus murrayana), western white pine (Pinus monticola), Englemann spruce (Picea engelmanni), various firs (Abies amabilis, A. grandis, A. magnifica, A. nobilis and A. shastensis), Alaska cedar (Chamaecyparis nootkatensis), aspen (Populus tremuloides), mountain maple (Acer douglasii) and mountain ash (Pyrus sitchensis). There are a few dominant bushes: high-bush cranberry (Vaccinium sps.), buffalo berry (Shepherdia canadensis), huckleberry (Vaccinium erythro-coccum) and Pachistima myrsinites. These berries could have been an important resource for people living in the Salt Cave Locality. The dominant grass is beargrass (Xerophyllum tenax). This was very important to various groups, for it was the preferred grass for making baskets. Other plants in this zone are of minor importance.

The macro-floral remains from the Salt Cave Locality sites were not abundant, except for burned and charred house beams and posts, which were found in most house pits. The only other remains were a few seeds. There were 42 Prunus emarginata seeds in the fill of House Pit 13 at Big Boulder Village. They had been gnawed by rodents, and probably were from rodent burrows. There was also a seed from a small fruit in the top stratum of House Pit 1 at Border Village.

Only the burned house beams and posts can be definitely attributed to human activity. In a past report the beams and posts have been identified as pine and cedar. Since cedar is not present in this area, the authors were probably referring to Incense Cedar (Libocedrus decurrens) (Cressman and Olien 1962).

Fauna

Animals often move seasonally from zone to zone but amphibians, reptiles and the smaller mammals usually stay within a limited area. Those species most closely linked to the California Valley Division of the Upper Sonoran Zone include the California jackrabbit (Lepus californicus), dusky-footed woodrat (Neotoma fuscipes), gray fox (Urocyon cinereoargenteus), ringtail (Bassariscus astutus) and white-toothed pocket gopher (Thomomys bottae).

Mammals most characteristic of the Semiarid Transition Zone include Mule deer (Odocoileus hemionus), elk (Cervus canadensis), the Oregon and golden-mantled ground squirrel (Citellus Oregonus and C. lateralis) and the brown pocket gopher (Thomomys fuscus).

Several large game animals and fur-bearing animals occupy the Canadian Zone in the summer. These include elk, mule deer, bighorn sheep (Ovis canadensis), martin (Martes americana), lynx (Lynx rufus) and red fox (Vulpes

fulves). Remains of all the mammals listed for these life zones were found in the Salt Cave Locality sites. Therefore, all were used for some purpose by the inhabitants of the area. Food is the most likely use, but they may have also been exploited for furs, sinew and bone.

Cutting across both the Upper Sonoran and Transition Zones in the Salt Cave Locality is the riparian micro-environment of the Klamath River. There are several species of fish and mammals, and one reptile which are found or were found protohistorically in and along this stretch of the Klamath River. The fish species include the economically important King salmon (Oncorhynchus tshawytscha), trout and steelhead trout (Salmo clarkii and S. gairdnerii) and the Dolly Varden (Salvelinus malma). The presence of salmon and steelhead is seasonal. There is always a Fall run of the King salmon and occasionally a spring run will reach the upper course of the Klamath (Kroeber and Barrett 1960). Steelhead, which are usually Salmo gairdnerii, run both in the Winter from December to February and in the Summer from June to November (Ibid 1960). Other fish found in the upper course of the Klamath River and adjacent permanent streams include 3 species of lamprey eel (Lampetra spp.), 2 species of chub (Gila spp.), the speckled dace (Rhinichthys osculus), 4 species of sucker (Catostomus spp. and Chasmistes brevirostris), and 3 species of sculpin (Cottus spp.). Of

these the eel, chub and sucker are known to have been taken ethnographically. The others are very small and may never have had much economic importance.

Two mammalian species lived in and around the river: the river otter (Lutra canadensis) and the fisher (Martes pennanti). The single species of reptile associated with the river is the Western pond turtle (Clemmys marmorata). All of these are known to have been hunted ethnographically by the Shasta.

Appendix B lists all the animals known to occur within or immediately adjacent to the Salt Cave Locality. It also lists those animals known to be economically important to native inhabitants ethnographically and those animals recovered as faunal remains in archaeological sites within the area. From the data there presented, it is clear that the inhabitants of the Salt Cave Locality used all 3 life zones and the riverine microenvironment in the course of their economic activities.

Conclusions

The potential resources of the Salt Cave Locality are varied. The intersection of differing life zones and the microenvironment of the river made a varied list of plant and animal species locally available. The climate, though not mild, is not severe. The geology, though somewhat restrictive to mobility, does provide abundant water,

raw material for stone tools, and a configuration which allowed an overlapping of Upper Sonoran and Transition Zone species in a limited area.

In 1963 M. Baumhoff discussed the ecological determinants of native Californian populations. In discussing inland groups he listed 3 determinants of major importance: acorn producing land, game land, and salmon streams. These were rated either as primary, secondary or tertiary in production. The rating of salmon streams was based primarily on their size and on the number of spawning runs. The primary salmon streams were the lower courses of large rivers which either had spawning runs of King, silver and steelhead trout or the Spring and Fall run of King salmon. Secondary salmon streams were the upper courses of primary streams and the entire courses of lesser streams. Tertiary salmon streams were streams draining less than 100 square miles. The Klamath River from the Shasta upstream is rated as a secondary salmon stream (Baumhoff 1963:178). The number of oak trees within an area determined its rating as acorn land. Oak woodland was the only primary acorn land. Secondary acorn lands had significant stands of oak, but they were smaller and scarcer than primary acorn lands. Tertiary acorn lands had an insignificant number of oaks. Game land was rated by assuming that different environments provided varying degrees of support for game animals. Primary game

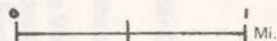
lands provided the main support for large game animals. Secondary game lands gave moderate support to game and tertiary game lands gave minimal support to game animals. The Salt Cave Locality could be described as a pine-fir forest at low or moderate elevation. Pine-fir forests at low elevations are rated as secondary acorn land and secondary game land. Therefore, using Baumhoff's scheme, the Salt Cave Locality has no primary resources. According to Baumhoff's maps the Shasta for the most part also have only secondary resources. Rostlund (1952) notes that the Shasta as a tribe give equal importance in their subsistence activities to fish, plants, particularly acorns, and game. It is logical that those people living along the Klamath River terraces in the Salt Cave Locality would also have a mixed subsistence, not unlike the Shasta.

MAP 3 GEOLOGY OF THE SALT CAVE LOCALITY

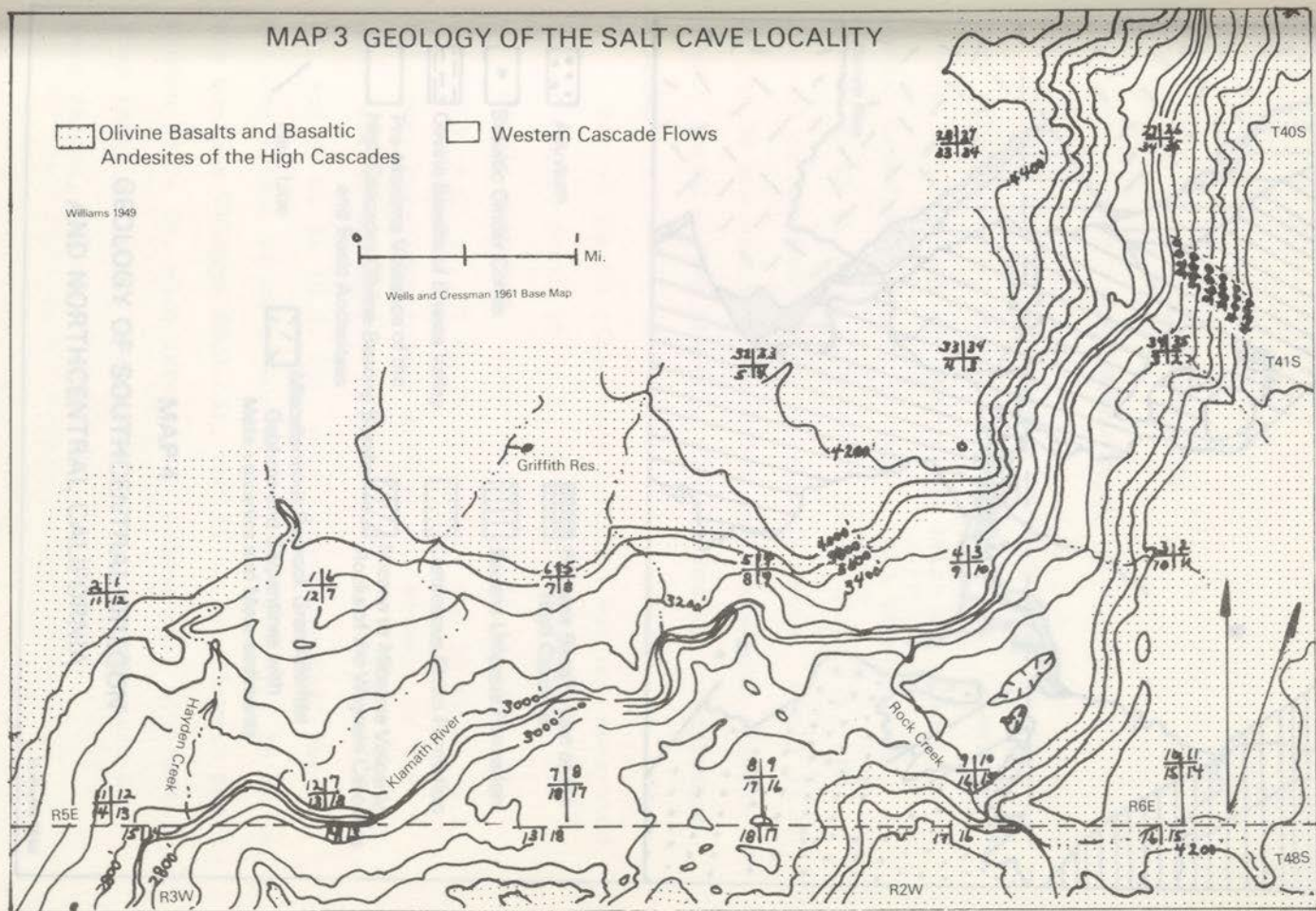
 Olivine Basalts and Basaltic Andesites of the High Cascades

 Western Cascade Flows

Williams 1949



Wells and Cressman 1961 Base Map





Alluvium



Basaltic Cinder Cones



Olivine Basalts of Shasta Valley

Pre-Mazama Volcanos of the
High Cascades Olivine-Bearing Basalts
and Basic AndesitesPliocene Basalts East of the
High Cascades

Eocene Umpqua Formation



Cretaceous Chico Formation

Eocene to Miocene Volcanic
Rocks of the Western Cascades

Fault Line

Miscellaneous Bedrock Granodiorites
Gabbros and Serpentine with
Meta-volcanics and Meta-sediments

MAP 4

GEOLOGY OF SOUTHCENTRAL OREGON
AND NORTHCENTRAL CALIFORNIA

CHAPTER III

SITE DESCRIPTION

There are twelve sites associated with the Salt Cave Project. Only one, 35 KL 24 (S.C. 10), is actually a cave. The others are open sites which are either midden areas or pithouse villages. All these sites, except 35 KL 25 (S.C. 11) and 35 KL 26 (S.C. 12), are located on terraces along the Klamath River. Sites 35 KL 25 and 26 are situated about 800 and 350 meters respectively north of the Klamath, along a small, intermittent stream.

Six of the 12 sites were recorded but not excavated. Two of these, 35 KL 16 (S.C. 2) and 35 KL 17 (S.C. 3), were simply recorded. Four others, 35 KL 19 (S.C. 5), 35 KL 23 (S.C. 9), 35 KL 25 (S.C. 11), and 35 KL 26 (S.C. 12), were unsystematically surface collected. Of the other six sites, three, 35 KL 20 (S.C. 6), 35 KL 22 (S.C. 8), and 35 KL 24 (S.C. 10), were test excavated; the remaining three, 35 KL 16 Border Village (S.C. 1), 35 KL 18, Big Boulder Village (S.C. 4), and 35 KL 21, Klamath Shoal Midden (S.C. 7), were extensively excavated. Artifacts from these sites are described in separate chapters of this report.

Unexcavated Sites

35 KL 16 (Site 2)

The site is located in the SE 1/4 of the SE 1/4 of sec. 12, T.41S, R5E, on a low terrace north of the Klamath River and east of Border Village, which is on the same terrace. It is separated from Border Village by a small, intermittent stream. Site S.C. 2 consists of three house depressions and a small associated midden. It appears to be part of Border Village and, therefore, is given the same site number, 35 KL 16.

35 KL 17 (Site 3)

The site is located in the SE 1/4 of the SW 1/4 of sec. 3, T.41S, R. 6E, on a low terrace along the west bank of the Klamath River about 70 m north of 35 KL 20 and about 200 m north of Klamath Shoal Midden, both of which are on this same terrace. Site 35 KL 17 is a small occupation area with 2 house depressions in a small clearing among black oak (Quercus kelloggii), Oregon oak (Q. garryana), and ponderosa pine (Pinus ponderosa).

35 KL 19 (Site 5)

The site is in the NE and NW 1/4's of the NW 1/4 of sec. 10, T.41S, R. 6E, on a high terrace or bluff on the southeast bank of the Klamath River. Site 35 KL 19 is

approximately 200 m north of 35 KL 23, which is located on the adjacent higher terrace. It is approximately 170 m downstream from Klamath Shoal Midden, which is on the opposite bank of the river. Site 35 KL 19 appears to be a midden area of shallow depth. A bulldozed gravel pit on the southwest boundary of the site indicates no cultural materials below the surface sod. The midden area runs about 300 m east/west along the terrace and about 50 m north/south. Most of the site area is a previously cultivated field, which today is primarily covered with grasses and herbaceous plants.

35 KL 23 (Site 9)

This site is located in the NE 1/4 of the NW 1/4 of sec. 10, T.41S, R. 6E, on a high terrace 300 m southeast of the Klamath River and 200 m south of 35 KL 19. Site 35 KL 23 is a group of 4 house depressions at one end of an open field near an intermittent stream. The field has been cultivated in the past which may have obliterated the outlines of other house depressions.

35 KL 25 (Site 11)

The site is in the SE 1/4 of the NW 1/4 of sec. 7, T.41S, R. 6E, on a small, oakcovered knoll, which overlooks an intermittent stream to the west and a meadow to

the south. The stream flows into the Klamath River, and 35 KL 25 is approximately 800 m upstream from 35 KL 26, which is adjacent to the same stream. Site 35 KL 25 is a village site, about 120 m long, with ten house depressions, which average about 10 m across. The house depressions are directly associated with and surrounded by a midden. On the stream bank are several milling slabs and hopper mortars.

35 KL 26 (Site 12)

This site is located in the SE 1/4 of the NW 1/4 of sec. 12, T41S, R. 6E, on a high knoll, just east of an intermittent stream and approximately 310 m north of the Klamath River, overlooking Border Village. It is a village site, consisting of 9 house depressions and an associated midden.

Test-Excavated Sites

35 KL 20 (Site 6)

The site is located in the SE 1/4 of the NW 1/4 of sec. 3, T.41S, R. 6E, on the second terrace above the west bank of the Klamath River, about 70 m south of 35 KL 17 and about 100 m north of Klamath Shoal Midden. The site consists of 11 house depressions, which more or less parallel the river. Some of the depressions are in among

ponderosa pine and oaks, and some are in grass-covered clearings. The house depressions range from approximately three to six meters across, with piles of earth and rock on three sides (Map 5).

A test trench 1 by 6 m, was excavated through House Pit 11. The excavation revealed three strata within the house: a loose duff (0-10 cm), a dark, humus-sandy soil (10-30 cm), and below a light, sandy soil. On the edge of the house pit a pile of rocky, gravelly soil rested on the dark, humus-sandy soil. It was within the rocky, gravelly soil that the wedge-shaped base of a wooden post was discovered. No house floor nor firepit was determined for this house pit. Cultural material was found primarily in the duff, the rocky, gravelly soil, and the dark, humus-sandy soil.

35 KL 22 (Site 8)

The site is in the SE 1/4 of the NE 1/4 of sec. 34, T.41S, R. 6E, on a low terrace about 2 m above the west bank of the Klamath River. It is approximately 300 m south of the Klamath River Road Bridge and about 1 3/4 miles north of Big Boulder Village. The site consists of 7 house depressions, which parallel the river for about 60 m among ponderosa pine. The house depressions are between 4.8 and 7.1 meters across. There were 6 hopper mortars and 7 milling slab fragments found near the high

water line of the river (Map 6).

A test pit 1 m square, with a 66 by 27 cm southward extension, was excavated in the southwest corner of House Pit 5, approximately 90 cm from the center of the depression. The excavation revealed several fragments of a burned post lying at an angle which followed the slope of the house depression. The lower end of the largest post fragment was 70 cm below the surface of the house rim. Another fragment was 40 cm from the surface at the rim. Bone fragments, flakes, charcoal fragments, and an ash lens approximately 15 cm in diameter were associated with the post fragments, suggesting a level of occupation, probably a house floor.

35 KL 24 (Site 10)

This site is located in the NW 1/4 of the SW 1/4 of sec. 8, T.41S, R. 6E, about 50 m south of the Klamath River. It is approximately 2 kilometers upstream from 35 KL 16. The designation 35 KL 24 is used for Salt Cave and associated smaller caves and rockshelters located along about 70 m of cliff face. Salt Cave, known as 35 KL 24, #1, is about 30 m deep, 26 m long and 13 m high. Near the rear wall, which is encrusted with salt, there is a spring. A large rockfall covers three-quarters of the cave area, to an estimated depth of 5 m. The floor is covered with bat and rodent guano, as are the floors of the

other caves. The rockshelters are shallow overhangs with a talus ridge and slope forward from the overhangs. The talus is composed of rock, earth and pieces of snags, which have fallen from higher ledges or the top of the ridge.

There were three test pits excavated in 35 KL 24, #1, and one test pit excavated in a second cave, designated 35 KL 24, #2. A test pit excavated near the rear wall of 35 KL 24, #1, revealed lenses of salt between layers of guano. A second test pit, 1 m square, was excavated about 15 m in from the entrance. The excavation went to 75 cm without reaching the bottom of the guano. A third test pit, 1 m square, closer to the entrance, was excavated, revealing 11 cm of brown silt covering a crumbling red and yellow rockfall to a depth of 75 cm. The only artifact found in the cave was a wooden spade, apparently made with steel tools. It was embedded about three-quarters of its length into fill adjacent to a pool dug near the spring. If there was any cultural debris in 35 KL 24, #1, it must have been buried under the rockfall.

Site 35 KL 24, #2, is east of #1 a few meters. The entrance to the cave is almost 45 cm high and little over 1 m wide. Beyond the entrance the cave widens quickly to form a room about 6 m wide and 3 m high. The floor is covered in part by a soft, moist guano and in part by a guano-salt crust. A small test pit was excavated in the

center of the room. The test pit revealed a wet, homogeneous mass of guano 42 cm thick. Below the guano were chert flakes.

A few flakes and cores were also found along the river, below #2. Some were in the river in water up to 30 cm deep. These were primarily of a light-colored chert, with rounded edges caused by water action.

Extensively Excavated Sites

35 KL 21 (Site 7), Klamath Shoal Midden

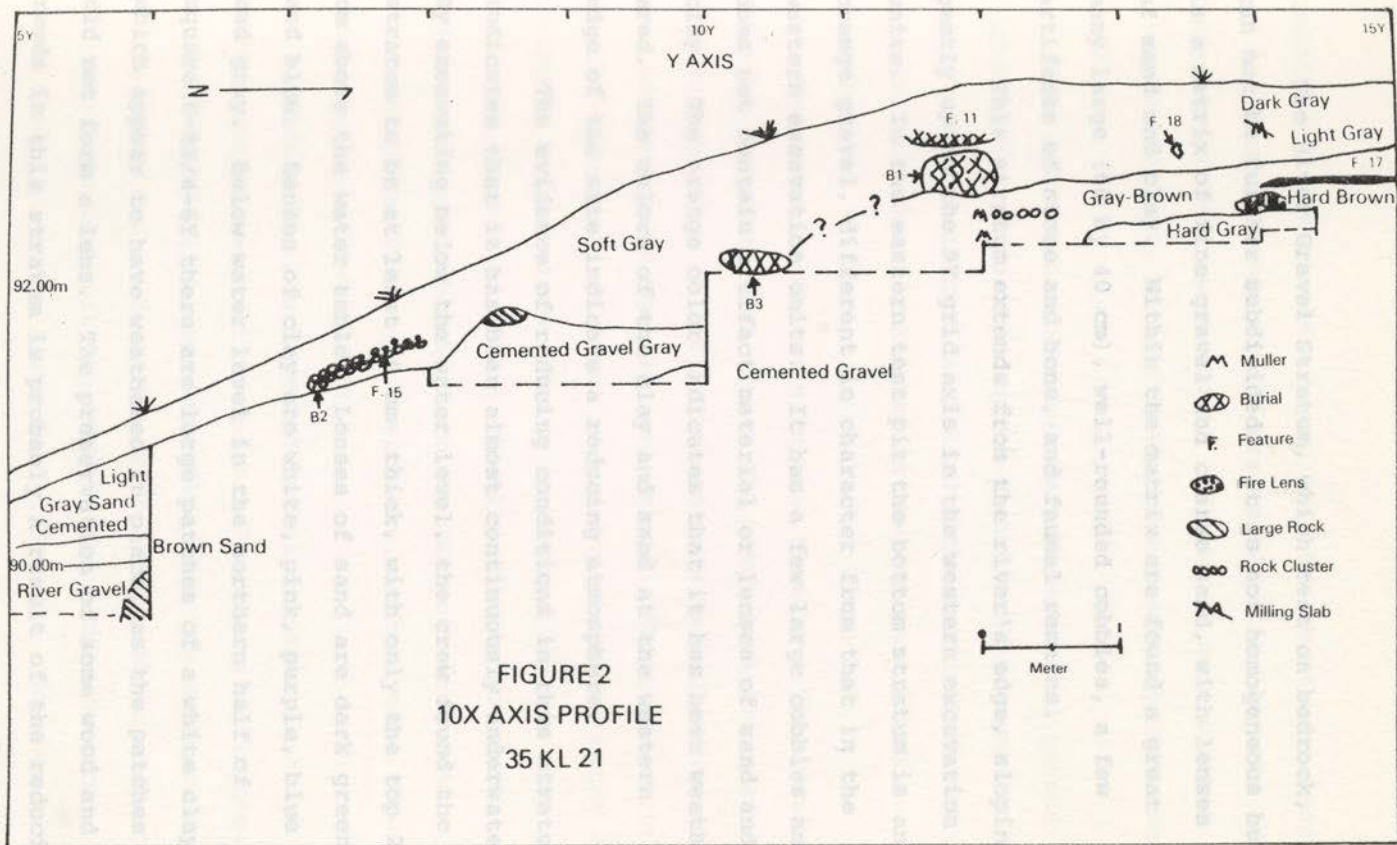
The site is located in the SE 1/4 of the NW 1/4 of sec. 8, T41S, R. 6E, on a low terrace on the west bank of the Klamath River about 230 m south of 35 KL 17 and 30 m south of 35 KL 20. The midden runs parallel to the river for about 60 m and includes the area from the river bank back about 20 m. The area of Klamath Shoal Midden apparently was once more extensive than it is now. In the shoal area of the river, adjacent to the site, many large cores and flakes have been collected. The material is found out into the river about 16 m. Undoubtedly, the river has cut into the site during high water.

Four areas of Klamath Shoal Midden were excavated over the 1961 and 1962 seasons. The first season a large area, 12 by 4 m, was excavated at the western edge of the site. The second season's crew excavated two test pits,

each 1 by 2 m, one on the eastern edge and one in the center of the site, and an extensive area 6 by 4 m, just east of the 1961 excavation (Map 7).

The site has been described in the preliminary reports as having three basic strata. These are not, however, found throughout the site, and additional subdivisions of the strata, defined during the second season cannot be correlated, except in a gross way, with the stratigraphy recorded during the first season. This difficulty is increased by the lack of a complete profile from the 1961 season, only one complete wall profile from the 1962 season and only occasional and sporadic descriptions of the soil matrix in the field notes from both seasons. Therefore, the following discussion of the stratigraphy is based on informed supposition as well as on data collected in the field. It does seem, however, that more than three gross stratigraphic divisions can be delineated.

The three basic stratigraphic divisions above bedrock have been designated, from bottom to top: River Gravel Stratum or Stratum I, Cemented Gravel Stratum or Stratum II, and Midden Stratum or Stratum III. Bedrock, exposed on the south edge of the western excavation units and a few meters south of the site along the river, is a green, friable rock which is weathered to a yellow color near the 9Y grid axis (Figures 2-4).



The River Gravel Stratum, which rest on bedrock, can not be further subdivided. It is not homogeneous but is a matrix of fine gravel and coarse sand, with lenses of sand and clay. Within the matrix are found a great many large (60 by 40 cm), well-rounded cobbles, a few artifacts of stone and bone, and faunal remains.

This stratum extends from the river's edge, sloping gently up to the 9Y grid axis in the western excavation units. In the eastern test pit the bottom stratum is an orange gravel, different in character from that in the western excavation units. It has a few large cobbles and does not contain artifact material or lenses of sand and clay. The orange color indicates that it has been weathered. The colors of the clay and sand at the western edge of the site indicate a reducing atmosphere.

The evidence of reducing conditions in this stratum indicates that it has been almost continuously underwater. By excavating below the water level, the crew found the stratum to be at least 50 cm thick, with only the top 25 cm above the water table. Lenses of sand are dark green and blue. Lenses of clay are white, pink, purple, blue and gray. Below water level in the northern half of square 6-8X/4-6Y there are large patches of a white clay which appear to have weathered in place, as the patches did not form a lens. The preservation of some wood and reeds in this stratum is probably a result of the reducing

conditions. The pieces of wood are each about 5 cm long and 1 1/2 cm in diameter and are embedded in clay and sand. These are probably segments of limbs which have cracked in weathering and, as driftwood, have caught against some reeds.

The bedrock has been cut away between grid points 7.5X and 11X, producing a small channel running north-south. The old channel is filled with the River Gravel Stratum. Artifacts are found in the top part of this channel fill.

There are no features in this stratum. The artifact material indicates that either the river bank area was used only briefly or the artifacts were washed in and deposited along with the sand and gravel. The presence of identifiable bone indicates no great distance of water transport was involved. There is one radiocarbon date from this stratum of 6065 ± 400 B.P. (Sample No. I-807, Isotopes Inc., unpublished) run on charcoal fragments collected below 200 cm on the site's southern edge, from excavation unit 20-24X/6-8Y.

Stratum II, the Cemented Gravel Stratum, is found in the southern excavation units. It seems to disappear at the 10Y grid line, not extending into the northern half of the site, and it does not exist at the eastern edge of the site. In test pit 56-58X/8-9Y the Midden Stratum rests directly on the River Gravel Stratum. However, the

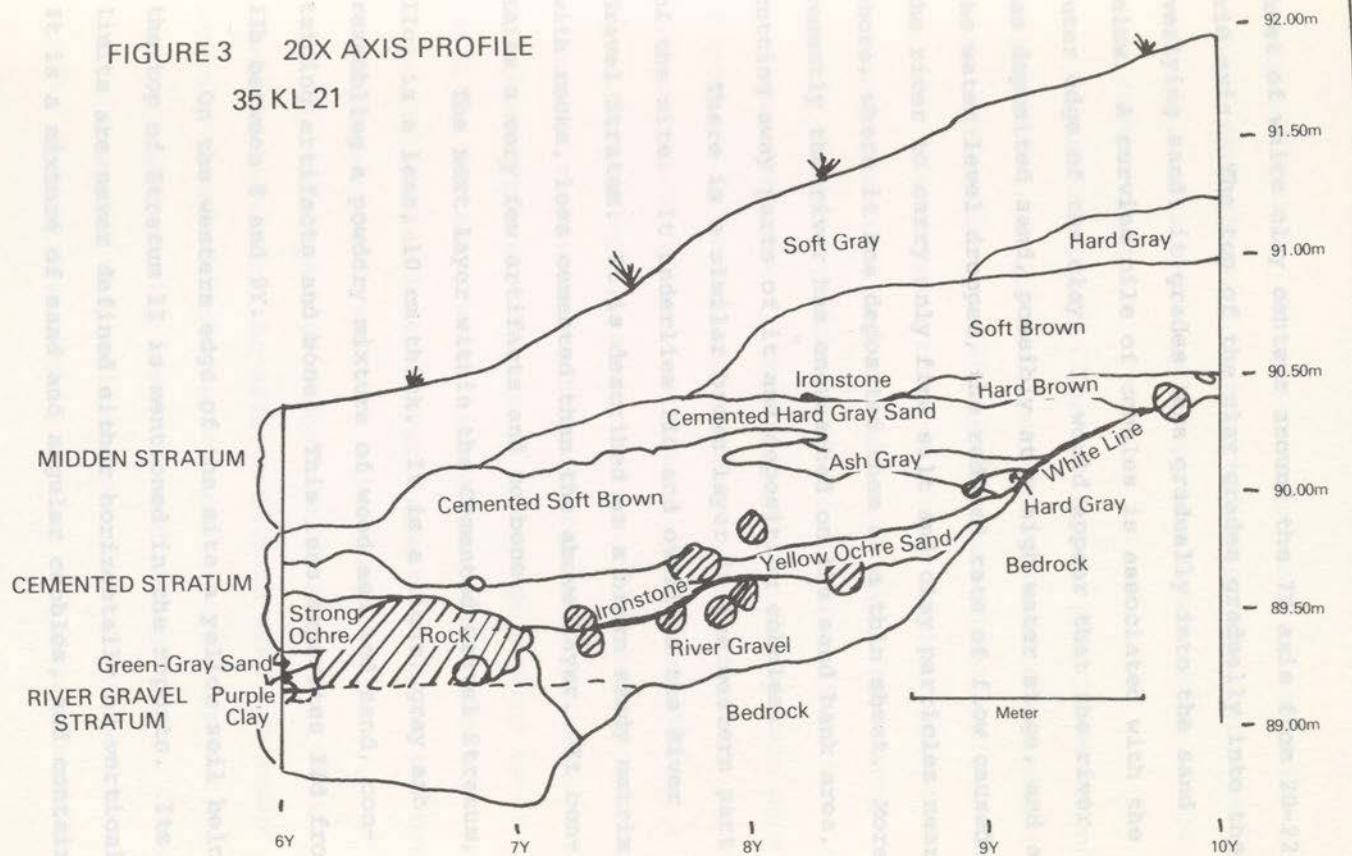
northern limits of the Cemented Gravel Stratum are not confirmed by excavation, as no excavation has been done deeper than the Midden Stratum in the grid squares north of the 10Y axis. The top of the Cemented Gravel Stratum slopes very gently from north to south with a sharp drop-off at around 6.5Y; from here it continues to slope gently to the edge of the river. The drop-off can be interpreted as a possible former bank of the river. Some pieces of waterworn pumice, 3-4 cm in size, occur here.

Stratum II seems to consist of several cultural layers. Four of these are clearly defined in the 20X profile, and two others are defined less clearly in the 6Y profile on the western edge of the site (Figure 3). The bottom layer, IIa at grid point 20X is described as a yellow, ochreous sand. It overlies Stratum I and bedrock from 9.1Y axis south to the river's edge, and it is underlain by a 1 cm band of ironstone from 7-8Y grid axis. The ochre staining appears to be a post-depositional feature.

Above the yellow, ochreous sand in the 20X profile is a layer described as light brown and little cemented, IIb. From grid axis 6.85Y to the river this is the top of the Cemented Gravel Stratum; from 6.85Y north it underlies the hard gray layer, IIc. This soft, light-brown layer is a sandy matrix which contains artifacts, bone and charcoal. Within the lower part of this layer, a thin

FIGURE 3 20X AXIS PROFILE

35 KL 21



sheet of white clay centers around the 7Y axis from 20-22X grid axis. The top of the clay grades gradually into the overlying sand; it grades less gradually into the sand below. A curving pile of cobbles is associated with the outer edge of the clay. It would appear that the river has deposited sand, possibly at a high water stage, and as the water level dropped, the reduced rate of flow caused the river to carry only fine silt and clay particles near shore, where it has deposited them as a thin sheet. More recently the river has encroached on the sand bank area, cutting away parts of it and depositing cobbles.

There is a similar brown layer in the western part of the site. It underlies IIc and overlies the River Gravel Stratum. It is described as a brown sandy matrix with rocks, less cemented than the above layer. It contains a very few artifacts and no bone.

The next layer within the Cemented Gravel Stratum, IIc, is a lens, 10 cm thick. It is a light, gray ash resembling a powdery mixture of wood ash and sand, containing artifacts and bone. This lens separates IIc from IIb between 8 and 9Y.

On the western edge of the site a yellow soil below the top of Stratum II is mentioned in the reports. Its limits are never defined either horizontally or vertically. It is a mixture of sand and angular cobbles, and contained

fossilized antler. If this is comparable to the yellow, ochreous sand it would be expected below IIb, not above it. Therefore, it is probably a separate layer, which is not found farther east.

In the 20X profile the top layer, IIId, is described as a cemented, gray, sandy matrix, which dries to nearly white. It contains artifacts, scattered bone and a little charcoal. It rests on bedrock at the northern edge of the excavation unit and extends to 6.85Y on the south, where it abruptly pinches off. It averages 25 cm in thickness throughout. The top layer on the western edge of the site is somewhat different in character and, therefore, may be a different stratum. It is described as a cemented, light-gray, sandy matrix which contains angular to rounded cobbles and pebbles with a very few artifacts. It extends from the 4Y axis on the south upslope to at least the 10Y axis, where excavation ended. The angular rocks and pebbles in the layer suggest it may be the result of slopewash, or it may be a talus slope.

The main agent of deposition in Stratum II would appear to be water, the effects of both wind and human activity being of minor importance. Except for the top layer, lenses of clay are scattered throughout the Cemented Gravel Stratum. The small number of artifacts and bone and the lack of features in Stratum II indicate brief and

transient use of the river bank during the time of deposition as contrasted to that of the Midden Stratum. Another interesting aspect of Stratum II is the lack of heavy cementing in all but the uppermost layer; this may have been a post-depositional feature. If so, the cement would not indicate the climatic conditions that have been postulated in the interim report for the period of deposition of this stratum, but it would represent a period between the deposition of the Cemented Gravel and the Midden Strata.

The Midden Stratum, Stratum III, is very complex. It can be divided into five or six cultural layers, one of which is discontinuous. In the 20X profile the bottom layer of the midden is described as a hard brown deposit, IIIa. It extends from 8.6Y to 10Y, and it averages 10 cm in thickness. Fill of a similar description was also encountered in excavations of grid 14-16Y/10-12X and in the eastern test pit, and it seems likely that all three occurrences may represent the same cultural layer (Figures 2-4).

The bottom layer of the Midden Stratum observed in the eastern test pit is a black fill with artifacts, some bone and a few scattered rocks. This is described as very black when moist, drying to gray. There seems to be nothing comparable to this layer in the western third of the site.

FIGURE 4 35 KL 21
9Y AXIS PROFILE
NORTH WALL OF TEST PIT

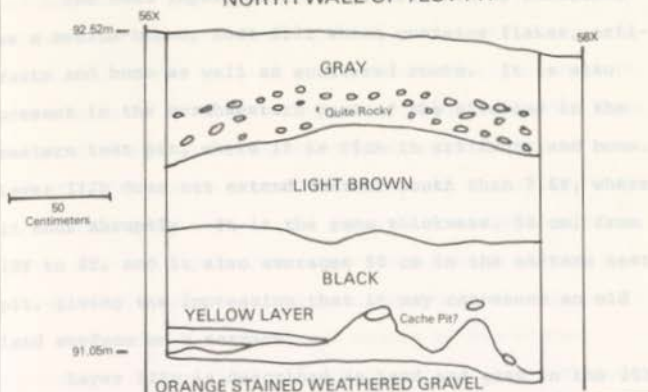
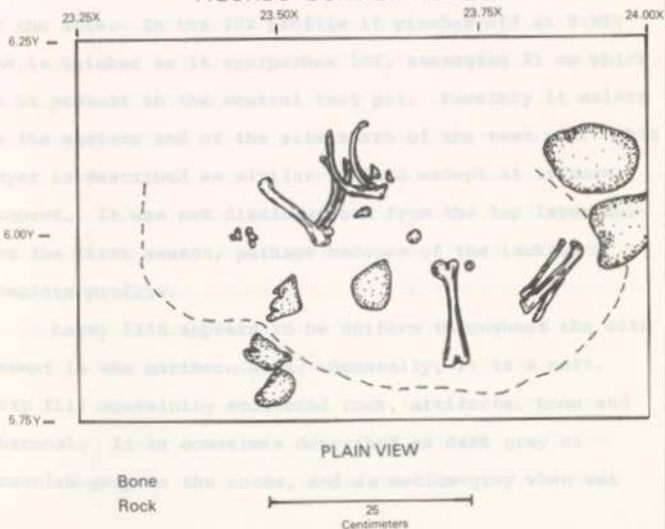


FIGURE 5 BURIAL 4 35 KL 21



The next layer, IIIB, in profile 20X is described as a medium-brown, soft fill which contains flakes, artifacts and bone as well as scattered rocks. It is also present in the northwestern part of the site and in the eastern test pit, where it is rich in artifacts and bone. Layer IIIB does not extend further south than 7.6Y, where it ends abruptly. It is the same thickness, 50 cm, from 10Y to 8Y, and it also averages 50 cm in the eastern test pit, giving the impression that it may represent an old land surface on a terrace.

Layer IIIC is described as hard and gray in the 20X profile. It seems to be restricted to the northern area of the site. In the 20X profile it pinches off at 8.95Y and is thicker as it approaches 10Y, averaging 25 cm thick. It is present in the central test pit. Possibly it exists at the eastern end of the site north of the test pit. This layer is described as similar to IIID except it is more compact. It was not distinguished from the top layer during the first season, perhaps because of the lack of a complete profile.

Layer IIID appears to be uniform throughout the site except in the northern area. Generally, it is a soft, gray fill containing scattered rock, artifacts, bone and charcoal. It is sometimes described as dark gray or brownish gray in the notes, and as medium-gray when wet

and very light-gray when dry. Generally, layer IIIId is thickest at the uphill edge of the midden and tapers off to the south, being 75-80 cm thick near the center of the site and 20-30 cm thick at the south edge. The top layer in the northwestern area, specifically in grid unit 10-12X/14-16Y, is a soft dark brown fill containing artifacts, charcoal, rock, and a great deal of bone. This may be the top layer of Stratum III north of 15Y and east of 10X, or it may be a very localized deposit (Figure 2).

The primary depositional agents of the Midden Stratum are apparently wind and human activity. There are no lenses of clay or sand throughout this stratum. The midden layers were the most productive of artifacts and other cultural debris, all the firepits, burials, rock clusters and bone clusters having been found in them. The quantity of this material indicates intensive use of Klamath Shoal Midden during deposition of Stratum III.

Two radiocarbon dates of 1280 ± 125 B.P. (I-502, Isotopes V) and 990 ± 110 B.P. (Tx-321, Texas V) have been determined for the Midden Stratum. Both are composite samples of charcoal taken from 50 to 110 cm below the surface in the northern most excavation area, within the grid coordinates 12-16Y/8-12X. The samples come from at least four layers: IIIId, IIIC, IIIB and the overlying soft dark-brown layer, and therefore, give only a rough

approximation of the age of the lower part of Stratum III.

Cultural Features

There is no evidence of house pits at Klamath Shoal Midden. The horizontal relationship of rock clusters and bone clusters in Stratum III seems to be random; they do not delineate particular areas. Burials are found on the south slope, and firepits are found under the level northern part of the midden, which was probably the most common work and occupation area. The random location of the features indicates repeated temporary use of the site area, probably by small groups of people on a yearly basis.

Four more or less complete burials and two isolated groupings of human bone are recorded. Two other groups of human bone are noted but not recorded in detail. All the human remains came from the top two layers; most are less than 50 cm from the surface. With the exception of one burial, all are located south of 11Y grid axis in the slope of the mound. This distribution may reflect simply the limited extent of excavation north of the 12Y grid axis or it may indicate a preference to bury individuals away from the level occupation area.

Burial 1 (Feature 11)

Age: Child, 4 1/2-5 years
Position: Flexed, head to west.
Condition: Fair, skull missing.

Depth from surface: 25-49 cm.
 Location: Stratum IIId or IIId; Grid 11-12Y/9-10.5X.
 Comments: The grave is cut through the edge of
 Firepit 1.

Burial 2 (Feature 16)

Age: Adult.
 Position: Probably flexed.
 Condition: Poor; disturbed by rodents. About a
 third of the skeleton is missing; a few bones
 were on the surface downslope from the skeleton.
 Depth from surface: 10 cm.
 Location: Stratum IIId; Grid 6.6-7Y/9.4-9.9X.
 Comments: These bones have an extensive calcium
 deposit and show deterioration, particularly on
 the lumbar vertebra; the individual may have had
 arthritis.

Burial 3 (Feature 19)

Age: Adult, c. 40 years.
 Position: Flexed, on back, head to west.
 Condition: Good, almost complete.
 Depth from surface: 78 cm.
 Location: Probably IIId; Grid 10-10.6Y/10-11.1X.
 Comments: Large rocks were noted above the burial
 but their positions were not recorded in detail;
 they may represent a rock covering for the grave.

Burial 4 (Feature 38) (Figure 5)

Age: Child.
 Position: Semiflexed ?
 Condition: Poor; very disturbed; about three-
 quarters of the skeleton is missing.
 Depth from surface: 14 cm.
 Location: Stratum IIId; Grid 5.8-6.1Y/23.4-23.9X.
 Comments: A shell head is associated with the
 skeleton.

Burial 5 (Feature 41)

Age: Adult.
 Position: Unknown.
 Condition: Poor; one femur and fragments of a radius
 and ulna.
 Depth from surface: 65 cm.
 Location: Stratum IIId or IIId; Grid 8.7-9.4Y/
 22.5-23X.

Comments: This may be part of burial 6; it is almost directly above it; the bone indicates a very large, robust individual.

Burial 6 (Feature 42)

Age: Adult.

Position: Unknown.

Condition: Poor, one femur and one tibia.

Depth from surface: 70 cm.

Location: Stratum IIId or IIc; Grid 8.3-8.9Y/
21.8-22.1X.

Comments: These may be part of Burial 5; the bones indicate a very large, robust individual.

Burial 7

Age: Infants and/or fetus.

Position: Unknown.

Condition: Poor, very few bones present.

Depth from surface: 25-30 cm.

Location: Stratum IIId; Grid 7-9Y/10-12X.

Comments: These bones were not recognized as human when excavated; therefore they are not recorded, only collected. There is one partial skull and parts of the post-cranial skeleton from three individuals. At least two individuals show evidence of infection, which affected the long bones.

Burial 8

Age: Adult.

Position: Unknown.

Condition: Poor, two ribs and a lumbar vertebra.

Depth from surface: 10-25 cm.

Location: Stratum IIId, Grid 6Y/22X.

Comments: The material is not recorded, only collected; it is located about 50 cm west of Burial 4.

Seven firepits or areas of compacted ash are recorded.

These are all north of 11Y grid axis in the area of the site which is rather level. One firepit is in the top layer, IIId; five are in IIc, and one apparently is in IIb. Most of the firepits are areas of compacted ash, flecked

with charcoal. None are directly associated with rock clusters.

Firepit 1 (Feature 11)

Size: 70 by 60*cm, 2 cm thick.
 Location: Stratum IIIc or IIId; Grid 11.4-12.1Y/
 9.4-9.9X.
 Depth from surface: 13 cm.
 Description: A band of hard, yellow soil with bits
 of charcoal.
 Comments: Burial 1's grave was dug through the
 eastern part of the firepit.

Firepits 2-5 (Feature 14A)

Size: #2 90 by 60 cm, thickness unrecorded;
 #3 70 by 20*cm, 15 cm thick; #4 40 by 75 cm,
 thickness unrecorded; #5 20* by 80 cm, thickness
 unrecorded.
 Location: Stratum IIIc or IIId; Grid 12.6-14.4Y/
 10-12X.
 Depth from surface: c. 75 cm.
 Description: Lenses of gray ash with little char-
 coal; there is a pinkish coloration to the lower
 part of two of these; #3 has a 10 cm layer of
 white ash on top.
 Comments: These ash lenses are associated with
 antlers and rock clusters but not directly.

Firepit 6 (Feature 17)

Size: 30 by ? cm, thickness unrecorded.
 Location: Stratum IIIc or IIId; Grid 14Y/10.5-10.8X.
 Depth from surface: c. 80 cm.
 Description: A gray ash lens.
 Comments: This may be a continuation of one of the
 ash lenses in Feature 14A; this ash lens is
 associated with bone clusters and artifacts.

Firepit 7

Size: 90 by 20*cm, 35 cm thick.
 Location: Dark brown layer in Stratum III; Grid
 15.8-16Y/9.3-10.2X.
 Depth from surface: 18-21 cm.
 Description: This firepit has a grayish-white lens,
 8 cm thick, over a light yellow-brown core,

surrounded on its sides and bottom by a very dark-brown soil, which in turn is surrounded by a gray-brown soil.

Comments: This firepit was never fully recorded, but its profile was described and drawn in the field notes.

There are several rock clusters throughout the site. Most are associated with clusters of bone and scattered artifacts. They are very common on the western edge of the site. One is recorded in the central test pit, and a rocky layer in the eastern test pit is also noted in layer IIIc. These rock clusters do not usually contain grinding stones. They seem to be trash areas or work areas.

Rock Cluster 1-2 (Feature 14B)

Size: #1 60 by 60 cm; #2 100 by 160 cm.

Location: IIIB, Grid 10-11.6X/12-13.6Y.

Depth from surface: c. 75 cm.

Comments: Rocks are associated directly with cut antlers; one cluster includes a mortar fragment.

Rock Cluster 3 (Feature 13)

Size: 115 by 40 cm.

Location: Stratum IIId; Grid 8.2-9.4X/7.2-7.6Y.

Depth from surface: 10 cm.

Comments: It is associated with a bone cluster and a human tarsal bone; the rock cluster is made up of approximately fifty cobble fragments, forty-one whole cobbles, and ninety-one angular rocks.

Rock Cluster 4 (Feature 16A)

Size: 200 by 120 cm.

Location: Stratum IIId; Grid 8-10X/6.8-8Y.

Depth from surface: 20-60 cm.

Comments: It is directly below Burial 2.

Rock Cluster 5 (Feature 18)

Size: 40 by 60 cm.

Location: Stratum IIIC; Grid 9.2-9.6X/12-12.6Y.
 Depth from surface: 45-50 cm.
 Comments: It is associated with two bone clusters,
 some flakes and a few stone artifacts.

Rock Cluster 6-7 (Feature 37)

Size: #6 45 by 50 cm; #7 100 by 130 cm.
 Location: Stratum IIIC; Grid 30-30.4X/10-10.5Y and
 30-31X/10.7-12Y.
 Depth from surface: 75-100 cm.
 Comments: This is associated with a bone cluster,
 flakes, a worked antler and other artifacts; it
 is at the juncture of IIIC and IIID. The larger
 rock cluster is really a circle of rock and bone
 with a cleared area in the center.

Two large grinding stones are recorded within the
 site: 1) a metate is associated with bone clusters, other
 artifacts and an ash lens, Feature 17. This feature may
 have represented a work area or occupation area; it is
 fairly free of large stones; 2) a hopper mortar is associ-
 ated with a human femur in Stratum IIID (Feature 41).

A cache pit is located in Stratum IIIC. It is noted
 only in profile on the 10Y axis between 20 and 22X, so its
 complete size cannot be determined. It is 50 cm from the
 surface, 50 cm deep and a meter wide at the top, tapering
 down to a point. The pit appears to be partly lined with
 stones. It apparently contains many broken bones and
 flakes.

35 KL 16 (S.C. 1) Border Village

This site is located in the SW 1/4 of the SW 1/4 of
 sec. 12, T.41S, R. 5E, on a low terrace, 6 to 8 m above

the north bank of the Klamath River, just west of an intermittent stream. The site is less than .8 kilometers north of the Oregon-California border. It consists of 19 apparent house depressions spaced irregularly in two parallel rows about 200 m long, covering an area from the terrace edge back 30 m from the river (Map 8).

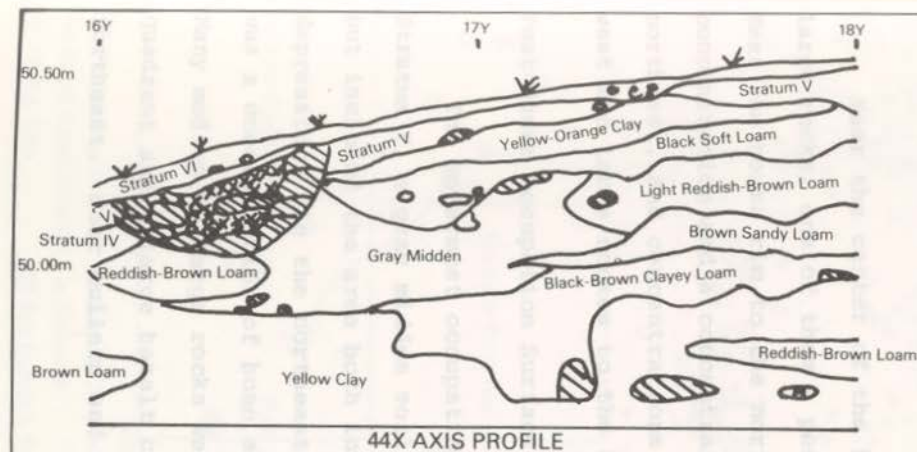
During the 1963 field season House Pit 1 was completely excavated and House Pits 2 and 16 were partially excavated. No excavation was attempted in the surrounding midden, which appeared to be less than 1 m deep. Though no test pit was excavated within the midden area of Border Village, the north-central unit in House Pit 1 was excavated partially into the midden immediately surrounding the house. The stratigraphy of the midden, without the house pit disturbances, could be partially seen in the profiles of this unit and at the bases of the house pits. The base stratum throughout the site was a yellow clay, Stratum I. It lay at the base of each house pit as well as at the bottom of the midden profile. Stratum II was a dark black-brown clay. It overlaid Stratum I in the profiles and at the base of House Pit 16. Above Stratum II in the midden profile there were a number of strata, including an ashy-gray midden, black-brown loam, brown sand and brown to reddish-brown loam, the latter usually in lenses. Many of these strata were probably the result of very localized conditions. This was illustrated by the

fact that only the bottom two strata were comparable in the 44X and 45X profiles between 16Y and 18Y (Figure 6). There were cobbles, flakes and a few artifacts found in all the strata.

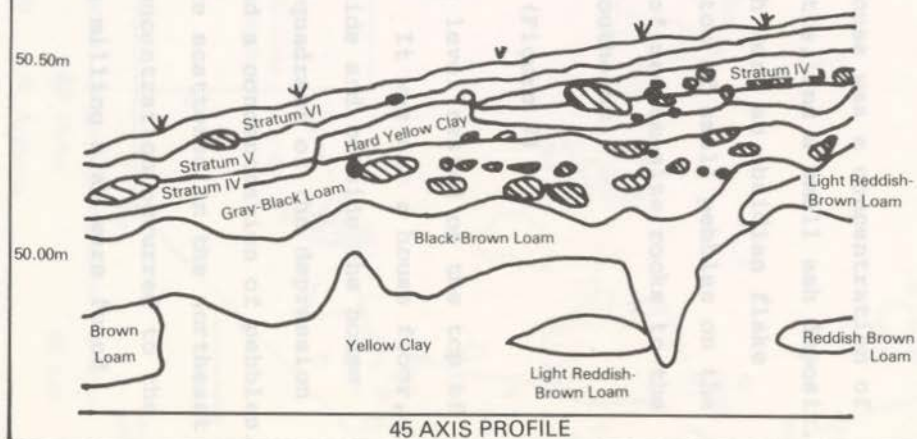
House Pit 1

House Pit 1 was a large, circular depression approximately 8 m in diameter and 1 1/2 m deep before excavation. Two programs of excavation were begun simultaneously. A test pit, 1 by 2 m., was excavated in the center of the depression, near a pothunter's hole, while various 2 m square units were excavated to the top of Stratum V or to the top of Stratum VI. After completion of the test pit, it was extended into a test trench, 1 m wide and 10 m long running north-south. This was excavated as a series of pits, each 1 m wide and 2 m long, which were separated from one another by unexcavated sections. Most of this trench was excavated in arbitrary 20 cm levels, but the northernmost unit was excavated in 10 cm levels. After the test trench was completed, the whole house was excavated to the top of Stratum V. Thereafter, the rest of the house pit was excavated by 10 cm levels and by floors and strata. Four superimposed floors and their fills were recognized; however, part of the crew excavated through half of Floor 2, mixing the materials from Strata II and III.

Careful note-taking procedure was not always



44X AXIS PROFILE



45 AXIS PROFILE

FIGURE 6
MIDDEN PROFILES

35 KL 16

-  Cache Pit
-  Rock
-  Projectile Point
-  Ash Deposit or Lens
-  Hammerstone

FIGURE 7 HOUSE RIM
HOUSE RIM 1 STRATUM V LAST OCCUPATION LEVEL

followed, nor were drawings made of the complete surface of each floor. Generally, artifacts found on the floors were not placed on drawings, nor their precise provenience recorded. Therefore, the following descriptions of the floors and strata are incomplete and partly reconstructed by the author. There is an element of estimation in all the diagrams of the house floors and stratigraphy.

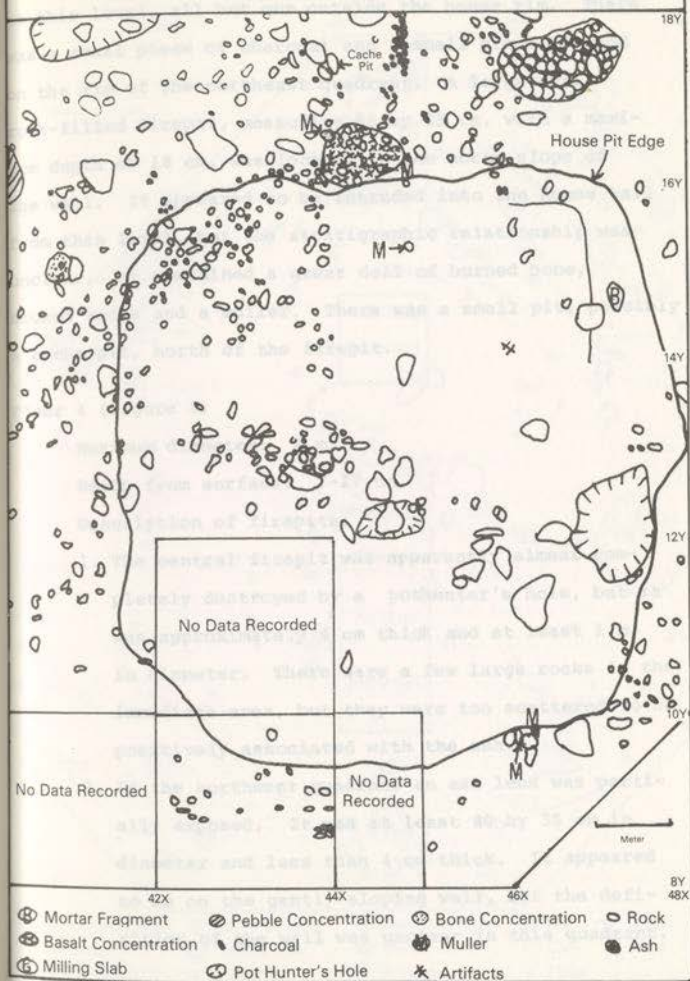
Surface Features

Near the center of the house was a concentration of large rocks, one of them a pestle, and a small ash deposit. Near the house rim to the north were an obsidian flake concentration and a concentration of small pebbles on the northwest, and concentrations of medium-size rocks to the west and large rocks to the southeast.

Post-House Occupation Surface (Figure 7)

The uppermost occupation level rested on the top of Stratum V, a gray midden soil. It was not a house floor, but included the area both inside and outside the house depression. In the northeast quadrant of the depression was a concentration of bone and a concentration of pebbles. Many medium to large rocks were scattered in the northeast quadrant and a large basalt concentration occurred to the northeast. Four mullers and a milling slab were found

FIGURE 7 35 KL 16
HOUSE PIT 1 STRATUM V LAST OCCUPATION LEVEL



at this level, all but one outside the house rim. There was a small piece of charcoal and a small piece of wood on the rim of the northeast quadrant. A large oval, rock-filled firepit, measuring 60 by 85 cm, with a maximum depth of 18 cm, was located on the north slope of the wall. It appeared to be intruded into the house wall from this level, but the stratigraphic relationship was unclear. It contained a great deal of burned bone, broken rocks and a muller. There was a small pit, possibly a cache pit, north of the firepit.

Floor 4 (Figure 8)

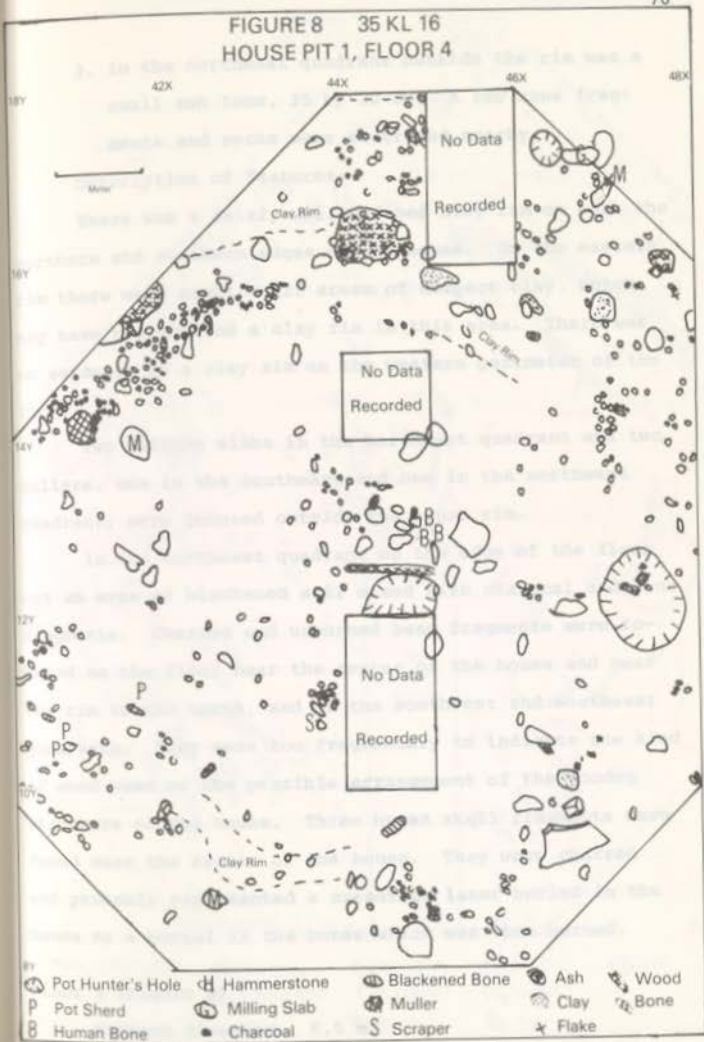
Maximum diameter: 6 m.

Depth from surface: 7-27 cm.

Description of firepits:

1. The central firepit was apparently almost completely destroyed by a pothunter's hole, but it was approximately 4 cm thick and at least 1 m in diameter. There were a few large rocks in the immediate area, but they were too scattered to be positively associated with the ash.
2. In the northwest quadrant an ash lens was partially exposed. It was at least 80 by 35 cm in diameter and less than 4 cm thick. It appeared to be on the gently sloping wall, but the definition of the wall was unclear in this quadrant.

FIGURE 8 35 KL 16
HOUSE PIT 1, FLOOR 4



3. In the northeast quadrant outside the rim was a small ash lens, 25 by 20 cm. A few bone fragments and rocks were scattered nearby.

Description of features:

There was a fairly well-defined clay rim on both the northern and southern edges of the house. On the eastern rim there were eight small areas of compact clay, which may have represented a clay rim in this area. There was no evidence of a clay rim on the western perimeter of the floor.

Two milling slabs in the northeast quadrant and two mullers, one in the southeast and one in the northwest quadrant, were located outside the house rim.

In the northeast quadrant on the edge of the floor was an area of blackened soil mixed with charcoal and bone fragments. Charred and unburned beam fragments were located on the floor near the center of the house and near the rim in the north, and in the southwest and southeast quadrants. They were too fragmentary to indicate the kind of wood used or the possible arrangement of the wooden structure of the house. Three human skull fragments were found near the center of the house. They were charred and probably represented a cremation later buried in the house or a burial in the house which was then burned.

Floor 3 (Figure 9)

Maximum diameter: 6.5 m.

Depth from surface: 10 to 40 cm. in excavation

Description of firepit: ~~one~~ ~~millings~~ ~~slabs~~ and ~~one~~

Most of the central firepit was destroyed by a pothunter's hole. There was a small area of ash and one rock associated with it. There were several medium to large rocks scattered just north of the ash, which may have originally been associated with it. ~~not questioned~~

Description of features: ~~remains were found near the~~

On both the northwest and northeast perimeter of the house there was a concentration of rocks; just outside the rocks was clay overlay. In the northeast quadrant there was a sloping bench just inward from the rock concentration. There was also a heavy scattering of rocks and a clay overlay in the southwest quadrant. It appeared that the house at the time of Floor 3 had a bench, at least partly surrounding the floor. The rocks may have been placed around the house to help hold down bark or wood slabs. ~~people had come from the child occupation~~

The remains of 7 vertical posts were still in place in the floor. Five were along the western edge of the floor and two were on the eastern edge. One was disturbed by a pothunter's pit. Pieces of wood, some of them beams, lay on top of the floor in from the posts in the southwest, southeast and northwest quadrants. There were a few pieces of charred wood near the center of the floor. ~~found at the sample~~

Several grinding stones were found in association with this floor. There were four milling slabs and one muller outside the line of posts and rock concentrations in the northeast and northwest quadrants. There were two mullers inside the rock concentrations in the northeast quadrant, one of them on the bench. There were five milling slabs on the floor in the southeast quadrant.

Three more human skull fragments were found near the center of the house on this floor. They were probably part of the same individual already noted on Floor 4. Rodent activity and the pothunter's pit could have moved the fragments up or down several centimeters.

There were two radiocarbon dates run for House Pit 1. It was originally reported (Anderson and Cole 1964; Valastro, Pearson and Davis 1967) that both samples had come from the oldest occupation level, Floor 1. However, a careful reexamination of the field notes and feature forms showed that one sample had come from the third occupation level, Floor 3. The date, 540 ± 120 B.P. or A.D. 1410 ± 120 (Isotopes V, I-1337), was taken on a wooden post just inside the rim in the northeast quadrant of Floor 3. A date, modern (TX-326 Texas V), was taken from a wooden post on Floor 1, in the southeast quadrant. A pothunter's hole in the northern portion of the grid from which the second sample was taken may explain the apparent contamination of the sample.

FIGURE 10 35 KL 15
HOUSE PIT 1, FLOOR 2

Floor 2 (Figure 10)

Maximum Diameter: 6.5 m.

Depth from surface: 23 to 53 cm.

Description of firepits:

1. A small central firepit was partly destroyed by the pothunter's pit; it was 30 cm in diameter and surrounded by rocks on the north side.
2. An ash lens 50 by 30 cm was found 1 1/2 m south of the central firepit.

Description of features:

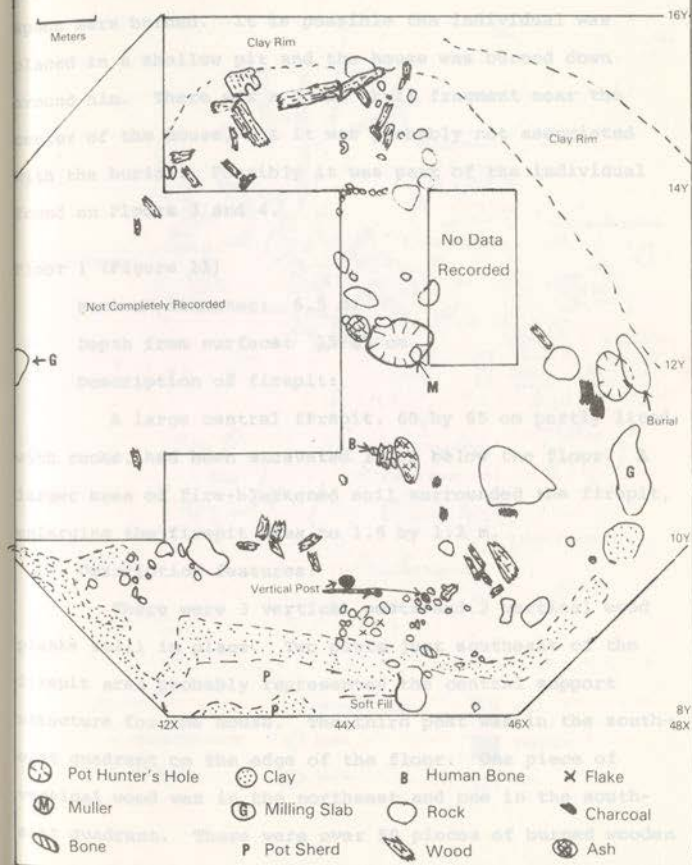
There was a clay rim which marked the perimeter of the house at this floor to the north, south and east. Data on the west side of the house were not recorded.

There were three vertical posts on the southern edge of the floor. In from the floor edge in the southern and northern parts of the floor were several burned house beams. Most of them lay with their long axis perpendicular to the floor edge, indicating that the roof had probably collapsed inward.

Only one muller was associated with this floor, and it was within the disturbed area of the pothunter's pit. Two milling slabs on the house rim may have been associated with this floor or with Floor 1 or 3.

There was a burial in the southeast quadrant. The burial pit appeared to have been dug from Floor 2 and

FIGURE 10 35 KL 16
HOUSE PIT 1, FLOOR 2



intruded into Floor 1. A pothunter's pit cut into its southern half. A carved elk antler spoon and a steatite pipe were associated with this burial. The bones and spoon were burned. It is possible the individual was placed in a shallow pit and the house was burned down around him. There was a human skull fragment near the center of the house, but it was probably not associated with the burial. Possibly it was part of the individual found on Floors 3 and 4.

Floor 1 (Figure 11)

Maximum diameter: 6.5 m.

Depth from surface: 15-67 cm.

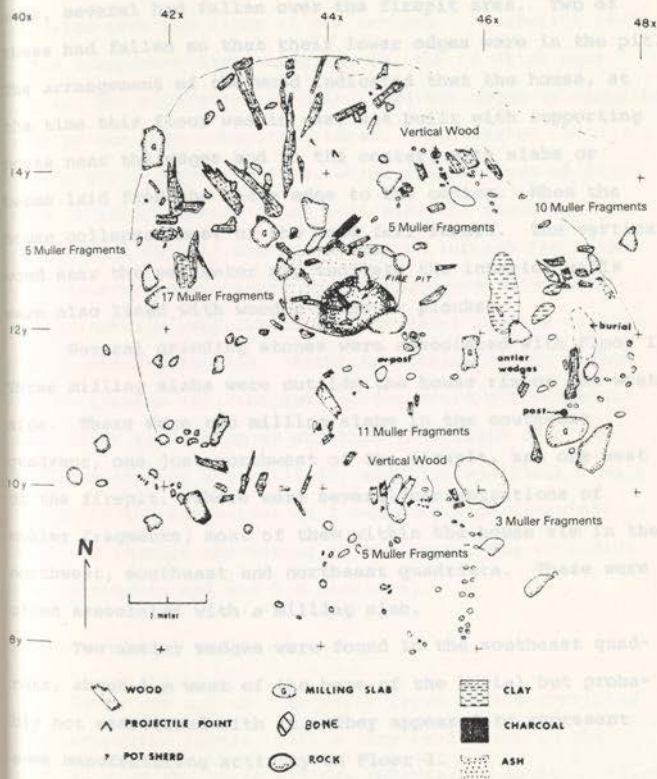
Description of firepit:

A large central firepit, 60 by 65 cm partly lined with rocks, had been excavated 15 cm below the floor. A larger area of fire-blackened soil surrounded the firepit, enlarging the firepit area to 1.5 by 1.2 m.

Description features:

There were 3 vertical posts and 2 vertical wood planks still in place. Two posts just southeast of the firepit area probably represented the central support structure for the house. The third post was in the southeast quadrant on the edge of the floor. One piece of vertical wood was in the northeast and one in the southeast quadrant. There were over 50 pieces of burned wooden

FIGURE 11 35 KL 16
FLOOR 1 HOUSE PIT 1



beams and slabs on Floor 1, some on top of others. Most lay with their long axis perpendicular to the floor edge. They were primarily near the perimeter of the floor; however, several had fallen over the firepit area. Two of these had fallen so that their lower edges were in the pit. The arrangement of the wood indicated that the house, at the time this floor was in use, was built with supporting posts near the edges and in the center, with slabs or beams laid from the house edge to the center. When the house collapsed most of the wood fell inward. The vertical wood near the perimeter may indicate the interior walls were also lined with wooden slabs or planks.

Several grinding stones were associated with Floor 1. Three milling slabs were outside the house rim on the west side. There were two milling slabs in the southeast quadrant, one just northwest of the firepit, and one west of the firepit. There were several concentrations of muller fragments, most of them within the house rim in the northwest, southeast and northeast quadrants. These were often associated with a milling slab.

Two antler wedges were found in the southeast quadrant, about 1 m west of the base of the burial but probably not associated with it. They appeared to represent some manufacturing activity on Floor 1.

House Pit 2

Before excavation the depression was approximately 8 m in diameter and 95 cm deep; it had originally been excavated into the slope of the terrace. Excavation revealed 4 apparent occupation levels, two of which were floors. The excavation of this house was begun by exposing parts of the last occupation level. This rested on top of Stratum IV, a gray, dry loam, which was overlaid by Stratum V, a sandy deposit found only near the center of the pit and in a run-off channel which cut through the house pit. Excavation continued by digging a one meter-wide test trench 8 m long, which exposed Floor 2, more of Stratum IV, and Stratum III. After excavation of the trench down to Stratum III, the rest of the house pit was excavated first to Stratum IV and then to Stratum III. The remaining strata, Strata I, II, and IIa, and Floor 1 were exposed by the excavation of 2 one meterwide trenches which cut through the center of the house, one extending 8 m north-south and one 7 m east-west.

Occupation Level 4

There was a 2 to 3 cm thick layer of sod overlying this occupation level. Only a very small area in the north part of the house pit was recorded in detail. Pieces of wood, charcoal, bone and a few pot sherds and stone

artifacts were mentioned in the notes of the excavation, but their provenience was not recorded.

Floor 2 Occupation Level 3 (Figure 12)

Maximum diameter: 7 m.

Depth from surface: 4-10 cm.

This floor was completely excavated but incompletely recorded. There was a heavy concentration of rock on the northern and eastern edge of the floor. Two milling slabs and three mullers were located in the northeast and southeast quadrants. There was a clay cap noted on the northern edge just in from the rock concentrations. There was also a clay overlay on the west side of the house, but it was not as compact as the clay on the north. It may have resulted when material slipped into the house after the abandonment of Floor 2. The presence of wood, artifacts, flakes and an area compacted from an apparent fire hearth were mentioned in the notes, but their exact locations were not recorded.

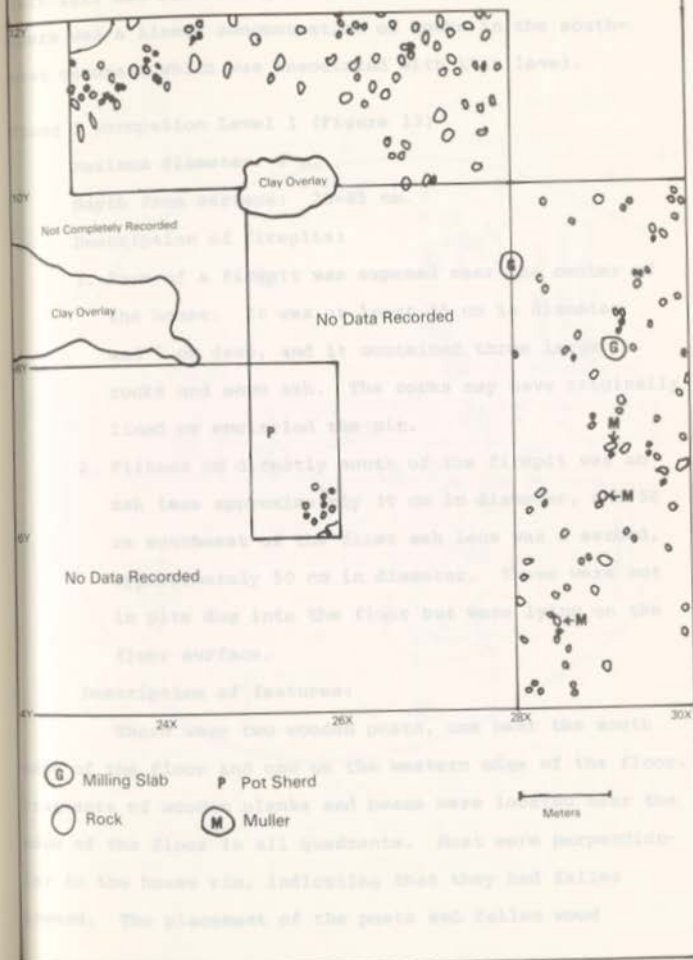
Occupation Level 2

Maximum diameter: 5.5 m.

Depth from surface: 10-30 cm.

The existence of this occupation level was deduced from the stratigraphy. The break between Stratum III, which was a hard, brown, clayey fill and stratum II, a soft,

FIGURE 12 35 KL 16
HOUSE PIT 2, FLOOR 2



dark fill has been designated as an occupation level. There was a linear concentration of rocks in the south-east quadrant which was associated with this level.

Floor 1 Occupation Level 1 (Figure 13)

Maximum diameter: 6 m.

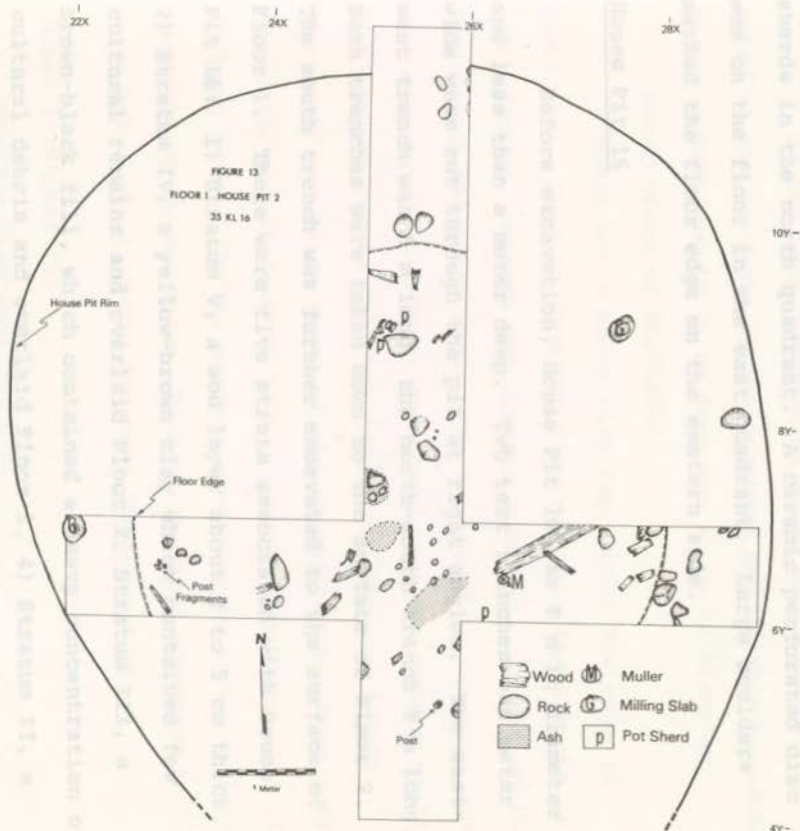
Depth from surface: 25-85 cm.

Description of firepits:

1. Part of a firepit was exposed near the center of the house. It was at least 35 cm in diameter and 5 cm deep, and it contained three large rocks and some ash. The rocks may have originally lined or encircled the pit.
2. Fifteen cm directly south of the firepit was an ash lens approximately 30 cm in diameter, and 50 cm southeast of the first ash lens was a second, approximately 50 cm in diameter. These were not in pits dug into the floor but were lying on the floor surface.

Description of features:

There were two wooden posts, one near the south edge of the floor and one on the western edge of the floor. Fragments of wooden planks and beams were located near the edge of the floor in all quadrants. Most were perpendicular to the house rim, indicating that they had fallen inward. The placement of the posts and fallen wood



indicated a house with support posts near its edges and beams or planks laid from the house rim to the center of the house.

There was a muller in the east quadrant and pot sherds in the north quadrant. A ceramic perforated disc was on the floor in the east quadrant. Large boulders marked the floor edge on the eastern side.

House Pit 16

Before excavation, House Pit 16 was 8 m in diameter and less than a meter deep. Two test trenches one meter wide were cut through the pit at right angles. The east-west trench was 8 m long, the north-south trench 9 m long. Both trenches were taken down to the surface of Floor 2. The south trench was further excavated to the surface of Floor 1. There were five strata associated with House Pit 16: 1) Stratum V, a sod layer about 2 to 5 cm thick, 2) Stratum IV, a yellow-brown clay which contained few cultural remains and overlaid Floor 2, Stratum III, a brown-black fill, which contained a heavy concentration of cultural debris and overlaid Floor 1, 4) Stratum II, a black-brown clay and 5) Stratum I, a yellow base clay. The division between Strata II and III was not always clear, due to a great deal of rodent activity.

Floor 2 (Figure 14)

Maximum diameter: c. 5.5 m.

Depth from surface: 10-45 cm.

Description of firepit:

An ash lens, surrounded by an ashy fill was located at the juncture of the northern and western trenches. It was approximately 15 cm deep and 45 cm in diameter.

Description of features:

There was a heavy clay cap around the edge of the house. Just in from the clay cap were large rocks in the northern, eastern and western trenches. In the southern trench the large rocks were implanted in the clay cap. The only house structures recovered were two wooden posts. One was set within the clay cap in the western trench. The other was 25 cm north of the firepit area. This indicated the possibility of both a central and outer ring of support posts. In the eastern trench there were two large deposits of animal bone. Most of the bone appeared to have been from a single immature Odocoileus sp.

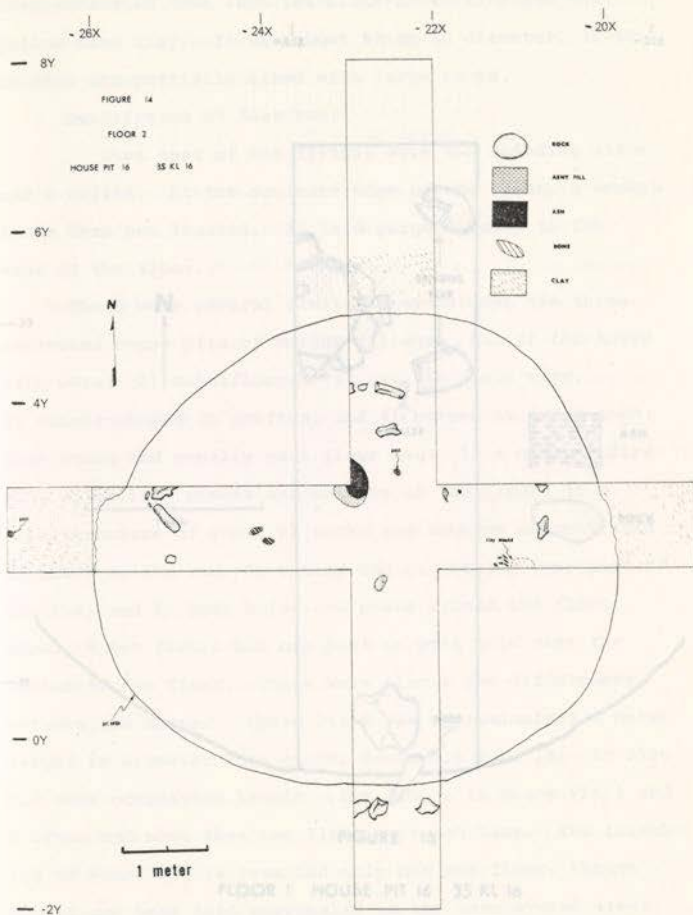
Floor 1 (Figure 15)

Maximum diameter: c. 6 m.

Depth from surface: 40-95 cm.

Description of firepit:

A large firepit filled with ash was located at the juncture of the western and southern trenches. It had



been excavated down into the black-brown clay and the yellow base clay. It was $\frac{1}{2}$ m. out 60 cm in diameter, 10-40 $\frac{1}{2}$ m. deep and partially lined with large rocks.

Description of Features:

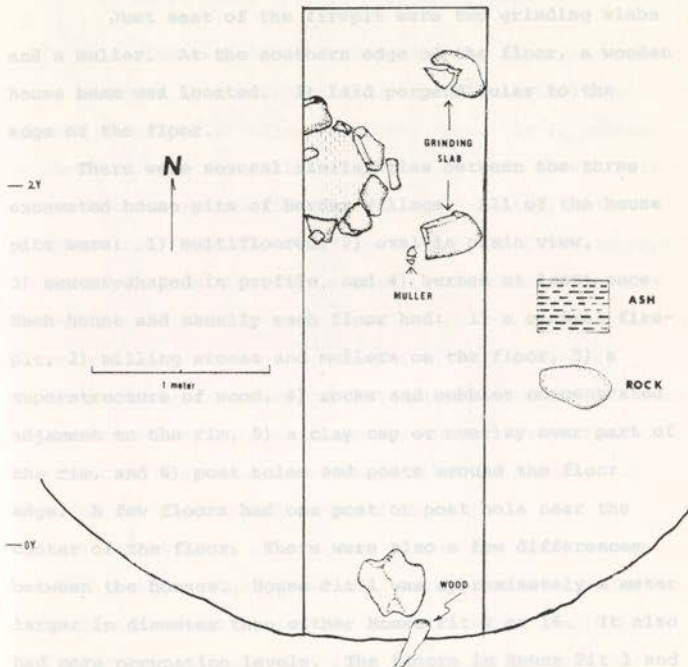


FIGURE 15

FLOOR I HOUSE PIT 16 35 KL 16

been excavated down into the black-brown clay and the yellow base clay. It was about 60 cm in diameter, 30-40 cm deep and partially lined with large rocks.

Description of features:

Just east of the firepit were two grinding slabs and a muller. At the southern edge of the floor, a wooden house beam was located. It laid perpendicular to the edge of the floor.

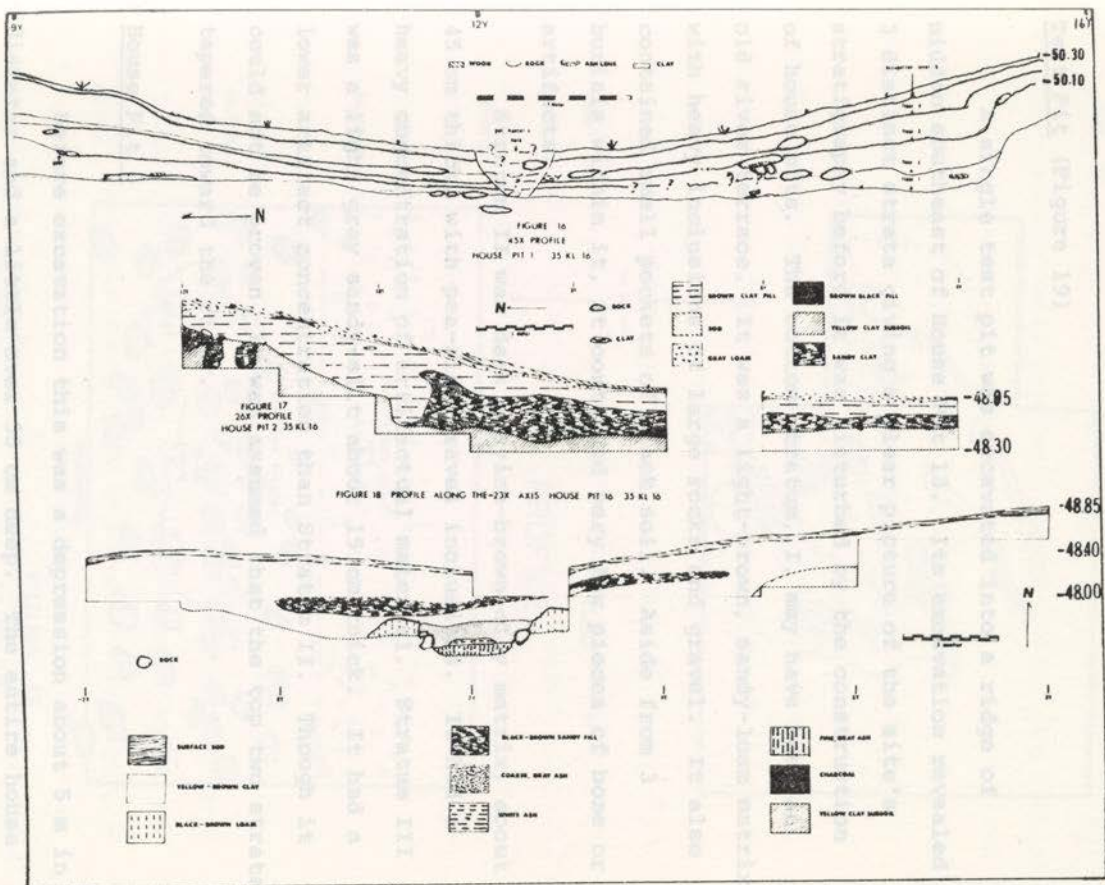
There were several similarities between the three excavated house pits of Border Village. All of the house pits were: 1) multifloored, 2) oval in plain view, 3) saucer-shaped in profile, and 4) burned at least once. Each house and usually each floor had: 1) a central firepit, 2) milling stones and mullers on the floor, 3) a superstructure of wood, 4) rocks and cobbles concentrated adjacent to the rim, 5) a clay cap or overlay over part of the rim, and 6) post holes and posts around the floor edge. A few floors had one post or post hole near the center of the floor. There were also a few differences between the houses. House Pit 1 was approximately a meter larger in diameter than either House Pit 2 or 16. It also had more occupation levels. The floors in House Pit 1 and 2 often had more than one firepit or ash lens. The trenching of House Pit 16 revealed only one per floor, though others may have laid unrevealed in the unexcavated areas

of the house floor. House Pit 1 also had a possible bench adjacent to its floors and rim; House Pits 2 and 16 did not (Figures 16, 17 and 18).

35 KL 18 (S.C. 4), Big Boulder Village

This site is a large village with 14 apparent house pits, arranged in 3 irregular rows, which parallel the Klamath River and an adjacent midden area. It is located in the SE 1/4 of the SW 1/4 of sec. 3, T.41S, R. 6E, just across the river from 35 KL 20 and approximately 400 m upstream from 35 KL 19. The site covers the first terrace of the river from the river's edge inward about 50 m and extends for 75 m north-south. In the center of the site there is a large boulder, approximately 1.5 m square, which has several depressions cut into its top half. These may be cupulates, a type of rock art common in northern California. They have also been called "rain rocks" or "baby rocks" (Heizer and Baumhoff 1962).

A single house pit, number 3, was excavated during the 1961 season. During the 1962 season two additional house pits, numbers 11 and 13, were excavated, and a 1.5 by 1.25 m test pit was excavated into a midden area to the southeast of the pithouses (Map 9). A single charcoal and wood radiocarbon sample taken from the "floor fill" of House Pit 3 was assayed dating it at 510 ± 110 B.P. or



A.D. 1440 $\pm$ 110 (Tx-316, Texas V).

Test Pit (Figure 19)

A single test pit was excavated into a ridge of midden southeast of House Pit 13. Its excavation revealed 3 distinct strata giving a clear picture of the site's stratigraphy before it was disturbed by the construction of house pits. The bottom stratum, I, may have been an old river terrace. It was a light-brown, sandy-loam matrix with heavy inclusions of large rocks and gravel. It also contained small pockets of black soil. Aside from 3 burials within it, it contained very few pieces of bone or artifacts.

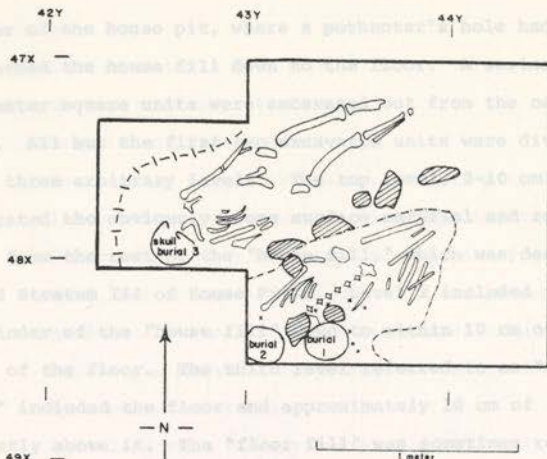
Stratum II was dark grayish-brown clay matrix, about 45 cm thick, with pea-size gravel inclusions. It had a heavy concentration of artifactual material. Stratum III was a light gray sandy-silt about 15 cm thick. It had a lower artifact concentration than Stratum II. Though it could not be proven, it was assumed that the top two strata tapered toward the river.

House Pit 3

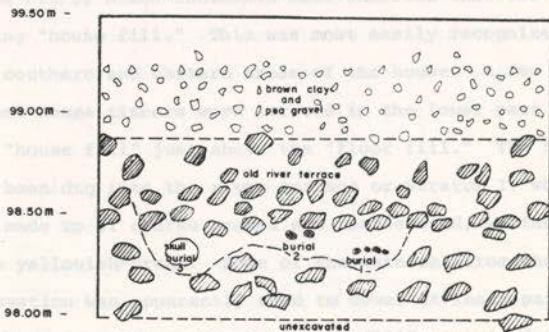
Before excavation this was a depression about 5 m in diameter and a little over 50 cm deep. The entire house pit was excavated to the floor. Excavation began at the

PLAN VIEW

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PROFILE



- APPROXIMATE LEVEL
- - - - - RAISED AREA OF BURIALS 1 & 2
- STONE
- |-|-| EDGE OF GRAVE
- BONE
- x OBSIDIAN OR CHERT FLAKE

FIGURE 19
35 KL 18
TEST PIT
AND
BURIALS

center of the house pit, where a pothunter's hole had disturbed the house fill down to the floor. A series of two-meter square units were excavated out from the central unit. All but the first two excavated units were divided into three arbitrary levels. The top level, 0-10 cm depth, separated the obviously loose surface material and root zone from the rest of the "house fill," which was designated Stratum III of House Pit 3. Level 2 included the remainder of the "house fill" down to within 10 cm or less of the floor. The third level referred to as "floor fill" included the floor and approximately 10 cm of fill directly above it. The "floor fill" was sometimes recognized by a thin, dark layer, designated Stratum II of House Pit 3, which contained more charcoal than the preceding "house fill." This was most easily recognized in the southern and eastern areas of the house. A few burned house timbers were located in the lower part of the "house fill" just above the "floor fill." The house had been dug into the river terrace or Stratum I, which was made up of coarse gravel and coarse sand, weathered to a yellowish-brown. Some of the material from the pit excavation was apparently used to cover at least part of the house structure, as the "house fill" contained many cobbles and gravel. The floor was dished, with a fireplace in the center and on the northeast edge.

Floor (Figure 20)

Maximum diameter: 5.22 m.

Depth from surface: 40-78 cm.

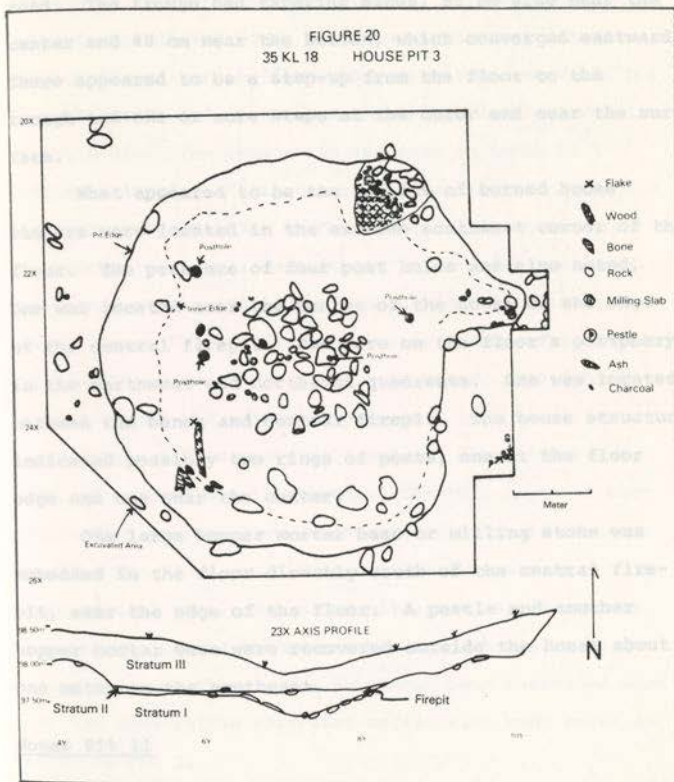
Description of firepits:

1. There was a large, irregular, central pit, 150 by 100 by 30 cm, which was partly lined and surrounded by rocks; it contained a layer of gray sand, but no ash or charcoal. It was probably used as a central firepit, but either cleaned out before the house was abandoned or partly destroyed by a pothunter's hole.
2. A smaller oval firepit, measuring 110 by 80 cm, was located in the northeast quadrant of the floor immediately adjacent to the wall. It was filled with ash and charcoal and partly lined with cobbles. Its depth was not recorded. It appeared to have previously been used as a cache pit.

Description of features:

There was a low curved shelf or bench along the western wall of the house. It was not clearly defined and may only have been a gently sloping wall as compared to the steep-faced eastern wall. It was about 40-75 cm wide. It was directly opposite a possible entrance trough in the eastern wall.

FIGURE 20
35 KL 18 HOUSE PIT 3



Complete excavation of the entrance trough was not possible because the outer end projected into an access road. The trough had tapering sides, 85 cm wide near the center and 48 cm near the bottom, which converged eastward. There appeared to be a step-up from the floor to the trough and one or more steps at the outer end near the surface.

What appeared to be the remains of burned house timbers were located in the extreme southwest corner of the floor. The presence of four post holes was also noted. One was located near the center of the house on the edge of the central firepit. Two were on the floor's periphery in the northwest and northeast quadrants. One was located between the bench and central firepit. The house structure indicated possibly two rings of posts, one at the floor edge and one near the center.

One large hopper mortar base or milling stone was embedded in the floor directly south of the central firepit, near the edge of the floor. A pestle and another hopper mortar base were recovered outside the house about one meter to the southeast.

House Pit 11

Before excavation this depression was approximately 5 m in diameter and 55 cm deep. The entire house pit was

excavated to floor level. Features on the floor such as post holes, firepits and cache pits were excavated to Stratum I. A one-meter wide trench 7 m long north-south was cut through the house fill, to the floor and house rim. Units of varying dimensions were then excavated out from the north end of the trench, followed by other units on the south. The excavation was done in terms of 4 arbitrary levels. First the top 10 cm, including most of the root zone and loose surface material, were removed. The succeeding levels were 20 cm. thick. The top level was termed surface fill, the second and third levels were termed "house fill." This was a gray, sandy silt, labeled Stratum III of House Pit II in this paper. The fourth level included the compacted gray soil just above the floor, fills of the cache pits and the floor itself, a layer of compacted yellow earth. The thin layer of compacted dark gray soil was designated Stratum II of House Pit II. The floor was dished, with 2 firepits in the south-central area. Two cache pits, one on the western edge and one on the southern edge of the house, were adjacent to the floor. The house had been excavated down into the same yellow clay-like matrix with many rocks as had House Pit 3.

Floor (Figure 21)

Maximum diameter: 4.1 m.

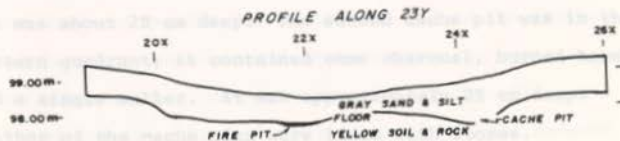
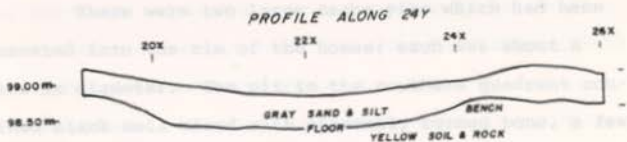
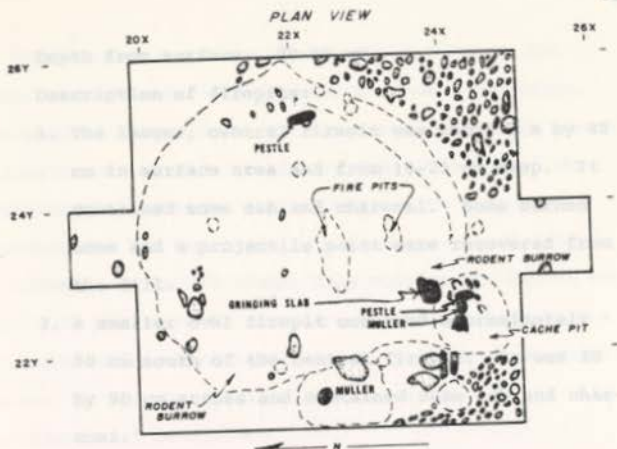


FIGURE 21

35 KL 18

HOUSE PIT II

SCALE
2 METERS

- Post hole
- Rock
- Artifact
- Bone
- ▲ Projectile Point
- Wood

Depth from surface: 20-50 cm.

Description of firepits:

1. The larger, central firepit was about 1 m by 40 cm in surface area and from 10-25 cm deep. It contained some ash and charcoal. Some burned bone and a projectile point were recovered from the fill.
2. A smaller oval firepit occurred approximately 50 cm south of the central firepit. It was 20 by 50 cm across and contained some ash and charcoal.

Description of features:

There were two large cache pits which had been excavated into the rim of the house; each was about a meter in diameter. The pit in the southern quadrant contained black soil mixed with charcoal, burned bone, a few scrapers, 3 projectile points, a muller and a pestle. The pit was about 20 cm deep. The second cache pit was in the western quadrant; it contained some charcoal, burned bone and a single muller. It was approximately 25 cm deep. Neither of the cache pits were lined with stones.

Eight post holes were discovered in the floor and on the rim of this house. Three of them were grouped within 10 cm of each other on the bench in the eastern quadrant. The others were more widely scattered, two at

the floor's edge and three on the floor close to the center of the house. The placement of the post holes, with some of them outside the floor rim and others placed in from the floor edge at least a meter, indicated the possibility of an outer ring of posts with a few inner support posts for the roof.

There was an additional hole outside the rim of the house. It was 40 cm in diameter, too big to have been a post hole, since these tended to be 10-15 cm in diameter. However, it was much smaller than the 2 cache pits. Its function was not determined.

There were few grinding stones directly associated with the floor. A broken grinding slab occurred in the southern quadrant adjacent to the cache pit, and a pestle was found in the eastern quadrant.

There was a possible bench around the southeast edge of the floor. It was 25 cm wide and raised about 10-15 cm above the floor. It tapered off on the north adjacent to the possible entrance, and on the south it ended adjacent to a rodent burrow and a cache pit.

Apparently, the outer rim of the house was covered with cobbles and rocks, many of which were clearly located to the southeast and southwest of the house rim. Careless excavation on the north edge did not preserve the location of rocks and cobbles, but the presence of some were noted

during excavation. These rocks may have been piled up around the house to help secure the base of a wall of planks and brush.

The only burned wood in this house were pieces of charcoal in the firepit and cache pit, and 2 pieces of what appeared to have been bark slabs which were located at the southwest edge of the floor, in the lower part of the "house fill," approximately 25 cm from the surface.

House Pit 13

House Pit 13 was a slightly oval depression with a pothunter's hole cut in the center. Before excavation the depression was approximately 5.5 m in diameter and 45 cm deep. After excavation the house, at its rim was seen to have a diameter of 4.5 m. The excavation procedure was similar to that used on House Pit 11. First, with crews working simultaneously at different locations along a 7.5 m trench, a meter-wide, east-west trench was cut through the depression. After reaching the level of burned timbers, excavation units adjacent to the trench were excavated to the level of the timbers. The trench was then excavated to the floor surface and excavation of the adjacent units followed. Each excavation unit was dug in arbitrary levels. The top level, 0-10 cm, included the root zone and surface deposits. The next level, 10-30 cm, was usually "house fill," here designated Stratum II of House

Pit 13; however, in some units it included the house rim and "floor fill." Excavation of a third level, from 30-50 cm, was not always necessary to reach the floor. This level contained the lower "house fill," the "floor fill" and the rim fill in some units. These arbitrary levels were used for artifact recording, so very few artifacts recorded below 10 cm can be associated precisely with "house fill" or "floor fill."

The "house fill," Stratum II, was a dark brownish-grey, sandy fill with equal quantities of fine gravel and large rocks and cobbles. Stratum I was the base stratum, a yellow soil with gravel and rock inclusions. At least three other strata just outside the house rim were noted when the trench wall was straightened, but they were not drawn or described in detail.

The house had been destroyed by fire so several of the superstructure timbers were recovered in the form of wood, charcoal and ash. Most of the timbers laid with their long axis toward the center of the house. Some timbers were at right angles to others and may have been tie beams. The area just outside the house rim contained a heavy concentration of cobbles and rocks. These may have been used to hold brush and timbers in place at ground level.

was located on the west edge of the floor area directly opposite the presumed post. There are large

Floor (Figure 22)

Maximum diameter: 4.25 m.

Depth from surface: 20-75 cm.

Description of firepit:

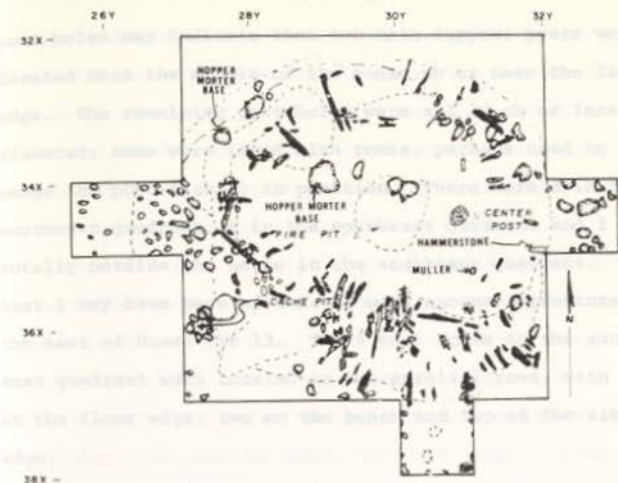
There was a single firepit near the center of the floor. It was approximately a meter in diameter and 20 cm deep. It had been severely damaged by the pot-hunter's hole, so its precise measurements are not known. It appeared that it may have been partly lined with rocks or surrounded by them before it was disturbed. It contained some ash and charcoal.

Description of features:

There were two cache pits in the southwest quadrant of the floor. One was located adjacent to the floor in the house wall. It was 40 cm in diameter and 15 cm deep. The second cache pit was immediately adjacent to the first but outside the house rim. It was lined with cobbles and was about 30 cm in diameter and 18 cm deep.

One large vertical post about 18 cm in diameter was found in place in the floor, about 40 cm east of the firepit. It was 20 cm long and charred from the floor level up. There were several post holes in the floor, bench and rim of the house. A large post hole about 20 cm in diameter was located on the west edge of the floor almost directly opposite the preserved post. These two large

PLAN VIEW



PROFILE ALONG 35X

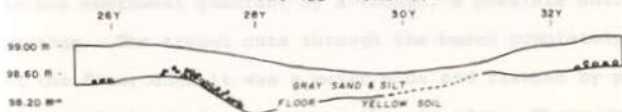
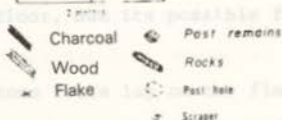


FIGURE 22

35 KL 18

HOUSE PIT 13

SCALE



post holes may indicate that two main support posts were located near the middle of the house on or near the floor edge. The remaining post holes were all 10 cm or less in diameter; some were lined with rocks, perhaps used to wedge the post tightly in position. There were 3 in the southwest quadrant, 6 in the southeast quadrant and 2 totally outside the house in the southeast quadrant. These last 2 may have been associated with another structure to the east of House Pit 13. The 6 post holes in the southeast quadrant were located in two parallel rows, with two at the floor edge, two on the bench and two at the rim edge.

A possible bench was located along the southern edge of the floor. It was over a meter wide near its center and narrowed to the east and west. It was broken in the southwest quadrant by a trough, a possible entrance passage. The trough cuts through the bench completely. At the floor edge it was a meter wide and flanked by post holes. It tapered to 30 cm at the rim edge. There was another large depression, a meter in diameter, on the northwest edge of the floor, but its possible function was not determined.

Several ground stone tools lay on the floor of House Pit 13. There was a large hopper mortar base just 30 cm west of the firepit in the northwest quadrant, and another

on the outer edge of the house rim in the northwest quadrant. On the eastern floor edge there was a hammerstone, and in the southeast quadrant a broken muller was located. A scraper was the only flaked stone artifact directly associated with the floor. It was in the northeast quadrant near the floor edge. Unfortunately, in such layer

The excavated house pits of Big Boulder Village have several characteristics in common. All three had: 1) a single floor or occupation level, 2) a central firepit, 3) cache pits adjacent to the outer rim, 4) a ring of flint cobbles and stones around the rim, 5) a superstructure of wood, which was usually cedar, although some pine was used, 6) possible entrances on the east side, 7) partial benches or shelves along one side between the floor and the outer rim, 8) hopper mortar bases or grinding slabs embedded in the floors, and 9) an oval plan view and a saucer-shaped profile. There were, however, differences as well. House Pit 3 was a meter larger in diameter than either House Pit 11 or 13, and it had two firepits, one of which appeared to have been in a former cache pit. House Pit 11 also had a second ash lens or firepit. House Pit 11 and 13 had several post holes on their benches, House Pit 3 had none on its bench. Small flint, on its right side, head 13° of south.

All three house pits had similar stratigraphies. They had been dug into an orange-yellow to yellow-tan

gravel or compacted loam with heavy gravel inclusions, which was probably the base stratum for all of Big Boulder Village. The layer just above the floor, designated the "floor fill" was black in House Pit 3 and dark gray in House Pit 11. These represented the deposit accumulated while the houses were in use. Unfortunately, no such layer was identified in House Pit 13. The upper strata of the houses consisted of brownish-gray to gray sandy-silt with inclusions of gravel and cobbles. This most likely included a mixture of materials from the midden. In digging the house pits, the inhabitants would have thrown up midden materials to later slump into the empty house pit along with more recent deposits. This was demonstrated by the mixture of projectile point types in the "house fill" of all the houses.

In Stratum I of Big Boulder Village in the Test Pit were 3 human burials in poor condition (Figure 19). The depths of these burials indicated they were deposited before the pithouses were constructed. They may also have been older than the burials from Klamath Shoal Midden.

Burial 1 (Feature 30)

Age: Adolescent or adult.

Position: Semi-flexed, on its right side, head 15° west of south.

Condition: Poor, only the skull and long bone shafts were present.

Depth from surface: 110 cm.

Location: 47.5-48.5X/43-44Y, in Stratum I.

Comments: This individual was buried in a common grave with Burial 2. It was possibly covered with large cobbles, but the cobbles had been removed without recording their precise position before the burial was discovered.

Burial 2 (Feature 36a)

Age: Adult.

Position: Semi-flexed, with the skull 15° west of south.

Condition: Poor, only the skull, long bone shafts, a few vertebra and a few ribs were present.

Depth from surface: 110 cm.

Location: 47-48.5X/43-44.5Y, in Stratum I.

Comments: Burials 1 and 2 were side-by-side in a common grave. There was a short stack of stones placed between the two skulls. There were large cobbles above the grave which may have covered it originally.

Burial 3 (Feature 36b)

Age: Adult.

Position: Extended on back, with its face turned to the left.

Condition: Poor, only the skull, long bone shafts, some ribs and some vertebra were present.

Depth from surface: 128 cm.

Location: 47-48.05X/42.25-44Y, in Stratum I.

Comments: This individual had been placed in a rounded, rectangular grave. The grave was covered by a thin layer of fine gravel over which large cobbles were placed.

The two graves were dug at different times. Burial 3 was dug from within Stratum I, while Burials 1 and 2 originated at the boundary between Stratum I and Stratum II. How much time was represented by this difference was not determinable. However, the differences in burial position in the two graves suggest a significant time difference.

All the complete burials from Klamath Shoal Midden

were either flexed or semi-flexed. Those from the Test pit at Big Boulder Village were either semi-flexed or fully extended. None of the burial practices used at Big Boulder Village or Klamath Shoal Midden were similar to the burial practices of the recent inhabitants of the area: Klamath, Modoc, Shasta or Takelma.

TABLE 1. --Radiocarbon dates for the Salt Cave Locality

Site	I. D. Number	Original Date	Corrected for New Half-Life and MASCA Correction Factor	Reference
35 KL 21	I-502	1280 + 125, A. D. 670	1296 + 125, A. D. 654	Radiocarbon, Vol. 8
	Tx-321	990 + 110, A. D. 960	1009 + 110, A. D. 941	Radiocarbon, Vol. 9
	I-807	6065 + 400, 4115 B. C.	7646 + 400, 5696 B. C.	Cressman and Olein 1963
35 KL 18	Tx-316	510 + 110, A. D. 1440	564 + 110, A. D. 1386	Radiocarbon, Vol. 9
35 KL 16	I-1337	540 + 120, A. D. 1410	580 + 120, A. D. 1370	Anderson and Cole 1964
	Tx-326	Modern		Radiocarbon, Vol. 9

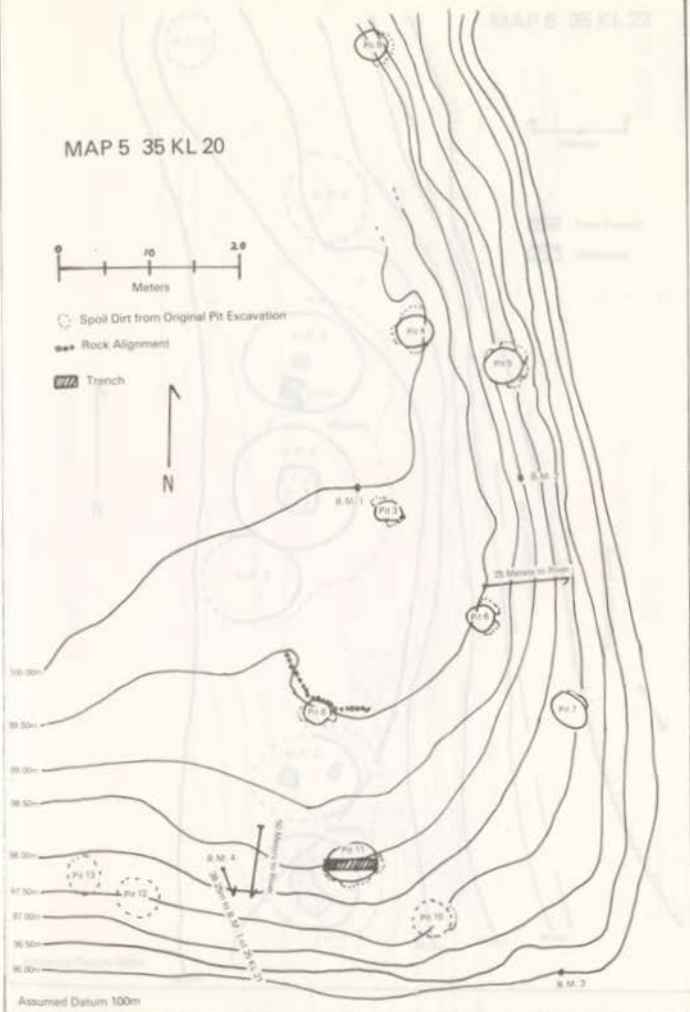
MAP 5 35 KL 20



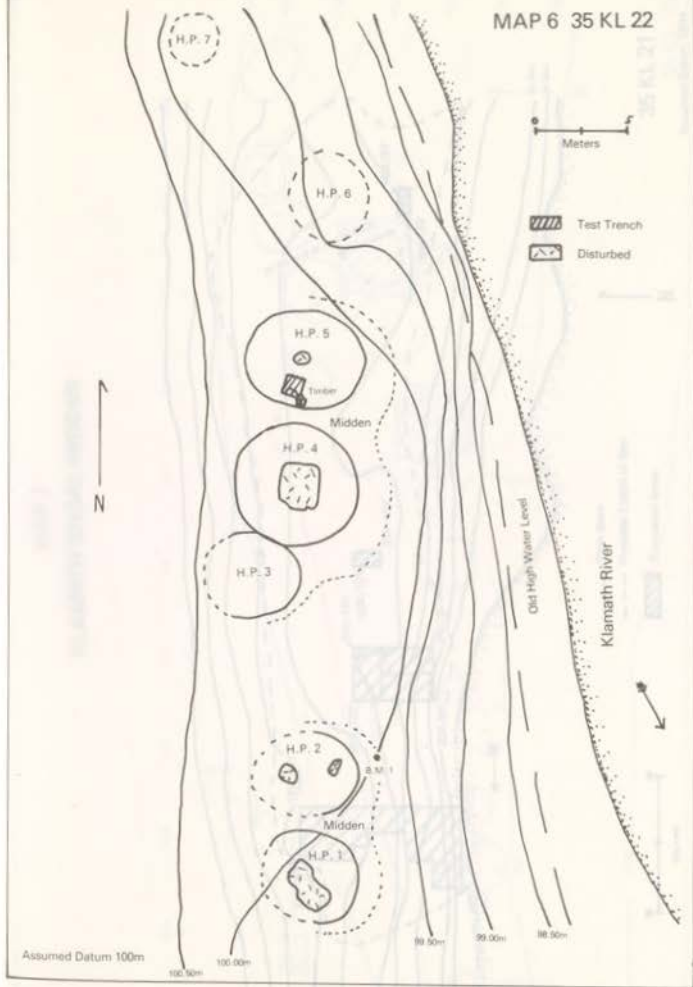
○ Spoil Dirt from Original Pit Excavation

●●● Rock Alignment

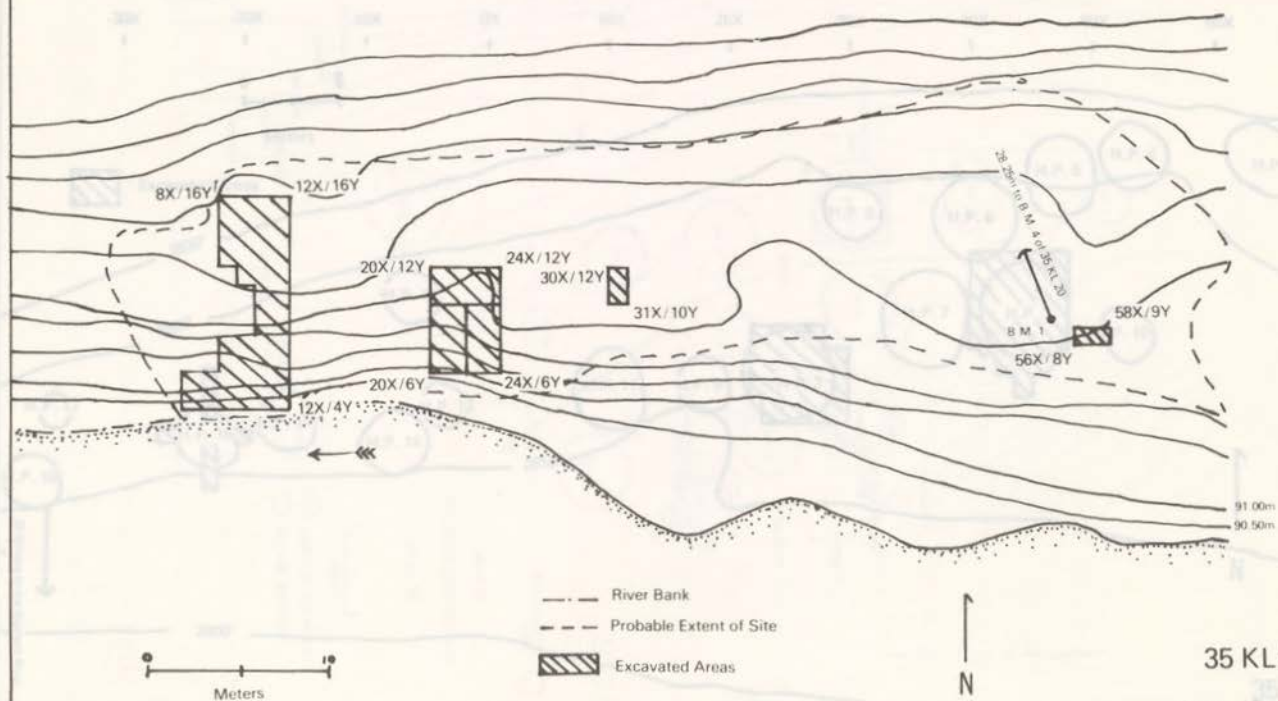
▨ Trench



MAP 6 35 KL 22



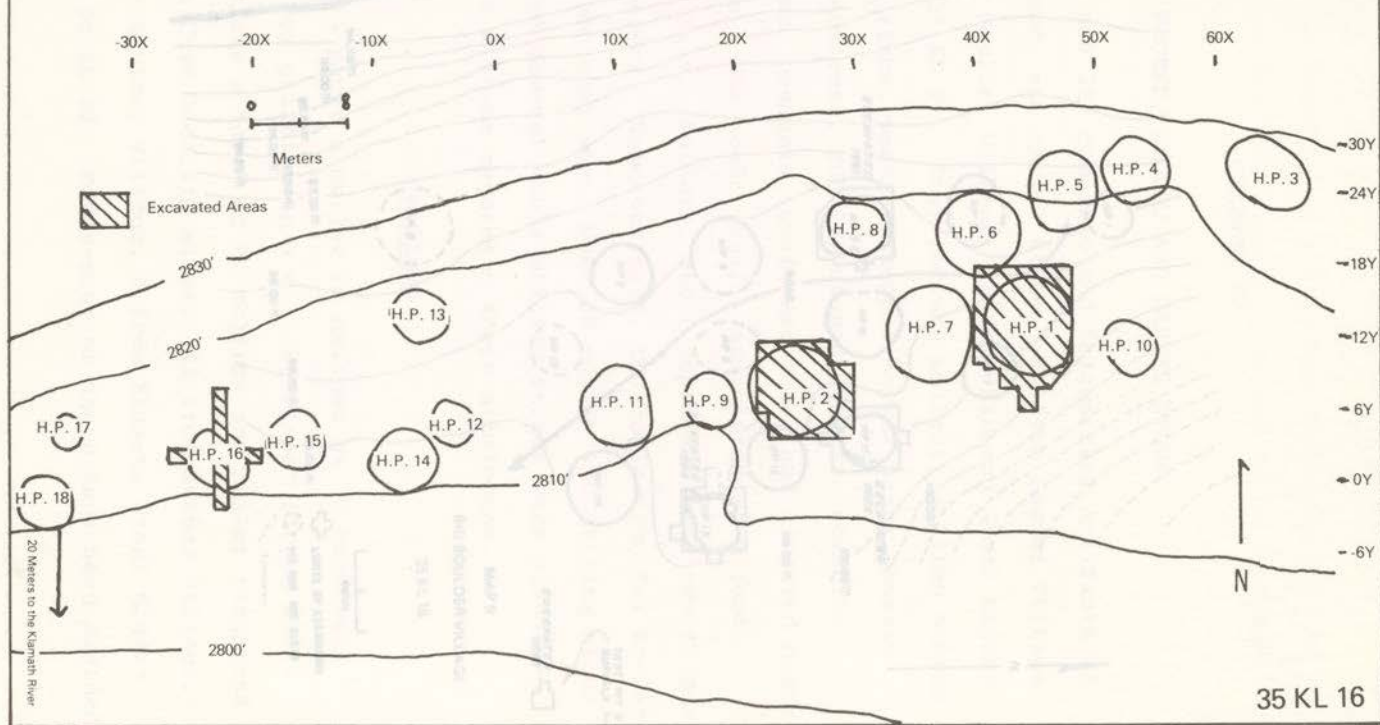
MAP 7 KLAMATH SHOAL MIDDEN



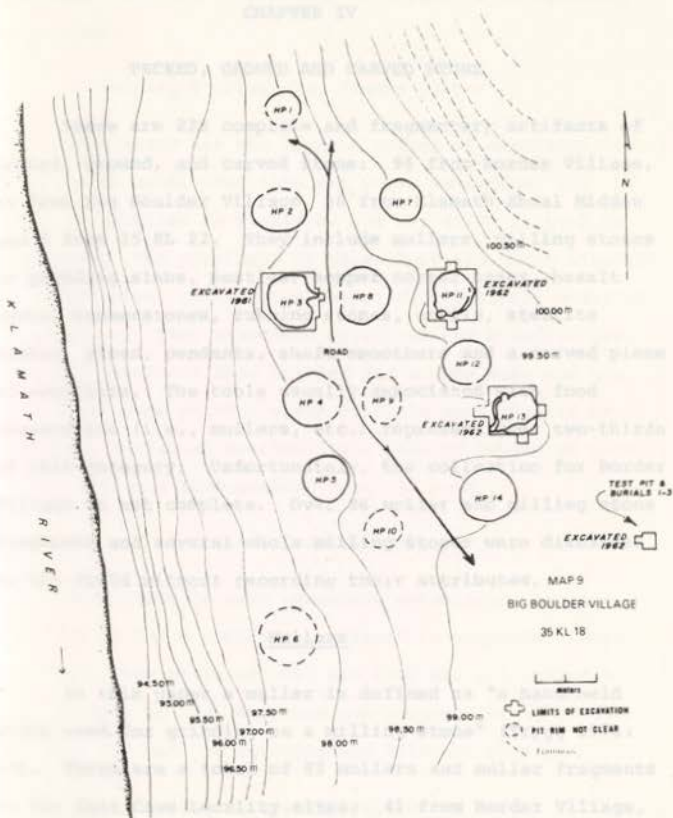
35 KL 21

Assumed Datum 100m

MAP 8 BORDER VILLAGE



35 KL 16



CHAPTER IV

PECKED, GROUND AND CARVED STONE

There are 228 complete and fragmentary artifacts of pecked, ground, and carved stone: 96 from Border Village, 89 from Big Boulder Village, 38 from Klamath Shoal Midden and 5 from 35 KL 22. They include mullers, milling stones or grinding slabs, pestles, hopper mortar bases, basalt bowls, hammerstones, rubbing stones, anvils, steatite dishes, pipes, pendants, shaft smoothers and a carved piece of argillite. The tools usually associated with food preparation (i.e., mullers, etc.) represent over two-thirds of this category. Unfortunately, the collection for Border Village is not complete. Over 30 muller and milling stone fragments and several whole milling stones were discarded in the field without recording their attributes.

Mullers

In this paper a muller is defined as "a hand-held stone used for grinding on a milling stone" (Trygg 1971: 10). There are a total of 82 mullers and muller fragments in the Salt Cave Locality sites: 41 from Border Village, 30 from Big Boulder Village, 8 from Klamath Shoal Midden and 3 from 35 KL 22. Forty-nine of these have been divided

into 6 classes based on 13 attributes (Appendix C); the remainder were too fragmentary or unique to be assigned to a class.

Class 1 (Plate Ia, Figure 23a-c)

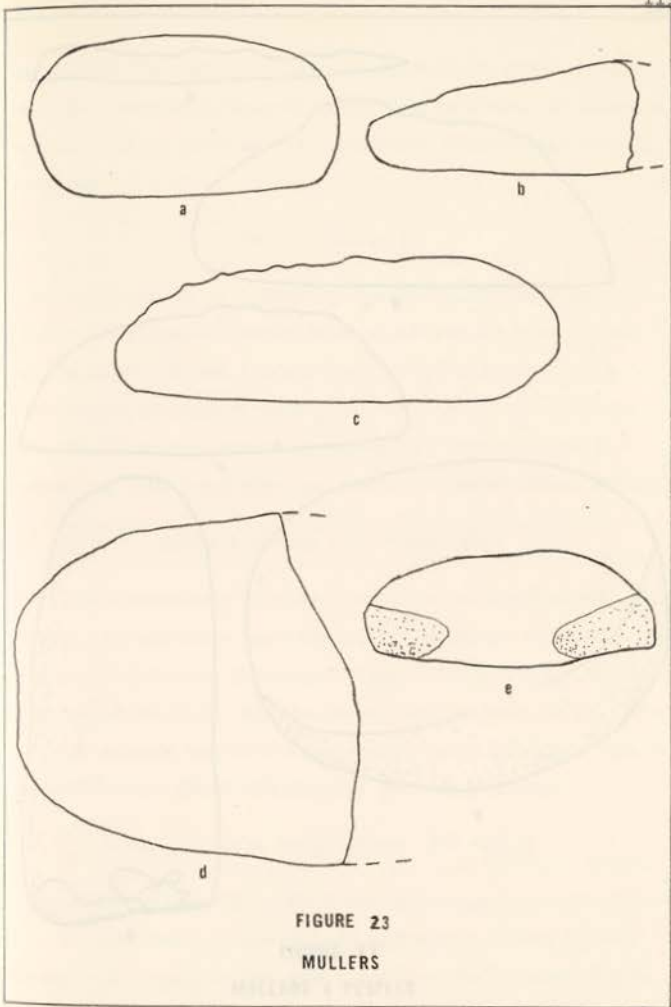
This class has the largest number of specimens, 20. They can be subdivided into two major varieties, 1a, which is circular in plainview and 1b, which is oval in plainview. The specimens in this class are often naturally shaped river cobbles, though a few are partly modified by grinding. They show both unifacial and bifacial use; bifacial specimens show heavier use on one side and are most often made of fine grain volcanic rock, basalt or andesite, unifacial specimens are made of vesicular basalt, welded tuff and fine-grained volcanic rock.

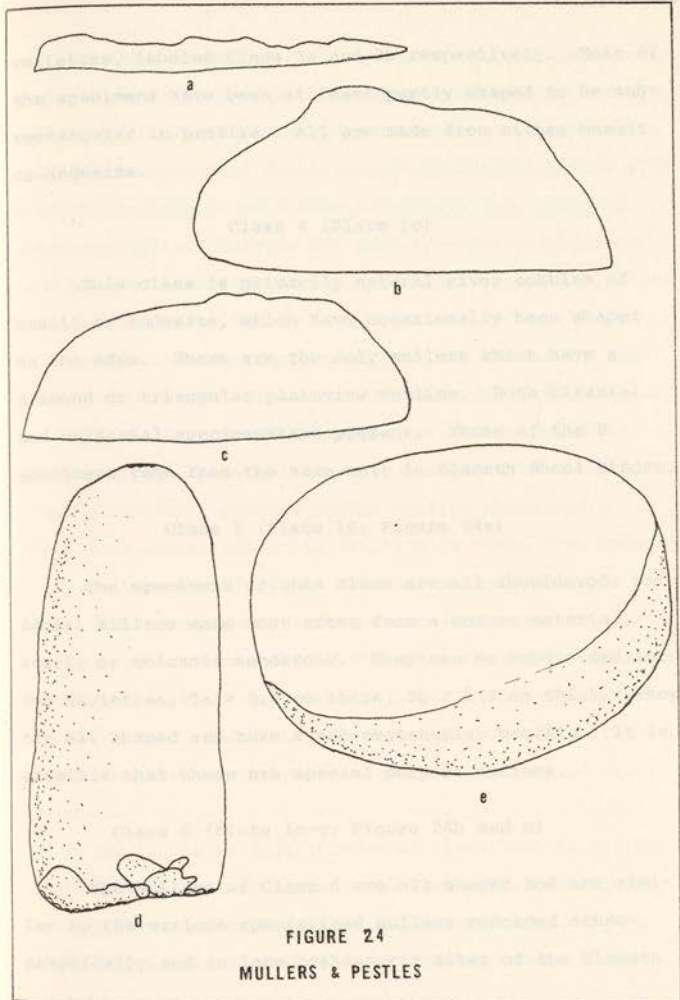
Class 2 (Figure 23d)

This class is very tenuously established because only one of the 8 specimens assigned is complete. Most specimens show bifacial use, and they are all shaped to some extent, so that they are sub-rectangular in profile. They are all made of fine-grained volcanic rock.

Class 3 (Plate Ib; Figure 23e
and Figure 24e)

This class can be subdivided into large and small





varieties, labeled Class 3a and 3b respectively. Most of the specimens have been at least partly shaped to be sub-rectangular in profile. All are made from either basalt or andesite.

Class 4 (Plate 1c)

This class is primarily natural river cobbles of basalt or andesite, which have occasionally been shaped on the edge. These are the only mullers which have a diamond or triangular plainview outline. Both bifacial and unifacial specimens are present. Three of the 8 specimens came from the same unit in Klamath Shoal Midden.

Class 5 (Plate 1d; Figure 24a)

The specimens of this class are all shouldered, unifacial mullers made most often from a coarse material, scoria or volcanic sandstone. They can be subdivided into two varieties, 5a > 3.0 cm thick, 5b < 1.5 cm thick. They are all shaped and have a sub-rectangular profile. It is possible that these are special purpose mullers.

Class 6 (Plate 1e-g; Figure 24b and c)

The mullers of Class 6 are all shaped and are similar to the various specialized mullers recorded ethnographically and in late prehistoric sites of the Klamath

and Modoc (Cressman 1956). They include in subdivision 6a hemispherically shaped mullers, developmental two-horned mullers and mullers with a transverse ridge. Class 6b is a single example of a "bell-shaped" or conical muller with a thickness-length ratio over 1.0 (Plate Ig). Many of these specialized mullers are made from materials other than basalt, including dacite, sandstone, vesicular basalt and a grainy andesite.

There are two complete mullers and one nearly complete muller which are unique and could not be classified. One is a small wedge-shaped muller of scoria; found in House Pit 1 of Border Village, it has one, shouldered, flat working surface. Also at Border Village there was a large loaf-shaped muller of basalt with three flat working surfaces and two additional facets running around the edge. It is triangular in transverse cross-section and tapers at the unbroken end. The other piece is from Big Boulder Village; it is simply a large, unshaped cobble which has been ground flat on one side. The remaining 21 mullers were too fragmentary to place in any of the 6 classes.

The intrasite distribution at Klamath Shoal Midden shows only one muller found in the Cemented Gravel Stratum and none in the River Gravel Stratum. Most mullers were found in the Midden Stratum. Within Border Village

most mullers and muller fragments were associated with the rim or wall of the houses. Of 41 mullers two were surface finds, 21 were associated with a house pit rim or wall, and 8 were associated with house floors. Within Big Boulder Village the association of most mullers was not recorded. However, of the 30 mullers, one is a surface find, 4 were noted as being associated with a floor, 3 associated with the midden and the remainder are recorded as being in "surface fill" or "house fill." Another distribution pattern within Big Boulder Village is the location of only 2 of the specialized mullers, Class 6, on house floors, one each on the floors of House Pit 11 and 13. The rest are located either in the "house fills" or outside the house pit in the "rim fills."

The great number of mullers at the two village sites indicate a reliance on wild seeds. It is possible that the specialized mullers were used for wocus seeds, which were either gathered at some distance or were traded to the people at the sites on the Upper Klamath (Barrett 1910 and Cressman 1956). It is also possible that these specialized mullers were used for some other seed found in the Klamath River Canyon area.

The great number of broken mullers and fragmentary mullers at Border Villate indicates either purposeful breakage, breakage due to heat from house fires or heavier

use of mullers at this site. Twenty-one of the 41 mullers were fragmentary, ten were broken, and only 9 were unbroken. In contrast, at Big Boulder Village there were only 8 fragmentary mullers out of 30, and 12 were unbroken. Though it is not unusual to find broken grinding stones, the great number of fragments, over half the total from Border Village, indicates the conduct of some activity which caused fragmentation of mullers. This is also true for the milling stones at Border Village.

The distribution of mullers at the Klamath Shoal Midden indicate possibly that activities requiring mullers were rarely done before about A.D. 600. Differences in the distribution of muller attributes and one muller type indicate a strong possibility that Big Boulder Village, Klamath Shoal Midden and 35 KL 22 can be associated with Klamath or Modoc culture, and Border Village can be associated with the Shasta or Takelma cultures. Class 6 mullers, associated ethnographically and archaeologically with the Klamath and Modoc (Cressman 1956, Trygg 1971, Barrett 1910, Voegelin 1942), are not found at Border Village, but are found at Big Boulder Village, Klamath Shoal Midden and 35 KL 22. Based on her study of the McLeod Collection Trygg (1971) noted that the Modoc apparently preferred unifacial, shouldered or slightly shouldered mullers. Of the 30 mullers at Big Boulder

village, 13 were unifacial and shouldered and 3 were unifacial and slightly shouldered. At 35 KL 22, 2 of the 3 mullers are unifacial-shouldered. By contrast, at Border Village 4 mullers were unifacial and shouldered and 4 were unifacial and slightly shouldered and the remainder were unshouldered. The differences between Border Village and Big Boulder Village when comparing the frequency of the attributes unifacial coupled with shouldered, slightly shouldered and unshouldered gives a chi-square of 6.99, which is a 0.03 level of significance. If one compares just unifacial shouldered to unifacial unshouldered the level of significance is 0.01. Clearly there is a significant number of unifacial shouldered mullers at Big Boulder Village as compared to Border Village. Unfortunately, there is little or no data as to the kinds of mullers used by the Shasta or Takelma. Voegelin (1942) attributes the horned muller to the Eastern Shasta, but this is the only mention of a specialized muller used by Klamath River peoples other than the Klamath and Modoc.

Milling Stones

There are 41 milling stones or grinding slabs from the Salt Cave Locality. All were broken but two, and only 3 were over three-fourths whole; most were small fragments. Considering the whole or nearly whole specimens, the

milling stones range in length from 10 cm to over 45 cm, in width from 6 cm to over 34 cm, and in thickness from 3.5 cm to over 8 cm. There are two basic types of milling stones: slabs, which are .5 to 5.0 cm thick, and blocks, which are over 5.0 cm thick. The frequency of these two types is about the same at all 3 sites (Table 22). Most of the milling stones are unifacial; there are only 9 of the bifacial variety in the collection. Only one fragment from Klamath Shoal Midden indicated the presence of a rim, and 9 others had slight depressions near their centers, ranging from 0.8 to 1.9 cm in depth.

The intrasite distribution of milling stones at Klamath Shoal Midden indicates their use was rare before A.D. 600. There was not one milling stone fragment in the Cemented Gravel or River Gravel Strata. Eight of the 13 milling stones from Border Village are associated with a floor, a house rim or both.

The milling stones were probably all used for seed grinding; only one fragment from Border Village had red pigment ground into it, indicating its use as a paint grinding slab.

There is one milling slab from House Pit 11 at Big Boulder Village, which is very similar to the flat, large slabs used by the Modoc and Klamath for grinding wocus seeds. It is 4 cm thick, over 35 cm in diameter and

made of welded tuff. The use by the Klamath and Modoc as well as other peoples of both the slab and block milling stones precludes the use of milling stones to indicate any cultural differences between the sites or to compare the sites with any particular cultural group.

Pestles

There are 22 pestles from the 3 excavated sites: 5 from Border Village, 9 from Big Boulder Village and 8 from Klamath Shoal Midden. Of all the ground stone artifacts, as a group the pestles constitute the greatest percentage of complete objects, over 50%. This is quite the opposite from the situation at Kawumkan Springs (Cressman 1956). All the pestles except 2 from Klamath Shoal Midden have been shaped. Most are made from basalt or andesite; there are 2 made from metagraywacky and one of vesicular basalt. The pestles range from 10.4 cm to 28.2 cm in length, 3.5 to > 9.0 cm in width and 3.4 to 7.5 cm in thickness. The pestles cluster into 3 groups based on length: those between 10 and 12 cm, those between 15 and 16 cm and those between 18 and 28 cm.

The pestles can be grouped into four classes based on two attributes: shape in cross-section, rounded or angular and shape in transverse outline, triangular or rectangular.

Class 1 (Plate IIa and b)

These are rounded in cross-section and triangular in transverse outline. The class shows the greatest variety in material with pestles of basalt, andesite, meta-graywacky and vesicular basalt. There is at least one of this class in each site. None of the specimens from this class have been used as mullers. The pestles in this class are comparable to Types B1 and B2 in Lillard, Heizer and Fenenga (1939).

Class 2 (Plate IIc)

Pestles of this class are rounded in cross-section and rectangular in transverse outline. There is one each of this class in Big Boulder Village and Klamath Shoal Midden. Since Border Village has only a small number of pestles it can not be considered significant that Class 2 is not represented. These are comparable to Type B11 in Lillard, Heizer and Fenenga (1939).

Class 3 (Figure 24d)

All the specimens from this class are of basalt. They are angular in cross-section and triangular in transverse outline. There is at least one in each site. One has a single battered end, a specimen from Border Village.

Class 4 (Plate IId-f)

All the complete or near complete examples in this class are on the long end of the range of pestle length, clustering between 18 and 28 cm. These pestles are angular in cross-section and rectangular in transverse outline. There is at least one example in each site.

As with other ground stone tools, all pestles at Klamath Shoal Midden occur in the Midden Stratum. The only difference to be noted between sites in regards to pestle distribution is the almost equal number found in Big Boulder Village and Klamath Shoal Midden, a very different pattern than occurred with the mullers where most were found at Big Boulder Village. Also Border Village has only 5 of the pestles from the Salt Cave Locality. The significance of the distribution of pestles in the 3 sites was tested using chi-square. The results gave a 0.02 level of significance. Possibly this indicates less reliance on this type of food processing in Border Village than at Big Boulder Village and Klamath Shoal Midden.

All the pestles but one have both ends battered. Two pestles in Border Village and Klamath Shoal Midden and 3 in Big Boulder Village have also been used as mullers on one or more sides. One pestle from Big Boulder Village has 5 working surfaces: two battered ends and 3 sides ground smooth from use (Plate II f). The size and shape of

the battered ends of a pestle is directly related to the kind of mortar within which it is used. Cressman (1956) points out there are two basic kinds of portable mortars: those which have conical depressions and those which approximate a bowl on the inside. There are pestles which have one end tapered or wedge-shaped which could be used in conical mortars and a larger flat, slightly concave or slightly convex end which could be used in the bowl-shaped mortar or hopper mortar. There are two of this kind from Klamath Shoal Midden and one from Big Boulder Village (Plate IIId). This suggests both conical mortars and bowl or hopper mortars were used at these sites.

The pestle can be used for several different kinds of food preparation. It may be used to grind acorns or other nuts, to pulverize fish or deer meat or fish or deer bones, and to grind roots or seeds. All of these uses are possible for the pestles from the Salt Cave Locality sites. Ethnographically, these activities were recorded for the Shasta, Takelma, Klamath and the Modoc (Dixon 1907, Holt 1947, Ray 1963, Spier 1930, Barrett 1910, Sapir 1910 and 1922).

Stone Bowls and Mortars

It is often difficult to draw a distinction between

portable stone mortars and stone bowls. Since there is no clearcut distinction and most of the collection consists of fragments, all vessels of basalt, andesite or vesicular basalt will be considerable portable mortars unless their form and thinness indicates they would be more properly described as bowls. The fragment had to be less than 5.5 cm thick to be categorized as a bowl. Its form was restricted to those which showed no sudden thickening toward the base and had convex bases. Also, within this general category are hopper mortar bases, which include rather flat stones with a narrow, shallow depression in the center usually less than 5 cm deep.

There are 7 portable mortars and fragments: 4 from Big Boulder Village, 2 from Klamath Shoal Midden and 1 from 35 KL 22. All are of basalt or andesite except one of vesicular basalt. Only 2 are complete. From Klamath Shoal Midden 5 pieces fit together to make a flat based portable mortar. The mortar is about 22 cm high and 17 cm in diameter. The base is 18.6 cm thick, the sides 9 cm thick, and the depression is 13.5 cm deep. It would fit into mortar Type A in Lillard, Heizer and Fenenga (1939). From Big Boulder Village there is a small portable mortar 13.7 cm by 13.0 cm, which has a depression 21.3 cm deep and is 7.2 cm thick near the base. This mortar came from Stratum II, which predates the house pit construction at the site.

There are 6 stone bowl fragments, 2 each from Border Village, Big Boulder Village and Klamath Shoal Midden. They are made either of basalt or scoria. They range from 3.0 to 5.0 cm in thickness. Five of the 6 are rim fragments.

There are 5 hopper mortar bases and base fragments from Big Boulder Village. One had been used as a milling stone on the opposite side; the others show no particular shaping. They are all of basalt or andesite. There are 3 which are complete or nearly so. They range in length from 10.0 to 25.0 cm, in width from 9.8 to at least 14.3 cm and in thickness from 3.8 to 6.4 cm. The depressions range from 0.6 to 2.9 cm in depth.

Three of the four portable mortars and bowls from Klamath Shoal Midden were surface finds and one was found in the Midden Stratum. In Border Village and Big Boulder Village the stone bowls and various mortars are found within houses or as surface finds, with the exception of the small mortar already described.

The presence of hopper mortar bases at Big Boulder Village indicates probable use of acorns for food. The portable mortars indicate use of roots, nuts and perhaps also the pulverizing of dry fish or animal bone. The presence of portable stone mortars at Klamath Shoal Midden, but no hopper mortar bases supports Squier (1956) that

hopper mortar bases may be of more recent use in the Northern California area than the portable stone mortars. The portable stone mortars at Klamath Shoal Midden were probably used for acorns, roots and possibly animal bone and dry fish. Ethnographically, all the Klamath River tribes used only the hopper mortar bases. The Klamath and Modoc are the only exception. They still made and used portable stone mortars at contact.

The lack of both hopper mortar bases and portable stone mortars at Border Village is both interesting and puzzling. The fact that 5 pestles and pestle fragments were recovered from the site may indicate that the lack of hopper mortar bases may be attributed to sampling error, particularly since over 30 grinding stone fragments and whole milling stones were discarded in the field and not fully recorded. It is also possible that wooden mortars or bedrock mortars were used by the inhabitants of Border Village.

The total lack of portable stone mortars at Border Village adds weight to the possibility that this site represents early Shasta or Takelma occupation. Most historical groups in northern California attributed portable stone mortars in their area to the work of ancestors or spirits. They used them only occasionally themselves. At Iron Gate just 14 miles downriver from Border Village

only hopper mortar bases were found (Leonhardy 1961). Some groups in northern California feared the portable stone mortars found in their territory. The Shasta feared them so much that they were never used or found within a village (Holt 1947).

HAR Stones

Following Trygg (1971) this category of ground stone tools lumps together hammerstones, anvils and rubbing stones. Often these tools have multiple working surfaces and show evidence of different kinds of use. A specimen was included in this category if it had a work surface which was battered, irregularly rubbed, pitted or any combination of these.

The material from this category can be subdivided into modified and naturally shaped. There are only 5 specimens which can be considered modified: 2 mauls, a hammerstone and 2 rubbing stones. One maul from Big Boulder Village is complete, measuring 9.8 by 9.2 by 8.1 cm. It is a roughly cube shaped piece of vesicular basalt with a deep, narrow pit or depression in its base (Plate IIIa). The other maul from Klamath Shoal Midden is a cylinder which flares out at the bottom. The bottom is flat with a broad, but shallow depression. The top has been broken-off, and the broken end was battered as if it was used as

a hammer (Plate IIIb). The hammerstone is from Border Village. It is a polished cobble of pink quartzite, elliptical with two pits pecked into opposite faces for fingerholds. The equatorial region of the stone is battered all around its circumference (Plate IIIc). A rubbing stone from Klamath Shoal Midden had been used on three surfaces. It has scratches on one tip as well as polish. Its size is 13.8 by 4.6 by 2.8 cm. The other rubbing stone from Big Boulder Village is broken at both ends. It has two slightly concave working surfaces.

The unshaped specimens can be roughly subdivided into two sub-classes: rounded and angular. Of 29 unshaped HAR stones, 9 are rounded. An unshaped HAR stone is considered rounded when it has a width-length ratio greater than .70 and a thickness-length ratio greater than .60. Eight of these stones fit the definition of Trygg's "Small Globular HAR Stones" (1971:39). Unlike the small, globular HAR stones in the McLeod Collection, those from the Salt Cave Locality were used for battering not rubbing (Plate IIId). Only one was used exclusively for rubbing, and one other had been used both for rubbing and battering.

Pitted HAR stones can be considered a special category. There were 3 in Border Village which had been rubbed, then pitted. They appear to be anvils made on

broken grinding stones. A pitted stone from Big Boulder village was used also as a hammerstone on one edge.

The last subdivision to be considered is a scoria rubbing stone (Plate IIIe). Its description fits the "fleshers" described by Trygg (1971). The remaining HAR stones have no special attributes. Five have battered surfaces (Plate IIIf and g), 8 have rubbed surfaces (Plate IIIh), and 3 have both rubbed and battered working surfaces.

There is no particular pattern to the distribution of the HAR stones. There are about twice as many in the village sites as in Klamath Shoal Midden. This may be due to the 500 year difference in age of the sites, but there may be other explanations. The only shaped mauls were found at Big Boulder Village and Klamath Shoal Midden. The only elliptical hammerstone was found at Border of the Village. Since there are so few of these types of artifacts their limited distribution cannot be considered significant.

The uses of the various HAR stones are varied. The mauls were possibly used in hammering stakes for the construction of fishing platforms and traps, or they may have been used in conjunction with bone and antler wedges for woodworking. Those stones showing battering were used as hammers or picks. The angular ones and the

elliptical hammerstones could have been used for pecking. Both the small, rounded and small, angular ones could have been flakers. The stones with rubbed worked surfaces were probably used for the processing of skins and, perhaps, also rubbed over the surfaces of worked stone to give a smooth finish. The pitted stones were probably anvils, possibly used for cracking acorns or other nut shells, though they may be fragments of hopper mortar bases.

The maul from Big Boulder Village fits the general description of mauls for the ethnographic Klamath and Modoc (Barrett 1910). The flesher from Klamath Shoal Midden seems to be similar to several in the McLeod Collection, but those could be either Modoc or Paiute (Trygg 1971). It was noted by Trygg that there seemed to be a Modoc preference for rounded HAR stones. Most of the rounded stones, 7 of 9 came from Big Boulder Village and Klamath Shoal Midden, which may add to the evidence that these sites are related to the Klamath or Modoc culture.

Shaft Smoothers

There were 4 shaft smoothers, 3 from Border Village and 1 from Big Boulder Village. All 4 are made of sandstone with one or two grooves cut longitudinally across a surface. The 4 are similar in length and width ranging

from 3.6 to 5.5 cm in length and 2.3 to 3.1 cm in width, but they fell into two groups based on thickness. Two are 1.7 cm thick, the others ranging from 2.8 to 3.9 cm (Plate IV a-c). One of the 3 from Border Village has two grooves, one on each of the two opposite sides. One of the thicker specimens also from Border Village has slight depressions on each side for fingerholds (Plate IVa).

All the shaft smoothers were found inside house pits. One in Border Village was on Floor 3 of House Pit 1, and the one from Big Boulder Village was on the floor of House Pit 13. Since there were not many found in any site, the lack of shaft smoothers at Klamath Shoal Midden is probably not significant.

The size of the grooves in the shaft indicates these were probably used for arrow shafts, though they may also have been used to abraid other items as well. These shaft smoothers are not similar to those usually associated with Klamath or Modoc (Barrett 1910 and Cressman 1956). Most of the ethnographic shaft smoothers made by the Karok, Shasta and other tribes of the Lower Klamath River are described as two grooved pieces used in conjunction. This may be how 3 of the 4 were used, but the one with fingerholds would appear to have been used alone with no opposing stone. Similar shaft smoothers are common in private artifact collections from the Ashland-Medford,

Oregon area, which included both Shasta and Takelma territory.

Polished Stone

This category includes all carved and polished stone artifacts. Most of this material comes from Border Village, though there are a few pieces from Big Boulder Village, Klamath Shoal Midden and 35 KL 22. The material includes steatite dishes, a vesicular basalt dish, steatite pendants, two pipes, a carved argillite piece and a cut piece of chalk.

The steatite dish fragments all come from House Pit 1 in Border Village. Five of the 6 are rim fragments from at least 3 different dishes (Plate IVd-f). The two largest pieces give the impression of coming from small, shallow, oval dishes, but the true size cannot be determined. The rim on the largest piece is incurved slightly. Two of the rim fragments come from a very thin dish; neither fragment is over 5 mm thick at the rim. All these pieces show rather deep scratches on their surfaces, probably made during the manufacturing process. Steatite dishes are found among tribes throughout the course of the Klamath River and among the Modoc.

There are 2 steatite pendants from Klamath Shoal Midden (Plate IVg, h). Both are from the Midden Stratum.

The complete specimen is 2.7 by 1.9 by .37 cm. The broken one is a little smaller; it tapers more at the top giving it a trapezoidal rather than a sub-rectangular shape. Both specimens have notched margins and one hole drilled primarily from one side and broken through by a little work on the opposite side. This type of pendant is quite common in the area of south-central Oregon. A similar though much larger specimen was found at Kawumkan Springs (Cressman 1956). A less well manufactured piece is part of the Lowie Museum ethnographic collection from the Rogue River Indians (Takelma?) specimen #2-13336.

There are two pipes, a small steatite specimen from Border Village which was associated with a burial in House Pit 1, and a broken piece of a pipe made of pink tuff from Klamath Shoal Midden (Plate IVi, j). The steatite pipe is triangular. The bowl is 1.6 cm wide and the mouth piece .70 cm wide. The interior of the bowl had been gouged out rather than drilled. The pipe from Klamath Shoal Midden is larger but consists of only a fragment of the bowl end. It seems to have been generally the same shape as the smaller steatite pipe. Neither of these pipes resembles any of the Modoc or Klamath pipes collected ethnographically, nor do they resemble the pipes made along the Klamath River, which are wooden with bowl and stem inserts of carved stone.

There was one piece of vesicular basalt recovered from Big Boulder Village's test pit which resembles a dish (Plate IVk). It is 10.0 by 9.8 by 3.8 cm and similar in shape to some of the steatite dishes but much cruder. It may be associated with one of the burials.

A unique piece of carved argillite was recovered from the backdirt of a pot hunter's hole in House Pit 4 in 35 KL 22 (Plate IVl). It is 4.6 by 1.7 by 2.6 cm. It has a flat bottom into which a deep groove has been roughly cut. From the bottom it rises and tapers to a ridged top. It appears to be incomplete. Since it exhibits deep scratches, it appears to have been carved with the same technique as the steatite bowls.

A small cut slab of chalk was recovered from the surface of Border Village. It is 5.09 by 3.88 by 1.35 cm. It appears to have split, so at one time it may have been thicker. Nothing is carved into its surface. Carved chalk blocks of much larger size are found in the Klamath and Modoc ethnographic collections of the Lowie Museum.

All the materials in this category could be classed as luxury items. They are generally similar to materials found throughout northern California, southwestern and southcentral Oregon, and none of them point to a relationship with any particular ethnographically known tribal group.

Tools at Klamath School Museum is of interest and is probably caused by two factors: 1) vegetable food

Both the steatite and argillite items show a similar manufacturing technique. The softer stone was carved out probably by a harder stone, producing some deep scratches which later polishing did not always obliterate. This indicates that the carving technique included gouging and not just pecking of the soft stone. The deepest gouge marks seem to be on the interior of the dishes and pipe bowl, possibly the interior of these items were not as nicely finished as the exteriors, which are much smoother.

There are 15 pieces of ground stone, the use of which cannot be determined because they are too fragmentary. There are 9 fragments from Border Village which could either be muller or milling stone fragments and one piece which may be a pestle fragment. There are 5 fragments from Big Boulder Village which could be mullers or milling stones.

Conclusions

The majority of the ground stone artifacts are tools for food processing and include mullers, milling stones, pestles, portable mortars, hopper mortar bases and bowls. These items reflect a strong reliance on the vegetable resources of the area. The significantly fewer food processing tools at Klamath Shoal Midden is of interest and is probably caused by two factors: 1) vegetable food

processing in this region was often associated with semi-permanent villages, in and around the house pits, whereas Klamath Shoal Midden is most likely a hunting and fishing camp, used seasonally; 2) Klamath Shoal Midden is an older site, and was used at a time when vegetable foods were possibly not as important as they became later.

The various grinding stones also indicate some very interesting cultural relationships between the sites in the Salt Cave Locality, and the ethnographic groups they most likely represent. The mullers strongly indicate a split between Border Village and the other 3 sites. The presence of specialized mullers in the 3 up river sites strongly ties them to Klamath or Modoc culture, while the total lack of such mullers in Border Village indicate that this site may be representative of Shasta or Takelma culture. This is particularly striking when it is considered that Border Village and Big Boulder Village are contemporary, according to the radiocarbon dates. The portable stone mortars also indicate a split along the same lines.

From her study of the McLeod Collection, Trygg (1971) suggested possible preferences by Modoc for particular ground stone attributes. They included shouldered and slightly shouldered-unifacial mullers, bifacial mullers which are slightly shouldered and unshouldered, slab milling stones, girdled stones and rounded HAR stones. Though

the ground stone artifacts from Big Boulder Village do not match this pattern perfectly, they show many of the same preferences: shouldered and slightly shouldered-unifacial mullers, rounded HAR stones, slab milling stones and slightly shouldered and unshouldered bifacial mullers. Many of the preferences are repeated on a smaller scale at Klamath Shoal Midden. In contrast Border Village shows a preference for slightly shouldered and unshouldered mullers, angular HAR stones and slab milling stones, while no particular preference for unifacial or bifacial mullers is indicated.

Other archaeological data dealing with specialized mullers along the Klamath River add to the picture. The Iron Gate site, just 14 miles downstream from Border Village and about a hundred years more recent, contains 5 specialized mullers described as "tear-drop shaped," but which could also be described as conical (Leonhardy 1961). A similar muller was recovered from Sis-13, a rockshelter a few miles south of Iron Gate (Wallace and Taylor 1952). The use of such single-horned mullers by the Shasta is reported (Voegelin 1942), and it is possible that specialized mullers or the idea for such a tool spread down the Klamath River from the Klamath Basin to be adopted on a limited scale by the Shasta in late prehistoric times. This could explain the total lack of

specialized mullers at Border Village and their presence about a hundred years later downstream at Iron Gate. It is possible that Border Village represents Upland Takelma occupation, rather than Shasta, since there is no mention of specialized mullers among the Takelma (Spair 1907, 1922).

Another difference in the grinding stones from Border Village and the up river site cluster is the fact that the vast majority of the grinding stones from Border Village are fragments or broken pieces; those from the other 3 sites are rarely fragmentary, most are whole and unbroken. The grinding stones therefore indicate the possibility that Border Village represents a different cultural group than the sites clustered up river, represented by Big Boulder Village, Klamath Shoal Midden and 35 KL 22.

An interesting void in the ground stone collection from all the sites is girdled and notched stones. There are specialized Klamath and Modoc mullers which are girdled but none appear in these sites. Also there are no net sinkers present in these sites. Net sinkers were found ethnographically all along the Klamath River and among the Klamath and Modoc (Barrett 1910, Spier 1930, Holt 1947, Voegelin 1942). Perhaps fishing with weighted nets is a late development along the Klamath River,

particularly for large species of fish, which would require weighted nets.

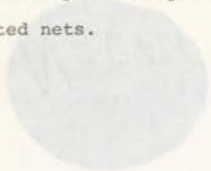


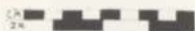
PLATE I. MULLERS



a



b



c



d



e



f



g

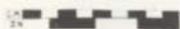


PLATE I MULLERS

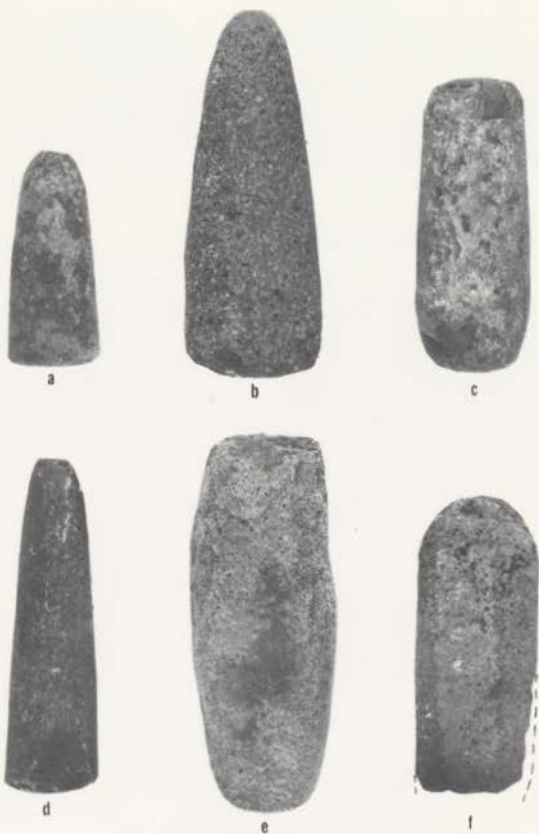
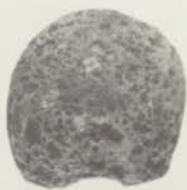


PLATE II PESTLES



a



b



c



d



e



f



g



h

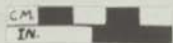


PLATE III HAR STONES



CHAPTER V

CERAMICS

Ceramics were present in Border Village, Big Boulder Village and Klamath Shoal Midden. Twenty figurine fragments, 2 disks and 417 pot sherds were recovered from Border Village. There were 4 figurine fragments from Klamath Shoal Midden and one possible pot sherd from Big Boulder Village. Thin section analysis done on a sample of figurines, disks and pot sherds indicated they were made from the same clay and were probably fired under the same conditions. As far as could be determined from rim sherds the vessels were usually shallow bowls and cups. The pottery was crudely made, plain buff ware, with great variability in body wall thickness and a tendency for the outer surface to exfoliate.

The ceramics from these sites and other sites along the upper course of the Klamath and Rogue Rivers may be related to one of three fired clay traditions; California, Shoshoni-Paiute or Columbia Plateau-Rocky Mountain. The analysis of the ceramics indicates that they were most likely related to the California Fired Clay Tradition, because there is no pottery associated with the California Fired Clay Tradition, the pottery from the Salt Cave

Locality must be considered an example of trait unit diffusion from Shoshoni or Paiute groups or an example of independent invention. The analysis of the minerals present in the paste of figurines, disks, pot sherds, basketry impressed clay and soil from a house floor all show the same suite of minerals (Table 2) and in roughly the same proportions (Kittleman 1964). This eliminated the possibility that the pottery was traded into the area. The other archaeological evidence from the sites indicates that the Big Boulder Village was occupied by ancestral Modoc or Achomawi, the Klamath Shoal Midden by ancestral Klamath, Modoc, Shasta and/or Takelma and the Border Village by ancestral Shasta and/or Takelma.

TABLE 2.--Probable temper for fired clay and pot sherds from Border Village

In order of abundance most to least:

Plagioclase feldspar
 Siliceous rock
 Basaltic rock
 Volcanic glass
 Pumice
 Obsidian
 Hyperstene
 Clinopyroxene
 Hornblende

Fired Clay Objects

Twenty-two fired clay objects were recovered from Border Village and 4 from Klamath Shoal Midden. Most of these can generally be described as figurine fragments. Using Treganza's (1946) types or categories of fired clay objects, these can first be divided into two groups: solid forms and perforated forms.

There were 3 perforated objects all from Border Village. One is a small, flat disk, broken in half. It is about 2.6 cm in diameter and .5 cm thick. There was also a large hemispherical disk, about 6.3 cm in diameter and 2.2 cm thick at the center where it was perforated (Plate Va, b). The remaining perforated piece was an irregular lump of fired clay flat on one surface, the hole off to one side. This piece may have been accidentally perforated and therefore not purposefully made (Plate VIr).

The rest of the 23 ceramic objects can be categorized as "solid forms." Thirteen of these fall into Treganza's category "1," which includes round; rounded flat; elongated or flattened, angular cylinder shapes. A rounded object about a centimeter in diameter, was slightly flattened on one surface as if it had broken off a large object. It could be either a head or a breast (Plate VIq). There was a rounded, flat piece, which appears to have been broken in half. It is

approximately 1.5 cm in diameter and .7 cm thick. There were 6 elongated cylinders, from .5 to 1.1 cm in diameter, all broken at one or both ends (Plate VI e-i). They appear to have been appendages, probably legs. The 2 larger ones may be torsos. One from Klamath Shoal Midden is 3.3 cm long and has three wide grooves impressed in one surface (Plate VIIi). The thicker end appears to have had an appendage which broke off. There were 5 objects which are flattened, angular cylinders (Plate VIIn-p). Four of these are cylinders with one pinched end. They appear to be legs from a figurine and are all broken at the rounded end. One crescent-shaped object flattened in cross-section, and broken at both ends, may have been a ring (Plate VIc).

There are 4 conical shaped objects and one that is possibly conical. The 4 conical objects range in diameter from .5 to 1.1 cm. They are broken at their wide end and appear to have been appendages for figurines. They may have been horns for animals, heads or legs (Plate VIj-m). The object that is categorized as a possible cone is broken at both ends as well as in half. It was at least 2.8 cm in diameter and 3.4 cm long. It is the only piece of fired clay with a decorated surface. There are 5 zones of fingernail impressions, which totally cover the surface (Plate VIa).

Two fired clay objects are best categorized as flat, irregular discoidals. One is small, 1.4 by 1.1 by .5 cm, with an end broken off (Plate VIi). The other also has one end broken. It is very large and its surface is rough. It is 5.6 by 4.9 by 1.5 cm. One part of the surface has been purposefully smoothed, otherwise it would appear to be nothing but a lump of clay.

There are 3 objects which are categorized as figurines. One appears to be the head of a deer. It has an elongated snout and two conical projections. It is 3.2 cm high (Plate VIb). Another figurine is more amorphous. It is flattened on one side, so the figurine is only visible from one side. There is a defined head with a pronounced mouth with lips and an eye. There is no detail on the neck or body. The mouth is fish-like, but the head is not particularly reminiscent of any animal species. It is 2.9 by 2.0 by 1.3 cm (Plate VIId). There is another piece which is broken, but appears similar to the above figurine in that it is flat to slightly concave on one side. One end and the top is broken, so it is not possible to speculate on what form it represents.

All the figurine fragments and other fired clay objects seem best designated as toys. Fired and sun-dried clay dolls, baskets and tops are recorded ethnographically for many tribes in northern California, the Klamath Basin

and the Great Basin. Spier (1930) mentions only two uses for fired clay among the Klamath: dolls and special pipe bowls used by shamans.

The physical characteristics of the fired clay objects are listed below. It can be used to compare with the physical characteristics of the pottery from Border Village. Such comparisons indicate no differences in technology used to make the two classes of artifacts.

Surface color: Brown (75yr/4/5); buff (75yr/4/7 and 10yr/4/7); dark brown (10yr/3/6) and pale to weak brown (10yr/2/3 to 10yr/2/6).

Hardness: 3.5-4 on Mohs scale.

Paste texture: Medium to coarse.

Surface texture: Grainy.

Luster: Dull or matte.

Temper or nonplastic inclusions: Plagioclase feldspar, siliceous rock fragments, basaltic rock fragments, volcanic glass sherds, pumice, obsidian, hypersthene, and clinopyroxene.

Construction: Hand modeled.

Surface: Wiped or untreated.

Firing atmosphere: Uncontrolled oxidizing, with outer surface sometimes accidentally smudged.

Core color: Gray (75yr/0/4) for very thick pieces only; weak yellowish orange (10yr/4/7); brown (75yr/4/5 to 75yr/4/6) and orange-brown (5yr/6/6).

The 4 objects from Klamath Shoal Midden are all from the Midden Stratum IIIa-c, in the two western excavation units. There are 4 from House Pit 2 in Border Village, the

large perforated disk is from Floor 1. The others are in the fill above it. The rest come from House Pit 1 of Border Village. The rounded solid object was found on Floor 1. There were 3 objects found on Floor 2, two cylinders and the deerhead figurine. Floor 3 had a small cylinder and the fingernail decorated cone. The rest of the material came from the fill between the floors. One figurine, the fish-mouthed animal, was found outside the house rim.

Pottery

The pottery from Border Village is a very crude, light-brown to medium-brown ware, with a tendency for the outer surface to exfoliate (Plate VIIIa). There is quite a range of variation for many of the attributes. Some of this variation can be explained by the probable poor control over firing. The variation in surface finish and wall thickness is either due to a lack of expertise or lack of concern.

The vast majority of the pot sherds, 318, were recovered from House Pit 1; there were 87 from House Pit 2 and 12 from House Pit 16. It was not possible to determine the number of vessels represented, but a minimum number from each house was estimated by separating the sherds on the bases of finishing technique, surface

texture and color. At least 2 vessels were represented by the sherds from House Pit 16, at least 4 from House pit 2 and at least 12 from House Pit 1.

Most of the pot sherds were located just inside or just outside the house pit rim in House Pit 1. From those sherds which had stratigraphic data and association with floor and fill recorded, about half, it was possible to determine that pot sherds were associated directly in almost equal numbers with Floors 2, 3 and 4, and were less abundant in the fills between them. Very few sherds were recorded in association with Floor 1, but this may be due to the poor excavation and recording techniques employed in this house. In House Pit 2 sherds were found on both floors. No strata or floor associations were recorded for the sherds from House Pit 16.

The physical characteristics of the pot sherds included:

Surface color: Orange-buff (2.5yr/2/3 and 2.5yr/2/4); orange-brown (5yr/3/5 and 5yr/4/4); brown (7.5yr/2/3 to 7.5yr/2/5 to 7.5yr/4/4 to 7.5yr/4/7 and 7.5yr/6/7) and light-brown (10yr/1/3 and 4, 10yr/2/2-8, 10yr/4/6 and 7, 10yr/3/5-7). The most common colors are brown (7.5yr/2/4 and 7.5yr/4/5) and light-brown (10yr/2/4 and 10yr/3/5). Sherds from the same vessel may have slightly different surface color due to the apparent lack of control in firing. For example, the largest partially reconstructed bowl has pieces which range from 2.5yr/2/4 through 7.5yr/2/4 to 10yr/2/4 and 10yr/1/3 (Plate VII).

Core color: There is less variation in core color. It ranges from 5yr/4/6, 7.5yr/4/6 to 10yr/3/7 and

10yr/4/7.

In order to evaluate the firing technique, 8 sherds from different vessels were refired in a bisque kiln at 894° C. All sherds were fully oxidized at this temperature, which produced both a surface and a core color of orange (5yr/6/6) on the Munsell Soil Color Chart and a hardness of 4 on the Mohs Scale.

Hardness: 3-4 on the Mohs scale; the refired pieces are 4 on the Mohs scale.

Apparent Surface Texture: Grainy.

Apparent Paste Texture: Medium to coarse.

Luster: Dull to matte.

Temper or non-plastic inclusions: Listed in order of abundance, most to least in each tested sherd: plagioclase feldspar, siliceous rock fragments, basaltic rock fragments, volcanic glass shards, pumice, obsidian, clinopyroxene, and one example of hornblende. The quantity of non-plastic inclusions is consistent and would seem to have been added purposefully. The deep weathering which produces clay would have destroyed the minerals observed. Therefore, these minerals and rock fragments had to be added to the clay after it was formed. This was noted by Dr. L. Kittleman, a geologist. An examination of a soil sample from one of the house floors showed the same suite of minerals (Kittleman 1964). It is possible that tempering was done by adding dirt from the occupation area to the clay.

Fracture: Rather sharp to crumbling.

Manufacturing techniques: 1) Firing atmosphere-uncontrolled, did not fully oxidize the clay and caused some surface smudging. 2) Construction-hand modeled; finger depression common. Apparently the clay was not cleaned or kneaded before construction. The outer walls show surface cracks and there are

impressions of leaves and other plant parts within the walls (Plate VII). Surface finish-sometimes wiped when clay was still plastic, often not wiped. Outer surface is often eroded away, except near the rims; inner surfaces are not usually eroded (Plate VIIIa, b).

Forms: Wide-mouthed, 11-26 cm in diameter, shallow, less than 8 cm, bowls most common; occasionally small cups, 3.5-6 cm in diameter and approximately 4 cm high (Figures 25-27).

Base: Probably gently rounded or flat, but no complete vessel or basal sherds were recovered. However, a broken vessel from the Rogue River Valley has a thick, flattened base.

Rim: Irregularly rounded; slightly incurved; often uneven.

Wall thickness: Most common 5-7 mm., tapering to 204 near the rim; some specimens from 8-10 mm thick.

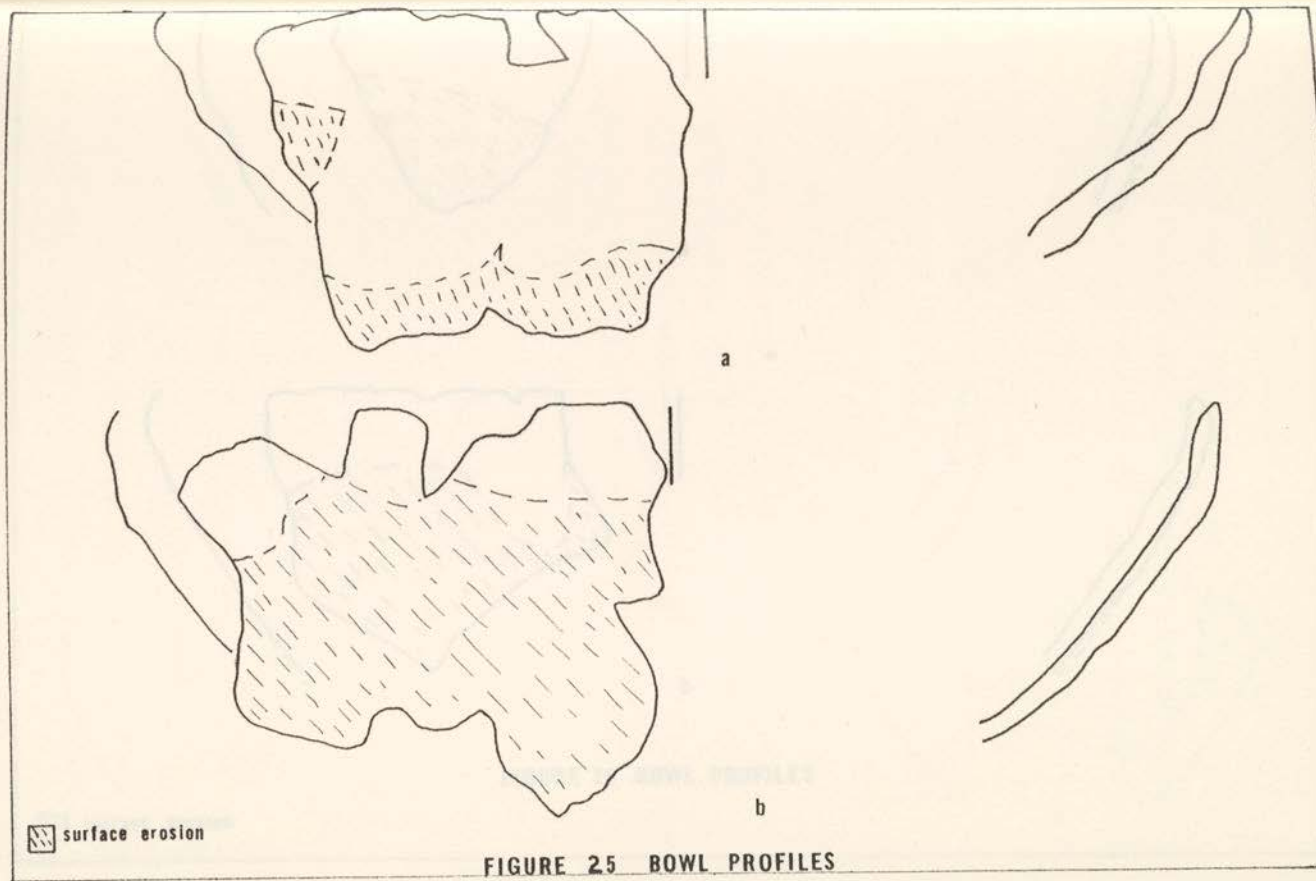
Decoration: None.

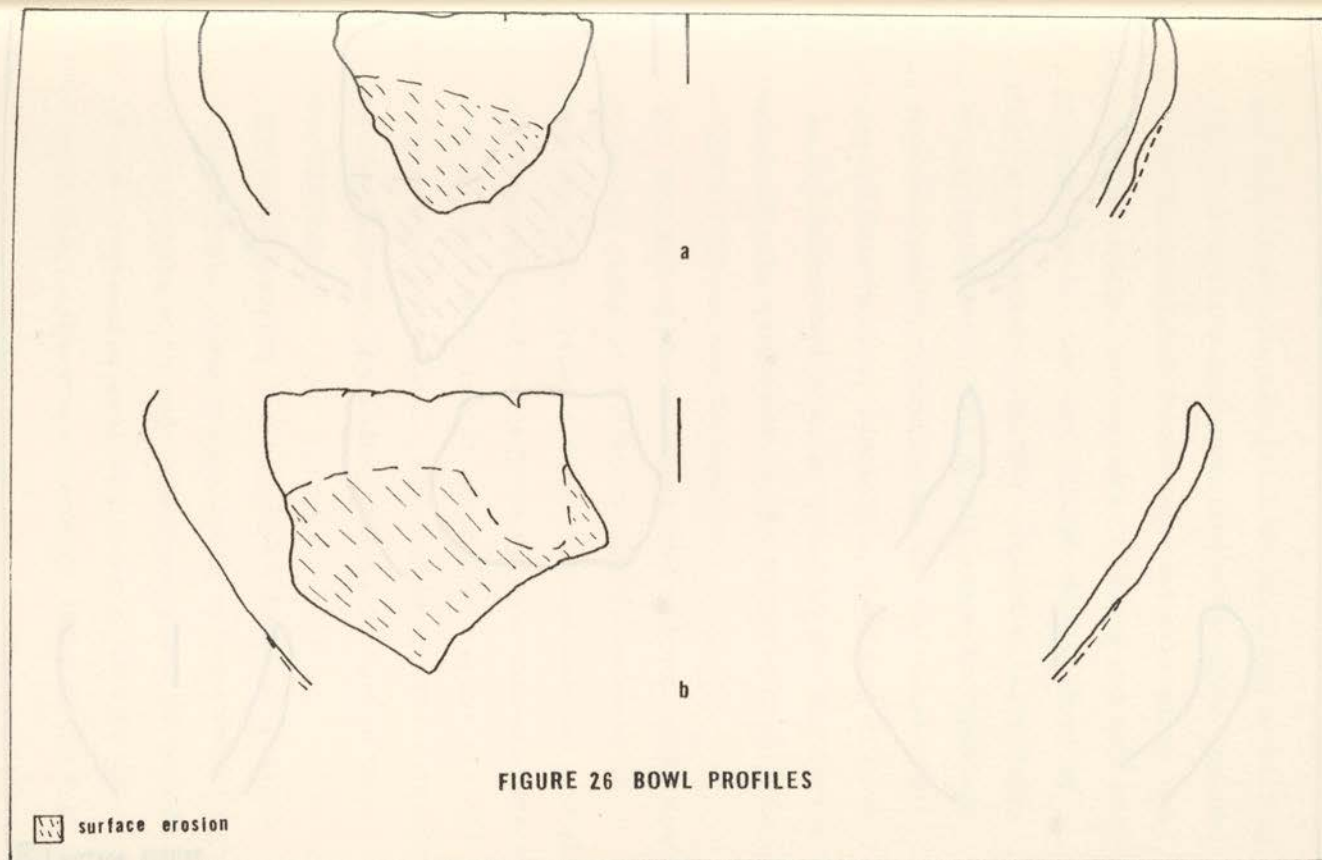
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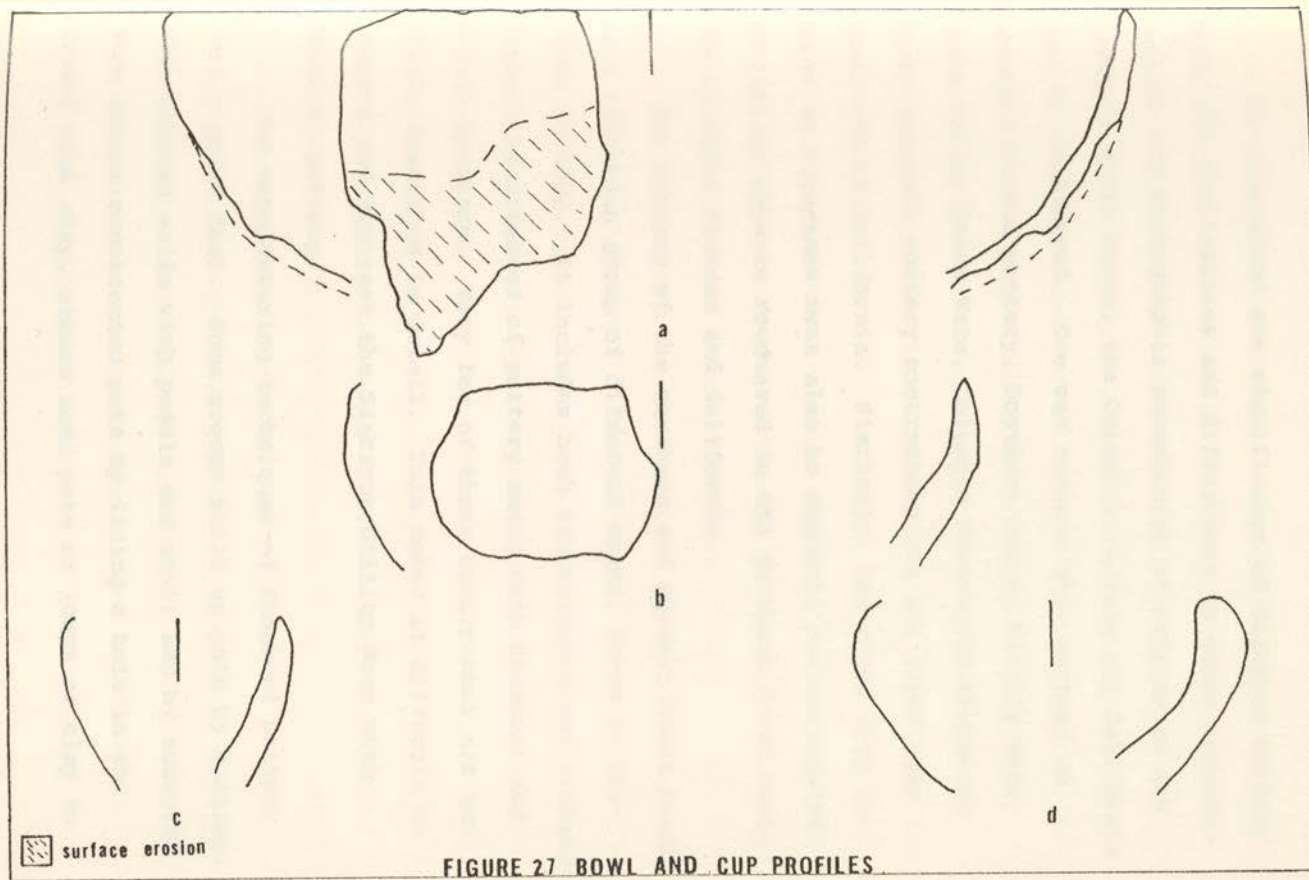
Function: Possibly used as containers for grease or fish oil, or used as serving or eating bowls.

Comparisons

Pot sherds with the same physical attributes have been recovered by local collectors along a limited stretch of the Rogue River, Oregon. Three sites, all north and northeast of Medford, contain pot sherds and figurine fragments. The apparent distribution of this pottery is along the drainages of the upper Rogue and the upper Klamath Rivers within the Siskiyou and Cascades; therefore, the pottery is here designated Siskiyou Utility Ware.







To understand the significance of Siskiyou Utility Ware, its similarities and differences to other archaeological and ethnographic occurrences of pottery in the Northern Great Basin, the Columbia Plateau and California must be considered. One can compare this pottery to Shoshoni-Paiute pottery, Southern Paiute Utility Ware, Owens Valley Brown Ware, Columbia Plateau-Northwestern Rocky Mountain pottery occurrences and the fired clay tradition of California. Similarly, the fired clay objects or figurines must also be compared and contrasted to similar objects recovered in the Northern Great Basin, the Columbia Plateau and California.

The pottery of the northern and western Great Basin is a confusing group of different wares, known as Shoshoni pottery. It includes both ethnographic and archaeological occurrences of pottery among both Shoshoni and Paiute speakers. Very few of these occurrences are uniformly described in detail. This makes it difficult to compare and contrast the Siskiyou Utility Ware with Shoshoni pottery.

The manufacturing techniques of Shoshoni pottery vary a great deal. Some groups built up pots by coiling, then thinned walls with paddle and anvil and by scraping. Some groups constructed pots by lining a hole in the ground with clay, others used pats or lumps of clay to

build-up pots by hand molding; some then shaped the vessel with an anvil. Some vessels were wiped rather than scraped. Some groups added a binder to clay, either pitch or a mucilage from plants. All tempered the clay with crushed rock and sand. All had an uncontrolled firing atmosphere which incompletely oxidized the paste. Decoration, when it is found, is usually fingernail indentation or incised lines (Steward 1943, Tuohy 1956, and Coale 1963).

The shapes of the vessels also vary. Usually, they are described as a flower-pot or kettle-shape; sometimes it is referred to as a truncated cone. These are flat-bottomed, with a rounded lip which is either straight or flares outward slightly. Sometimes the lip is flat, rather than rounded. One exception is Wilson Butte Plain Ware, described as a shallow bowl, with probable rounded base (Gruhn 1961).

Cooking is most often listed as the main use of Shoshoni pottery. The Snake River Shoshoni also used their vessels to hold oil, grease and fish, according to historical accounts (Steward 1943).

The nearest Shoshoni pottery to the Upper Klamath River would be that made by the Northern Paiute and Bannock. Those people constructed a pot by lining a hole in the ground with pats of clay. The clay had

pitch added to it as a binder. The vessel was flat bottomed with straight sides.

Southern Paiute Utility Ware is quite different from Shoshoni pottery. It is constructed by building up a vessel by coiling and shaping it with a paddle and anvil. The vessel is then scraped to thin and smooth the walls. It is tempered with quartz sand and mica and fired in an uncontrolled firing atmosphere (Baldwin 1950).

There are two basic shapes of vessels, a wide-mouthed, deep bowl and a tall, narrow jar. The base of the vessels were pointed to rounded. The rims were straight to slightly outcurving and the lip was rounded or flattened. Fingernail indentations were used for decoration, occasionally. These were apparently used for cooking (Baldwin 1950).

The vessels of Owens Valley Brown Ware were built up by coiling and smoothed with the fingers. They were made of clays naturally tempered. The vessel was covered with mallow syrup. It was fired in an open sagebrush fire. The shape of the vessels apparently changed through time. Flat bottomed vessels were made in the late contact period. Those from archaeological sites are better made and have round bottoms. The rims occasionally turned inward. They were apparently used for cooking (Coale 1963).

There are scattered occurrences of pottery from the Columbia Plateau and the northern Rocky Mountains. These have been reported in ethnographic works and are sometimes found in archaeological sites. Most of these have not been described in detail. Because of this few generalizations are possible. Ethnographically, pottery is known for the Kutenai, Sanpoil and northern Okanegan. Only the Kutenai truly fired their vessels. The Sanpoil sun-dried vessels and the northern Okanegan set them in the hot ashes of a fire (Osborne 1957).

Great Falls Ware is usually attributed to an archaeological manifestation of Kutenai culture (Kehoe 1959). It is hand-modeled pottery with a paddle used for shaping. It is a straight walled, flat-bottomed to rounded-bottomed cylinder. It was tempered with crushed quartzite, basalt or sand. It has a wiped surface and is decorated by cord-wrapped, check-stamped, incisions or nail impressions. It was used for cooking. Archaeological occurrences along the Lower Columbia indicate possible use of fired clay vessels (Slocum and Matsen 1968, Osborne 1957). Two sites had remains of fired vessels. The vessels were small, 5-12 cm in diameter. One sherd was decorated with a typical Lower Columbia motif and appears to have been used as a lamp.

The Foothill Yokuts in Central California made

pottery. Their pottery is grouped with that of the Western Mono into one ware. Therefore, it is related to the wares of the Southern Paiute and Owens Valley Paiute. It was constructed by coiling and the surface was polished with a piece of steatite. The finished pot was coated with acorn mush before firing. Sand temper was occasionally added. The basic shape was hemispherical bowl with a flat bottom. The vessels were used for cooking (Gayton 1929).

Fired clay objects are not uncommon in the California Culture Area. Figurines of various types are prevalent, however, other uses were also made of fired clay. This tradition begins in the Early Horizon and carries through to the ethnographic present. In the Early Horizon there are miniature biconoid baked clay objects, perforated discoidals and clay balls. In the Middle Horizon baked clay balls, perforated discoidals, spool-shaped objects, pipes and human figurines are known. In the Late Horizon there are baked clay bird and human effigies, pipes and clay balls used as a substitute for stone in boiling. Ethnographically, baked clay was used by the Pomo as shot for slings and for dolls and play baskets by girls and boys. The Coast Miwok made human and bird effigies to be used in ceremonies (Barrett 1952, Beardsley 1948, Mannion and Mannion 1970).

There is no other pottery known for the Klamath River area with the exception of one sherd from 4-Sis-13 (Wallace and Taylor 1952), and 3 questionable pieces of fired clay from 35 KL 13, a rockshelter at Big Bend on the Klamath River (Newman and Cressman 1959). Two similarly questionable pot sherds, which glued together, were recovered from Big Boulder Village, House Pit 3. There is no complete description of the 3 questionable sherds from 35 KL 13, but a partial description in the 1962 report indicates they are similar to the pottery from Border Village. The major difference being a hardness of 2 on the Mohs scale for the sherds from 35 KL 13.

The rim sherd from 4-Sis-13, from the information given in the site report, seems very similar, if not identical to the material from Border Village. It is described as being fired in an oxidizing atmosphere, rock tempered with organic material originally present. The surface was rather crudely smoothed, and it has a wall thickness of 5-7 mm (Wallace and Taylor 1956:28-29).

There is no reported use of pottery along or near the Klamath River ethnographically. However, fired clay was used by some peoples. The Klamath made a special shaman's pipe from fired clay, and they made dolls (Spier 1930). The use of fired clay for pipes is also reported for the Wiyot by Loud (1918). Recent archaeological sites

on the Chetco and Pistol Rivers just north of the Klamath River on the Oregon Coast contained fired clay pipes (Berreman 1935, 1944 and Heflin 1966).

Very few of the baked clay objects or figurines from Border Village and Klamath Shoal Midden compare closely to figurines or baked clay objects from other areas. Many of the figurines do not compare to any known forms; these are fragments which appear to be extremities. Figurines with extremities are not common in northern California or the Northern Great Basin. One possible extremity was found at the Fernandez Site on San Francisco Bay (Davis 1960), and Coast Miwok reportedly made human figurines with arms and legs (Mannion and Mannion 1970). Extremities for human and animal figurines were indicated at an Idaho rockshelter (Lynch and Olsen 1964) and from sites in San Diego County associated with San Luis Rey II (True 1957). Animal figurines are also uncommon. They are occasionally associated with northern Shoshoni peoples ethnographically and have been recovered from the above mentioned Idaho rockshelter and from San Luis Rey II San Diego County sites (Ibid).

The two perforated discoidals are comparable to fired clay objects from the Sacramento-San Joaquin Rivers Delta region of California. There are perforated discoidals associated with Middle Horizon to Historic sites.

These are usually small, 1.7 to 3.6 cm in diameter, but rather thick, between 0.75 and 2.85 cm. The small perforated discoidal from House Pit 1 is similar to one from 4-SJo-82. The larger discoidal from House Pit 2 is twice the diameter of most California discoidals. Only one from 4-SJo-80 is close in size, and it is a ring rather than a discoidal.

The two decorated objects are not comparable to known objects either. The fingernail decoration is very unusual. There is one fragment of a rounded, flattened object from 4-SHo-80 with fingernail decoration. Some of the fired clay pieces from Wakemap Mound may be fingernail impressed, but it is also possible that the incisions were made with a sharp-edged implement. The elongated cylinder from Klamath Shoal Midden, which is grooved, is similar to some of the figurine fragments from northern California, but they are usually decorated with punctate designs or incised lines and are usually larger than this piece. Generally, the figurines from Border Village and Klamath Shoal Midden do not compare closely with any known figurine tradition. However, they and the baked clay discoidals seem most similar to the northern and central California Fired Clay Tradition.

Conclusions

Siskiyou Utility Ware is representative of an independent pottery tradition which appears to have developed around A.D. 1400 and ceased to exist sometime before 1800. It appears to have a limited distribution, which includes the Upper Rogue River and the Upper Klamath River drainages west of but not including the Klamath Basin.

Analysis of the pot sherds and other fired clay objects from Border Village and Klamath Shoal Midden support the contention that the pottery was not traded into the sites. The mineral suite present in pot sherds, figurine fragments, basketry impressed fired clay and soil from one of the house floors is the same.

There is little that Siskiyou Utility Ware has in common with Shoshoni pottery, Owens Valley Brown Ware and pottery from the Columbia Plateau. The shape of Siskiyou Utility Ware, an incurved shallow bowl, is quite different from Shoshoni pottery with its truncated cone-shaped vessels. In shape the Klamath River pottery resembles archaeological specimens of Owens Valley Brown Ware, but it is made by a different technique. Owens Valley Brown Ware is coiled and wiped. The Klamath River pottery is hand modeled and wiped. Fingernail decoration or incising is occasionally found on Owens Valley Brown Ware and Shoshoni pottery. There is no decoration on the sherds

from Border Village, though the inner edge of rims on a few sherds from the Rogue River sites have fingernail impressions. Functionally, both the Owens Valley Brown Ware and various Shoshoni wares were used for cooking. The Siskiyou Utility Ware was apparently not put over a fire. It was probably used for storage of grease or fish oil or as a serving or eating bowl.

There are similarities between Siskiyou Utility Ware and the others. All were fired in an uncontrolled firing atmosphere. All have a sand or grit temper. All have vessel walls 5-8 mm thick. The vessels and sherds all fall between 3.5 and 4 on the Mohs scale of hardness. These characteristics, however, simply indicate a common degree of technological development and not necessarily a direct relationship.

From the evidence, it seems that Siskiyou Utility Ware is an independent pottery tradition. It may well have developed out of a California Fired Clay Tradition base. The figurines from Border Village and Klamath Shoal Midden show the strongest similarities to ceramic objects from northern and central California. It should also be noted that a few steatite bowl fragments were also present in Border Village. These rim fragments indicate a shape common along the Klamath River for steatite bowls and dishes. It is not impossible to imagine a

group of people with a knowledge of fired clay, which they had used to make figurines and other objects, transferring this technology to the production of bowls, not unlike the shape of their steatite bowls. This could have happened as an independent invention or as a trait unit diffusion. The Northern Great Basin and east side of the Sierra Nevada both had pottery-making groups from which the trait could have diffused. There is not enough information on the distribution of Siskiyou Utility Ware, nor on the development of Shoshoni and Owens Valley pottery to determine whether trait unit diffusion is a reasonable explanation.

The implications of Siskiyou Utility Ware are limited. Its belated discovery points to our lack of knowledge as to the cultural dynamics and history of Northcentral and Northeastern California and Southwestern and Southcentral Oregon. None of the ethnographically known groups, indicated by the other artifactual evidence, made pottery. The presence of the pottery implies that one of these cultural units or some unknown group made pottery for a number of years and then stopped. The questions are not only how and why this pottery was made, but why it ceased to be made apparently just a couple of hundred years after it began. It would be easy to explain if one could point to a change in life style or in cultural

groups for this part of the river. However, so far the evidence indicates no great change in either. The only explanation may be limited to the fact that there were no groups living along the 39 kilometer stretch from Shovel Creek to the Klamath Basin at contact. If the pottery-making villages were very limited in distribution and were required through harrassment or environmental change to suddenly move, it is possible that pottery was dropped. However, much more must be learned of the distribution of Siskiyou Utility Ware, both in time and space, before this question can be seriously considered.



Plate V
Fired Clay Figurine

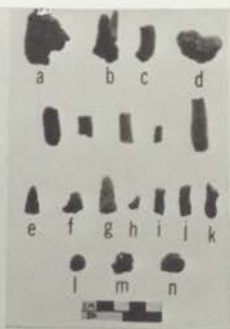


Plate VI
Fired Clay Figurine



a



b

Plate VII
Pot Sherds



a



b

Plate VIII
Pot Sherds

CHAPTER VI

ANTLER, BONE AND SHELL ARTIFACTS

There were a total of 600 pieces of modified bone and antler and 6 pieces of modified shell from the sites in the Salt Cave Locality. The majority of the bone is Odocoileus sp., and Olivella is the most common modified shell. As a group these artifacts show similarities to objects from the Northwest California-Southwest Oregon Coast, Central California and South-central Oregon west of the Cascades.

Antler and Bone

The majority of modified bone and antler, 261 pieces, was recovered from House Pit 1 in Border Village. The remainder of the modified bone and antler from Border Village included 31 pieces from House Pit 2 and 9 pieces from House Pit 16. There were 229 pieces of modified bone and antler from Klamath Shoal Midden, and there were 80 pieces from Big Boulder Village, including 18 from House Pit 3, 9 from House Pit 11 and 53 from House Pit 13. The difference in the total amount of modified bone in these 3 sites was due either to cultural differences, intensity of activity or

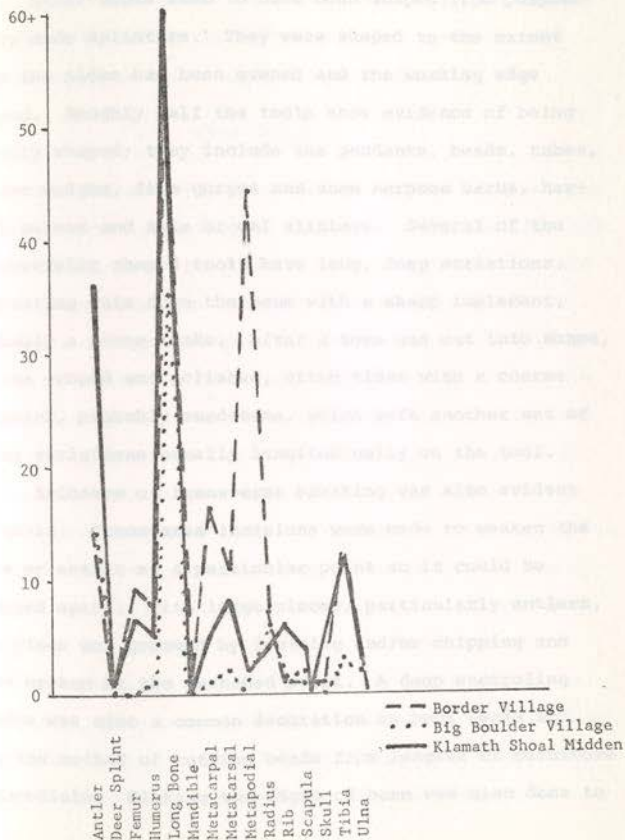
differential bone preservation.

In all three sites most artifacts were made of deer bone, Odocoileus sp. The most frequently used bone for tools was the tibia, followed closely by the metapodials. Also frequently used were radius, femur and humerus. As can be seen in Figure 28, metacarpals and metatarsals were most common in Border Village, and tibias were most common in Klamath Shoal Midden. The radius was most common in Big Boulder Village, but the sample size for the site was too small to show meaningful preferences. Ulnas were used both in Klamath Shoal Midden and Big Boulder Village but not in Border Village. Deer and elk (Cervus canadensis) antler was commonly used in all three sites, however, the number of antler pieces from Big Boulder Village was artificially elevated by the presence of 12 fragments of what could be a single antler tool.

Similar bone modifying techniques were used in all three sites. The majority of bone tools were made of splinters or a split long bone, with the split head used as a handle or grip. A few had the head intact. There were only 11 tools which had a completely worked base or head. The manufacturing technique of bone and antler artifacts was sometimes indicated by marks left on the artifact. Several of the tools made from splinters had not been shaped. Apparently, long bones, broken either

FIGURE 28

SKELETAL ELEMENTS USED AS BONE TOOLS



during butchering or marrow extraction, were taken up and used with no further modification, except perhaps at the working end.

Other tools seem to have been shaped from purposefully made splinters. They were shaped to the extent that the sides had been evened and the working edge shaped. Roughly half the tools show evidence of being totally shaped; they include the pendants, beads, tubes, antler wedges, fish gorges and some harpoon barbs, harpoon points and awls or eel slitters. Several of the purposefully shaped tools have long, deep striations, indicating cuts down the bone with a sharp implement, probably a stone flake. After a bone was cut into shape, it was ground and polished, often times with a coarse material, probably sandstone, which left another set of finer striations usually longitudinally on the tool.

Evidence of transverse breaking was also evident on tools. Transverse incisions were made to weaken the bone or antler at a particular point so it could be snapped apart. With large pieces, particularly antlers, the piece was grooved by incising and/or chipping and then broken at the weakened point. A deep encircling groove was also a common decoration on bone beads and was the method of cutting beads from lengths of carnivore metapodials. Flaking the edges of bone was also done to

sharpen an edge. A few pieces of bone have gouges or carved depressions, which have been smoothed by polishing or scraping. The technical expertise of bone and antler working in these sites covered all extremes from fine work represented by the carved elk horn spoon to use-shaped splinter tools represented by gouges.

Tool Categories

Gifford's (1940) bone tool categories, devised for use in Northern and Central California were used for the basic groupings of bone tools. Not all of the bone and antler artifacts from the Salt Cave Locality fit into Gifford's categories, so a few new ones have been added for descriptive purposes, but in general the remarkable fit indicates the general relationship of the Salt Cave Locality to northern California. These categories and types were basically descriptive with some association made to possible function. As Gifford pointed out in his introductory remarks, most bone tool typologies, including his own, were not necessarily based on ethnographic reality. The following categories of bone and antler artifacts from the Salt Cave Locality are based on descriptive attributes and only occasionally correspond to functional types. Gifford labeled his categories and their subdivisions with letters and numerals. The

categories are labeled A through MM. The subdivisinal labels function as they would in an outline, consequently they represent different features with each category.

Awls (Category A)

There were 34 whole or fragmentary bone awls which were divided into seven groups.

1. Ulna awls (AlaII). The proximal end of the ulna was intact, with a sharp irregular point on the opposite broken end. It was about 9.8 by 3.5 by 2.2 cm. Along the outer ridge a small area of the bone was chipped away for a thumb rest.
1 specimen (Plate IXq).
2. Split cannon bone awls (AlbII). Of five specimens, only one was whole. It was 12.5 by 2.3 by 1.2 cm. The bases of the other four ranged from 1.5 to 2.6 cm in width and .05 to 1.2 cm in thickness. 5 specimens (Plate IXs, t, u, v).
3. Completely worked awls (Ald). Four awls had been completely shaped, including the removal of the head of the bone. All had either the base or tip broken off. The dimensions of the most complete one was > 8.0 by 1.1 by 0.7 cm.
4 specimens (Plate IXa, c, e, k).
4. Splinter awls (Ale). These awls were made from

the splinters of unidentifiable long bone.

The complete ones ranged in size from 3.8 to 8.8 cm in length, 4.2 to 1.5 cm in width and .2 to .5 cm in thickness. 9 specimens (Plate IXm, n, o, p; Xa, f, g, h, k).

5. Splinter cannon bone awls (AleI). These were just like the other splinter awls, except that the bone was identifiable. They ranged in size from > 5.2 to 9.5 cm in length, .8 to 1.8 cm in width and a .35 to 1.0 cm in thickness. 4 specimens (Plate IXi, j, l; XI).

6. Deer splint awls (Alg). There were two deer splints which had polished tips and appeared to have been used as awls. The bones were intact, only the tips were modified. 2 specimens (Plate IXg, h).

7. Bird bone awls (A4). The bird bone awl was broken at the base, but it was at least 8.4 cm long by .5 cm in diameter. The tip was formed by splitting the bone for a very short distance and breaking off one half. The other half was then ground to a point. 1 specimen (Plate IXb).

There were 8 awl fragments too small to classify. They included 5 rounded tips, 2 of antler and 3 of bone. There were 2 flattened or lenticular tips which may not

have been awls but harpoon tips. There was one mid-section of an awl (Plate IXf; Xb, c, d).

Most of the awls in this collection were probably used as eel slitters and for piercing buckskin. Many were highly polished over their entire surface but did not have the use polish of basketry awls. These were probably eel slitters which were a common tool for Klamath River tribes recorded ethnographically. A few had needle-like tips on an otherwise unmodified splinter. These were probably for piercing buckskin.

"Pin" or "Dagger" (Category B)

There were 3 specimens which fit into this category. These specimens were very similar to category A and category C, gouges, flakers and smoothers. They were separated from awls because their working point was less abruptly tapered or rounded. They were separated from category C because their shafts were completely worked.

1. Split cannon-bone dagger or knife (B3). These were relatively flat, split shafts of metapodials with their heads completely or partly worked down. The shaft had been cut and then polished to some extent. The two specimens ranged from 8.9 to 12.9 cm in length, 1.3 to 1.5 cm in width and .8 to 1.1 cm in thickness.

2 specimens (Plate XIk, 1).

2. Pin (B8). The pin had been shaped from bone into a tapering cylinder, 5.7 cm long and .6 cm in diameter, with a slightly grooved head. All its surface had been polished smooth. The tip was discolored by charcoal, which may have happened after the pin was lost or discarded.
- 1 specimen (Plate IXd).

The two daggers or knives were possibly used as eel slitters or as knives for skinning. Bone knives were used by northern California groups for warfare (Du Bois 1935, Goldschmidt 1951) and other purposes. The pin may have been a hair pin, though it was rather short for that purpose.

Gouges, Fleshers or Flakers (Category C)

The 108 items in this category were divided into 12 classes. Seven classes, C9 to C15, were added to Gifford's (1940) original total because more than 12 skeletal elements were used as gouges and fleshers in the Salt Cave Locality. The classes were based on the skeletal element used, not on shape or form. The tools in this category had a pointed working edge which was flattened or rounded. The shaft of the tools were left unworked in most cases. Some of the points were thick,

flattened points; these probably were flakers. Those with thin, flattened points were probably fleshers or smoothers. Others had rather sharp, short points, sometimes with an S-shaped curve; these may have been used as gouges.

1. Metapodial (C1). This was the most common class with 23 specimens. Within this class 6 appeared to have been used as flakers, 5 as gouges and 10 as fleshers or smoothers. The remainder were too fragmentary to guess at their function. The length of these specimens ranged from 3.2 to > 15.3 cm, the width from .8 to > 2.9 cm, and the thickness from .6 to 2.3 cm. 23 specimens (Plate XIIb, XIIIa, b, j, n, o; XIVE, f, t, w, x).
2. Ulna (C2). These all appeared to have been smoothers, fleshers or flakers. The proximal end of the ulna was not modified, only the working edge had been shaped. The 2 complete specimens were 8.0 to 8.5 cm long, 3.2 to 3.4 cm wide and 1.9 to 2.0 cm thick. 3 specimens (Figure 29a).
3. Tibia (C4). There were 2 tibia flakers, 5 possible smoothers or fleshers and 3 gouges. The working edge was shaped and the shaft of the tool had been purposefully split. The specimens

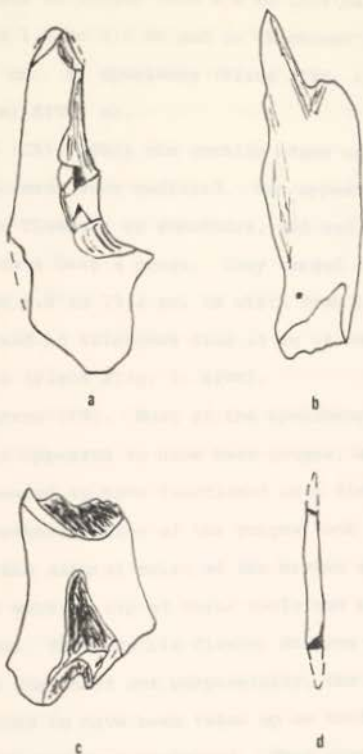


FIGURE 29 BONE TOOLS

ranged in length from 4.6 to 15.4 cm, in width from 1.3 to 4.3 cm and in thickness from .4 to 1.0 cm. 11 specimens (Plate XIId, i; XIIIId, e, k, m; XIVh, u).

4. Rib (C5). Only the working edges of these specimens were modified. Two appeared to have been fleshers or smoothers, and one appeared to have been a gouge. They ranged in length from 4.8 to 19.2 cm, in width from 1.2 to 2.2 cm and in thickness from .3 to .8 cm. 3 specimens (Plate XIIg, 1; XIVc).
5. Humerus (C9). Most of the specimens in this type appeared to have been gouges, only one appeared to have functioned as a flesher or smoother. Three of the gouges took advantage of the natural twist of the broken shaft. Only the working tip of these tools had been modified. The possible flesher and one fragment had the shaft cut purposefully, the rest appeared to have been taken up as tools after the shaft had been shattered. They were 4.0 to 8.4 cm long, 1.5 to 2.5 cm wide and .5 to 1.7 cm thick. 9 specimens (Plate XIIIf, p, r; XIVo; Figure 29b).
6. Radius (C10). Most of these specimens were

little modified, split shafts with shaped working edges. Only 2 specimens did not have at least part of the proximal head present. Four of this group appeared to have been fleshers or smoothers, and 4 appeared to have been gouges. They were > 4.2 to 8.8 cm long, 1.4 to 3.4 cm wide and .6 to 2.2 cm thick. 8 specimens (Plate XIIIa, i; XIVd; Figure 29c).

7. Femur (C11). All these items were from Border Village. Most had both their shafts and working edges shaped. Four specimens appeared to have been used as fleshers or smoothers, 2 appeared to have been gouges and one tool appeared to have been used as a gouge on one end and as a concave edge scraper along one side of the shaft. The shaft appeared to have been flaked before use. One gouge had been totally shaped and polished. It may have been an eel slitter. In length the complete specimens ranged from 5.5 to 11.4 cm, in width from 1.5 to 2.2 cm, and in thickness from .4 to 1.3 cm. 7 specimens (Plate XIIe; XIIIl, q, s).
8. Mandible (C12). Part of an ascending ramus was used as a gouge. The specimen was 3.0 by 2.5 by .5 cm. Only the working edge had been modified.

1 specimen (Plate XIVs).

9. Scapula (C13). The 2 specimens in this class were used as gouges. One specimen appeared to have had one end cut, which was then used. The other specimen had a projection shaped by roughly breaking away most of the blade leaving the ridge. The point of the projection was polished from use. The specimens ranged from 3.4 to 5.2 cm in length, 2.3 to 2.7 cm in width, and 1.3 cm in thickness. 2 specimens (Plate XIVn,r)
10. Antler (C14). This was the second largest class within Category C. The vast majority were antler tines which appeared from their modified tips to have been used as flakers. However, the modified tips of these antler tines may not have been the result of human activity, but may have been the result of natural wear. Only 6 were modified to an extent which made human modification the only explanation. Three specimens which were cut and shaped, appeared to have been used as fleshers or flakers. Two of these show deep scratches on their sides from the shaping process; one was highly polished. There were no complete antler tools in this class. The size range for the flaker tines went from

- > 1.2 to 12.3 cm in length > .4 to > 1.8 cm in diameter. The fleshers ranged from > 5.0 to > 9.9 cm long, 1.6 to 3.9 cm wide and .8 to 1.0 cm thick. 22 specimens (Plate XIIc, h, m; XIVb,q).
11. Unidentifiable long bone (C15). These specimens have been split from long bones without leaving any identifiable characteristics. Three were probably used as gouges. They ranged in size from 2.5 to 12.3 cm in length, from 1.0 to 1.8 cm in width and from .3 to .8 cm in thickness. 7 specimens (Plate XIII; XIIIIf, g; XIVi, v).

The remaining 13 pieces within Category C were fragments. They were all tips of tools. Six appeared to have been smoothers or flesher tips and 7 appeared to have been gouge tips. They all appeared to have been broken from tools which were partly shaped.

Knife, Chisel, Scraper or Wedge
(Category D)

The tools in this category were all end bladed. The working edge was either straight, concave or convex. Most shafts had been shaped, some were also polished, others were neither shaped nor polished. The division into classes was based on the general shape of the tool and the shape and thickness of the working edge. One class was

added to Gifford's original seven. There was a total of 54 specimens in this category.

1. Straight, flat knife, chisel or scraper (D2).
The single specimen was cut from a flat bone. The working edge was slightly concave. It was 4.4 cm long, >1.7 cm wide and .5 cm thick. 1 specimen (Plate XVIIg).
2. Tang-hafted chisel or scraper (D4). The tools in this type had been purposefully shaped. The basal third of the tool was indentd to form a tang. The specimens ranged in length from > 7.2 to 9.0 cm, in width from > 1.2 to 1.7 cm, and in thickness from .4 to .7 cm. 5 Specimens (Plate XVIb, e, h, o, p).
3. Bone chisel (D5). Though classed as bone chisels, these tools may also have been used as scrapers or smoothers. These tools can be roughly subdivided on the bases of length into 2 subclasses: those less than 4.5 cm and those greater than 6 cm. In width all the complete specimens ranged from > 1.0 to 2.3 cm and in thickness from .6 to 1.7 cm. 14 specimens (Plate XIVc, f, j, k; XVIIe, h, i, j, n).
4. Bone wedge (D6). This class was very similar to D5, except the working edge was broader and

the whole tool was heavier. Two of the specimens were made from split metacarpals, which had been purposefully shaped. The wedges ranged in length from 3.8 to > 9.1 cm, in width from > 2.0 to 3.8 cm, and in thickness from .6 to 1.6 cm. 5 specimens (Plate XVIIa, l, m).

5. Bone scraper (D8). Tools in this class were made from split long bone; most were split purposefully and a few were completely shaped. There were four kinds of work edges: 1) round on unsplit antler or bone shaft, 2) straight, flat edges, 3) thick, convex edges and 4) convex edges worked thin. There were also 3 thick, convex edged tools which also had a concave scraping edge flaked on one side of the shaft. The complete specimens were from 4.9 to 16.1 cm long, from 2.0 to 5.0 cm wide and from .4 to 2.2 cm thick. 29 specimens (Plate SVa, b, c, d, e, f, g, h, i, j, k; XVa, d, g, l, n, r).

Shoehorn-shaped Object (Category N)

This category's specimens have convex working edges. The entire tool was shaped and polished. It has been suggested that tools of this general shape were used as sweat scrapers, lice killers or as spoons. All the

specimens would fall into Gifford's N2 class. The complete items ranged from 6.3 to 8.1 cm by 1.9 to 2.3 cm by .5 cm. 4 specimens (Plate XVIIi, q; XVIIId, f).

Head-scratcher (Category Q)

There was a single specimen from this category; it was recovered from the Black Stratum of Klamath Shoal Midden. It was a flat piece of bone cut flat on one end and pointed at the other. It was polished and had an incised decoration on one surface. Though it was not perforated, it still appeared to have been a head-scratcher according to Gifford's criteria. It was 3.3 by 1.1 by .5 cm. (Plate XVIIIId).

Pendant (Category Q)

These were rather flat, perforated objects, which were not pointed. Often they were decorated. There were very few in the Salt Cave Locality.

1. Elongated pendant, unengraved, unserrated (Q4).

There was one pendant of this class recovered from Border Village. It had been shaped and polished. The perforation had been made by first drilling through almost totally from one side, and then breaking through by drilling on the opposite side. The side and bottom of the

pendant was broken. It was 1.9* by .9* by .1 cm 1 specimen (Plate XVIIIa).

2. Pendant worked down and decorated (Q6). This pendant was also broken. It was a piece of bone cut and shaped so the original interior surface of the bone was not present. It was decorated with punctate designs on one surface. There was no perforation present, however, over half the piece was missing. Its dimensions were 2.4* by 1.4* by .2 cm 1 specimen (Plate XVIIIb).

There was one possible fragment recovered from Klamath Shoal Midden. It was a highly polished bone fragment with 3 parallel lines engraved into one surface. The piece was too fragmentary to speculate about its original form (Plate XVIIIc).

Gaming Pieces (Category S)

These were flat, solid pieces of bone with flat or rounded ends. They resembled gaming pieces from ethnographic collections in shape and size. There were two complete specimens and 3 fragments. The size of the complete specimens were 3.4 by .56 by .35 cm and 4.2* by .83 by .62 cm. All pieces were highly polished on at least one surface and usually on both. 5 specimens (Plate XII, g, i, j).

Bipointed Objects (Category T)

This category included any bipointed object, whether straight, bowed or beveled, which was not perforated. Most of these artifacts were probably parts of harpoons. Fifteen specimens, mostly broken, were placed in this category. Eight classes were distinguished.

1. Straight, circular in transverse cross-section throughout length (T1a). The two specimens of this class were both from Klamath Shoal Midden. They were greater than 1.7 cm in length and ranged from .25 to .40 cm in diameter. They were both extremely smoothed and polished. They were probably nose pins. 2 specimens (Plate XIXee; Figure 29d).
2. Pin, circular in transverse cross-section at one end, flattened at the other (T1c). The artifact was recovered from Border Village. There were four stains which ran around its center, indicating it was probably wrapped with sinew or other material when used. It was probably a fish gorge. Its dimensions were 4.1 by .5 by .45 cm. 1 specimen (Plate XIXbb).
3. Straight, rectangular in transverse cross-section, broader at base (T1f). These specimens were more or less rectangular to triangular in transverse

cross-section. They were broadest near their bases, which were abruptly bevelled. They had been shaped and smoothed but not highly polished. They appeared to have been used as harpoon barbs. Bennyhoff (1950) felt this type could be points for Wintu-type toggleheads or part of a spur-type toggle. They ranged in length from > 2.5 to 5.2 cm, in width from $.5$ to $.80$ cm, and in thickness from $.4$ to $.6$ cm. 5 specimens (Plate XIXv, w, z).

4. Straight, more or less circular in transverse cross-section, but one side flat (Tlg). This was a well-shaped object which had been highly polished over most of its surface. It resembled harpoon points illustrated in ethnographies of Klamath River tribes. It was > 5.0 cm by $.65$ cm. 1 specimen (Plate XIXu).
5. Straight, circular in transverse cross-section, but one end bevelled (Tlh). This object was carefully shaped and then polished on all but one surface, where the cancellous interior of the bone showed through. It resembled a fish gorge. Its size was 8.1 by 1.0 by $.7$ cm. 1 specimen (Plate XIX mm).
6. Rather flat, horizontally bowed (T2a). This specimen was shaped and smoothed on all surfaces. It appeared to have been used as a barb or

gorge. Its dimensions were 2.4 by .7 by .3 cm.

1 specimen (Plate XIXf).

7. Circular in transverse cross-section, curved or bowed laterally, both points exposed (T2bII).

Though the specimen was broken there were several small grooves near the center indicating it had been bound at its center rather than at one end.

It was made from a piece of bone which appeared to have had a naturally bow-shape. It had been highly polished, which was done before the grooves had cut into the center. It was > 2.7 by .38 cm.

1 specimen (Plate XIXs).

8. Rather flat, double curved (T2c). One specimen was flat; the others were concave on one surface, which was shaped using the bone's marrow cavity. They appeared to have been used as harpoon points or barbs, but they may also have been used as fish gorges as Gifford (1940) suggested. They were all recovered from Border Village. They ranged in length from 4.7 to 6.2 cm, in width from 1.4 to 1.8 cm, and in thickness from .51 to .57 cm. 3 specimens (Plate XIVy, aa).

The objects in this category were classified according to shape. Their functions have been inferred from shape and surface finish. Based on appearance most were

probably parts of composite fish spears, harpoons or toggles; a few were fish gorges and nose pins.

Pointed, Blunt-based Objects
(Category U)

The 26 specimens in this category were all probably parts of composite fishhooks, fish spears or harpoons. All of them were either flattened or grooved, apparently to facilitate attaching them to other parts of a tool. Most were made from bone, but a few were made from antler. There were several specimens, which did not fit into Gifford's scheme; therefore, one class was added (U4) and one of his classes (U1) was subdivided into two classes.

1. Flat, pointed, symmetrical, blunted-base (U1a).

These objects were used as barbs for fishhooks; they were identical to ethnographic specimens in the Lowie Museum, #1-4149. One specimen from Big Border Village has been grooved for easier hafting. The other specimens were recovered from House Pit 1 in Border Village, each from a different stratum. They were highly polished on one side, less so on the other. The complete specimens ranged from 2.5 to 2.9 cm in length, from .4 to .5 cm in width and from .1 to .2 cm thick. 4 specimens (Plate XIXg-j).

2. Straight, pointed, more or less symmetrical (U1b).

These specimens were recovered from Big Boulder Village and Klamath Shoal Midden. Over half had flattened bases, presumably for easier hafting. They appeared to have been used as points or barbs for fish spears or harpoons. Some may also have been fish gorges or parts of a fishhook. Most were carefully shaped and their surfaces smoothed or polished. They ranged in length from 2.4 to > 5.0 cm, in width from .5 to .8 cm and in thickness from .35 to .5 cm. 7 specimens (Plate XIXe, x, aa, cc, ii).

3. More or less curved, asymmetrical (U2). The specimens in this class were not well-made, being rather crudely shaped. They appeared to have been used as barbs. They ranged from 1.7 to 2.8 cm in length, from .84 to .94 cm in width, and from .3 to .46 cm in thickness. 3 specimens (Plate XIXa).
4. Base-notched, more or less curved (U3). These artifacts were probably barbs for fishhooks or fish spears. Each had been notched by a different technique. One had a crescent-shaped notch taken from one side of the base. The second was deeply grooved on three of the four sides of the base. The third was very lightly grooved around

the base. Two had been highly polished on one surface, the other was polished on one surface. They ranged in length from 1.8 to 2.6 cm, in width from .58 to .76 cm and in thickness from .2 to .5 cm. 3 Specimens (Plate XIXb).

5. Straight, pointed, channel groove, basal notch

(U4). This class was added to Gifford's scheme. The items within this type were described in Gifford (1940) as ethnographic specimens; he apparently was unaware of archaeological examples. These specimens were probably used as harpoon points, some may have been barbs, for composite harpoons. Most of them were made from metapodials. They were shaped and smoothed, using the marrow cavity as the basis for a channel groove down one surface. The opposite surface was slightly convex. The points were rather thick and therefore rather blunt. The three specimens which had their bases intact were basally notched. The complete specimens ranged from 5.6 to 5.7 cm in length, from > .8 to 1.7 cm in width, and from .48 to .8 cm in thickness. 9 specimens (Plate XIXd, h, k, ff, gg, ii-kk).

There were 11 tip fragments which ranged from fairly thick, blunt points to needle-sharp points. Because their

basal portions were missing, they could not be reliably classified. However, they would have fallen into Category T or U (Plate XIXc, p, r, t, dd).

Bead or Tube (Category EE)

This artifact category included items of varying length. Some were short enough to have been used as beads. Others, long enough to have been tubes, were used probably as ear or nose ornaments or as drinking or sucking tubes. There were a few of medium length which were not clearly either one. Gifford's (1940) types did not differentiate between beads and tubes. Generally, in this collection mammal bone was used for bead-making and bird bone for tubes.

1. Bead or tube, undecorated, bird bone (EE1a). All these specimens were recovered from Border Village and Klamath Shoal Midden. About half appeared to have been tubes rather than beads. They ranged in length from 0.5 to 5.9 cm and in diameter from 0.35 to 1.2 cm. 21 specimens (Plate XVIIIh, i-k, o, q; XXe, h, j-l).
2. Bead or tube, undecorated mammal bone (EE1b). Most of the specimens were recovered from H.P. 1, Border Village, and were beads. Seven of those were burned and were associated with human skull

fragments recovered near the center of the house pit. Only three were recovered from Klamath Shoal Midden, 2 of these appeared to have been tubes. These beads and tubes ranged from 1.2 to 3.7 cm in length and from 0.54 to 1.3 cm in diameter. 12 specimens (Plate XXd, m).

3. Bead or tube, more or less encircling incisions (EE2a). This type included the majority of beads from the Salt Cave Locality. One was recovered from Big Boulder Village, one from Klamath Shoal Midden and the remainder from House Pit 1, Border Village. All but one of the beads from Border Village were burned and associated with the skull fragments near the center of the house. The beads ranged in length from 1.3 to 2.7 cm and in diameter from .3 to 1.2 cm. 47 specimens (Plate XVIIIe; XXa-c, g, n, o, q).
4. Tube or bead with incised geometric decorations (EE2b). All these specimens were recovered from House Pit 1, Border Village. Two were beads and 4 appeared to be pieces of a tube. All were highly polished. All the incisions were straight lines. Most were short and placed either parallel or perpendicular to the axis of the object. Only one tube had diagonal lines. The specimens

ranged in length from 1.0 to 3.7 cm and in diameter from .85 to 1.02 cm. 6 specimens (Plate XVIIIIf, g, p; XXf, i).

Single-holed Whistle (Category FF)

Whistles were separated from flutes on the basis of number of holes. A whistle had one hole and a flute two or more.

1. Whistle with incised decoration (FF3). There was one nearly complete and one fragmentary whistle recovered from Houst Pit 11 in Big Boulder Village. They were found together and may well have been a matched pair. They were of cut bird bone which had been polished and then incised with short, straight lines perpendicular to the long axis on two sides. One incised line encircled the whistle. The hole was cut into the bone in about the middle of the tube. The nearly complete specimen was > 10.04 cm by 1.07 cm. 2 specimens (Plate XVIIIIm, n).

Wedge or Chisel (Category HH)

These wedges and chisels were all of deer or elk antler. All were broken to some extent, many were just fragments of the tip. In most cases it was not possible

to determine whether elk (Cervus canadensis) or deer (Odocoileus sp.) antler had been used. Most of the nearly whole specimens appeared to be made of deer antler. Only one was definitely elk. Only 3 specimens had their butt ends intact, and they showed evidence of pounding. The difference between a wedge and chisel was based on the measurement of the tips width. This was based on the system used by Newman (1959), where a chisel had a bit width of less than 1.5 cm. Using this criteria, there were 3 possible antler chisels and 9 antler wedges. The remainder were too fragmentary to utilize this criteria. The nearly complete specimens ranged in length from 9.0 to >10.5 cm, in width from 3.1 to 5.0 cm and in thickness from 1.5 to 3.3 cm. 21 specimens (Plate XXI).

Hollow-base Antler Tine Point
(Category II)

In Gifford's (1940) typology these artifacts were also perforated near their base. The Salt Cave Locality specimens were not perforated, but otherwise fit the criteria for this category. The point did not seem to have been modified. The hollowed base was presumably for hafting. These may have been for fishing spears, either points or barbs. Two were recovered from Klamath Shoal Midden and one from Big Boulder Village. They ranged from > 1.5 to 2.4 cm in length and from .77 to 1.0 cm in diameter.

3 specimens (Plate XIc-e).

Barb or Blade for Fish Gig
(Category MM)

1. Bipointed barb, grooved on one side (MM1b).

These specimens from Border Village and Klamath Shoal Midden were probably barbs for toggle head harpoon. One was flat on the side opposite the groove, and the other was rounded. Both were shaped and then smoothed. Their size ranged from > 2.35 to 7.35 cm in length, from .6 to .8 cm in width, and from .35 to .5 cm in thickness.

2 specimens (Plate XIXn, y).

2. "Blade" with base shouldered on face (MM2b).

This specimen was shaped from a piece of antler, then smoothed. It had a shouldered base and a channel groove cut into the opposite face. It was probably used as a prong for an unbarbed fish spear. It was recovered from Big Boulder Village. It was > 5.4 cm in length, 1.28 cm in width and .78 cm in thickness. 1 specimen (Plate XIXhh).

Elk Antler Spoon (Plate XXII)

A single, carved elk antler spoon was recovered from House Pit 1, Border Village in association with the

only complete burial from this site. Gifford (1940) had no type category for elk antler spoons, as they were only known ethnographically. This specimen was carved and then smoothed and polished. The bowl of the spoon was carved from the skull adjacent to the antler. It had been worked to an even thickness. The handle was carved with three different design areas. Near the base the handle was solid. Just above the pedestal element, the handle split into two thin stems which were decorated with incised lines on one side. The top was a flat capital with incised lines on both surfaces. It was a rectangular shaped capital which was the least common type ethnographically (Kelly 1930). The pedestal design element was unlike those used ethnographically by the tribes on the lower Klamath River (i.e., Yurok, Hupa, Karok). The spoon's dimensions were bowl length 5.65 cm, bowl width > 3.89 cm, bowl thickness .35 cm, handle length > 10.0 cm, handle width 1.46 cm and handle thickness .5 cm.

Miscellaneous

There were 3 bone tools which could not be classified using Gifford's scheme, and they did not fit into an ethnographic category. From Big Boulder Village a flat, triangular bone with a convex point was recovered from House Pit 3. It was carefully shaped and highly polished.

It may have been used as a gaming piece or as a thumb guard for splitting fiber. It was 1.5 by 1.55 by .23 cm.

The other two artifacts, recovered from Border village, both may have been points for fish spears. Their tips were broken off and one had its side broken also. One was narrow, with one flat surface and one convex surface. It appeared to be a harpoon point, but no barbs were present. It was > 5.7 by .82 by .36 cm. The other was flat with one surface slightly concave and one slightly convex. Its base had been shaped flat across with a crescent area of bone removed on the convex surface. It was also notched just above the base. From the treatment of the base, it appeared to be a point for a fish spear, possibly a harpoon point. It was > 5.35 by 1.21 by .39 cm.

The remainder of the bone tools were too fragmentary to classify in any way. There were 212 such fragments. Most of these were from tools made from long bone.

Cut bone and particularly cut antler were common in the Salt Cave Locality. There were 4 pieces of cut bone, 2 from Border Village and 2 from Big Boulder Village. There was an ulna from a mustelid which had its shaft cut through. Up the shaft from the cut were 4 evenly spaced incisions, which appeared to indicate the location

of future cuts. The sections cut from this ulna may have been used as beads at Big Boulder Village (Plate XIp). A metapodial shaft from a carnivore also had been cut through. This piece showed it had been carefully grooved and then snapped leaving a very small ridge around the marrow cavity. The size of the bone, the technique of cutting and its location in House Pit 1, Border Village, indicated bones of this kind were the likely source of the incised beads recovered from this site (Plate XIa). There was a similarly cut piece of long bone recovered from Big Boulder Village. It was broken in half and at one end. The other unbroken end showed the groove and a large, crude ridge left by snapping (Plate XIb). The fourth piece of cut bone is a skull fragment which had been highly polished on one surface. It may have been a waste piece from the manufacture of a spoon.

All the cut antler was recovered from Klamath Shoal Midden. There were 7 pieces of antler which had been cut near their base or along the shaft leaving at least two tines intact (Plate XXIII). The shaft was cut by grooving around the shaft almost to the center and then snapped off at that point. One large base had been chopped instead of grooved. Four antlers showed the same technique of cutting by grooving, which resulted in whole tines or a tip. There were 2 antler bases attached to

skull fragments which also showed the circular groove resulting from the above technique. There were also two antler pieces which showed they had been cut through along the center of their shafts.

The probable steps in preparing antler for use as a tool was to first separate the antler from the skull near the base. Then the antler was cut just below a branch junction. Then individual tines were cut off and sections of the larger shafts were cut up. From that point tips of tines, splinters or shaft sections might be removed to be shaped into tools.

Shell

There are 6 shell artifacts from the sites in the Salt Cave Locality. There are four shell beads and an Haliotis pendant from Klamath Shoal Midden and a mussel shell spoon from Border Village. The spoon is 8.0 by 3.5 cm and is made from a Gonidea shell, a freshwater mussel (Plate XXIV). Mussel shell spoons were commonly used by women in several tribes along the Klamath River, including the Shasta and the Klamath-Modoc (Voegelin 1942).

From Klamath Shoal Midden there are 3 whole Olivella biplicata shell beads which have their top spire ground off. One is broken so its identification is tentative. The whole beads are approximately one centimeter long and

.65 cm in diameter (Plate XXIVa, b). They are generally classified as Type F5b by Gifford (1947) and Type 1a by Bennyhoff and Heizer (1958). Ethnographically, this type of bead was favored for necklaces by various Klamath River tribes, particularly the Western Shasta (Voegelin 1942). It is also a very common bead in archaeological sites in Northeastern California, particularly in Modoc and Siskiyou Counties. This type of bead is found from Early to Late Horizon in the Sacramento Valley (Beardsley 1948). The fourth bead from Klamath Shoal Midden is a time marker in Central California. It is an Olivella biplicata "saddle" bead. It dates to the later part of the Middel Horizon (Bennyhoff and Heizer 1958). This bead was found in the Midden Stratum near the river, associated with Burial 4 (Plate XXIVc). The characteristic date of this bead type corresponds to the C-14 date from the Midden Stratum. The bead is 1.2 by 1.0 by .14 cm. This would be Type X3bI in Gifford's (1947) typology of California shell artifacts and Type 3b in Bennyhoff and Heizers' (1958).

The abalone pendant, also from Klamath Shoal Midden, is also from the Midden Stratum. It retains the epidermis and has one perforation at the tapering end. It is 3.8 by 2.5 by .4 cm. The edges are rounded, but no other finishing work is present (Plate XXIVd). It is of

Haliotis rufescans and was probably locally made from shell traded upriver. It may be typed as Gifford's KleII (1947).

There are whole unmodified shells and shell fragments in all the sites. Border Village had 10 fragments of freshwater clam shell, family Unioidea. Big Boulder Village has one fragmentary freshwater clam shell, one possible Haliotis rufescans fragment and two land snails, possibly Fuminicola. Klamath Shoal Midden has 4 possible Fuminicola, 2 Goniobasis shells, one freshwater clam shell fragment, a freshwater limpet, Ancylus, and another freshwater snail shell. It also had 2 calcium deposits from crayfish. Site 35 KL 22 had 3 possible Fuminicola and a freshwater clam shell fragment. The freshwater clam and crayfish remains may represent use as food and/or decoration. The freshwater and land snails are very small and undoubtedly entered the sites incidentally during or after occupation.

Comparisons

The bone and antler artifacts from Border Village, Big Boulder Village and Klamath Shoal Midden were similar to bone and antler artifacts from archaeological reports on sites in the Klamath Basin, North-central California, the Northern Great Basin and the Columbia-Snake River

They were also similar to tools illustrated in ethnographic reports for the Klamath, Modoc, Shasta and several other Northern California and southern Oregon tribes. However, very few could be associated with a particular tribe or a particular region. Not surprisingly, most of the modified antler and bone from the Salt Cave Locality resembled bone and antler artifacts from the Klamath Basin, the Lower Klamath River, North-central California and the Northern California-southern Oregon Coast.

The use of ulnas for awls, flakers and scrapers (AlaII and C2) was a trait of tribes living in the Klamath Basin, the Lower Klamath River, North-central California and the Northern California-southern Oregon Coast (Voegelin 1942). Such specimens were recorded ethnographically for the Klamath, Modoc, Shasta, Karok and Northern Maidu and were found in the following archaeological sites: Laird's Bay (Cressman 1942; Squier 1956), Long II-Kawumkan Springs (Cressman 1956), Sis-13 (Wallace and Taylor 1952), Iron-gate (Leonhardy 1961) and in Hum-118 and 169 (Elsasser 1965). They seemed absent from sites in the Northern Great Basin and the Columbia-Snake River Plateau. Split cannon bone awls with the proximal end as the handle (AlbII) were also limited in distribution. They have been reported for the Shasta, Karok and Tolowa and were recovered from Hum-118 (Elsasser 1965). Though not specifically reported as

cannon bone awls, Squier (1956) mentions split mammal bone awls as a trait of the Tule Lake, Gilliam Bluff and Indian Bluff Phases of the Klamath Basin. Therefore, the distribution of the use of the proximal ends of ulnas and the split proximal ends of cannon bones seems to have been the same. The remaining types of awls were not recorded in ethnographic reports, but they were present in archaeological sites from all the regions listed above.

Bone pins have a similar distribution (B8). They have been recorded in archaeological sites in the Klamath Basin, Northern California-southern Oregon Coast and North-central California.

Categories C and D were difficult to compare with tools from other reports or ethnographies. The classes within these categories were not discussed in ethnographic and archaeological reports. Antler tine flakers and split antler flakers were specifically mentioned, but they appear in all regions.

The fishing equipment as represented by the classes in Categories T, U and MM were rarely comparable. Those few artifacts which were comparable showed connections with North-central California, the Klamath Basin and the Northern California-southern Oregon Coast. The single prong for an unbarbed fish spear from Big Boulder Village compared to those associated with the Middle Horizon in

Central California (Bennyhoff 1950). The other region with similar artifacts was the Columbia-Snake River Plateau. An example was found in the Snake River Canyon (Warren et al. 1968) and at the Dalles (Cressman 1960). The unbarbed fish spear was basically a fluvial fishing implement (Bennyhoff 1950). Though the unbarbed fish spear disappeared toward the end of the Middle Horizon in Central California to be replaced by the barbed prong, this apparently was not true of Northeast California and South-central Oregon. Many of the individual artifacts in Categories T and U may have been part of spurred and awl-type toggle harpoon heads, but they did not appear exactly as those described or pictured in various reports. However, the 2 specimens in class M1b were comparable to toggle spears pictured in Bennyhoff (1950). Both fit into Bennyhoff's Type IIIa. The known archaeological distribution was restricted to coastal sites, Hum-118 and 169. One of these was recovered from Border Village and Klamath Shoal Midden. The spur-type was used by the Shasta and the various tribes on the Lower Klamath River. The Klamath and Modoc used the awl-type. This points to the possibility that Klamath Shoal Midden was a fishing station used by more than one tribal group. Spier (1930) mentioned such a site on the Klamath River in the canyon area, used by the Klamath and Shasta.

Carved elk antler spoons were restricted in distribution to the Klamath River drainage, and the Northern California-Southern Oregon Coast, including the Shasta, but not the Klamath-Modoc. Three such spoons were recovered from Hum-169 (Elsasser 1965). The presence of such a spoon in House Pit 1, Border Village, adds weight to the hypothesis that this site was occupied by Shasta or Takelma.

Conclusions

The variety and distribution of bone and antler artifacts indicated the importance of bone and antler as a raw material. The artifacts made from these materials appeared to be used for preparing hides, cutting and shaping wood, fishing, making stone tools and as ornaments. Two of these purposes, fishing and woodworking, were expectable in this forested, riverine environment. There appeared to be little difference in distribution of these tools within sites or between the sites (Table 3), and comparisons of these artifacts to those of other nearby regions showed many similarities.

The heavy concentration of bone and antler artifacts within House Pit 1, Border Village, was probably due to the repeated use of this house. The fact that over half of these artifacts were associated with the first 2 floors

TABLE 3. --Bone and antler tool category distributions

Category	35KL16	35KL16	35KL16	35KL18	35KL18	35KL18	35KL21	35KL21	35KL21	Totals		
	H. P. 1	H. P. 2	H. P. 16	H. P. 3	H. P. 11	H. P. 13	St. III	St. II	St. I	35KL16	35KL18	35KL21
A	11	0	0	0	0	4	18	1	0	11	4	19
B	1	0	0	0	0	0	0	0	0	1	0	0
B3	1	0	0	0	0	0	1	0	0	1	0	1
B8	0	0	0	0	0	1	0	0	0	0	1	0
C	61	4	2	1	1	8	29	1	2	67	10	32
D	2	2	0	1	0	0	0	0	0	4	1	0
D2	0	0	0	0	0	0	1	0	0	0	0	1
D4	3	1	0	0	0	0	1	0	0	4	0	1
D5	6	0	0	0	0	2	5	1	0	6	2	6
D6	4	0	0	0	0	1	1	0	0	4	1	1
D8	10	2	1	1	1	0	13	1	0	13	2	14
N	3	0	0	0	0	1	0	0	0	3	1	0
O	0	0	0	0	0	0	1	0	0	0	0	1
Q	1	0	0	0	0	0	3	0	0	1	0	3
S	3	0	0	0	0	1	1	0	0	3	1	1
T1a	0	0	0	0	0	0	2	0	0	0	0	2
T	7	1	1	0	0	0	4	0	0	9	0	4

TABLE 3. --Continued

Category	35KL16	35KL16	35KL16	35KL18	35KL18	35KL18	35KL21	35KL21	35KL21	Totals		
	H. P. 1	H. P. 2	H. P. 16	H. P. 3	H. P. 11	H. P. 13	St. III	St. II	St. I	35KL16	35KL18	35KL21
Ula	3	0	0	0	0	1	1	0	0	3	1	1
U	4	0	1	1	0	1	15	1	0	5	2	16
T or U	2	0	1	0	0	1	7	0	0	3	1	7
EE	73	0	1	0	0	1	11	1	0	74	1	12
FF	0	0	0	0	2	0	0	0	0	0	2	0
HH	10	0	0	0	1	1	9	0	0	10	2	9
II	0	0	0	1	0	0	1	1	0	0	1	2
MM	1	0	0	0	0	1	1	0	0	1	1	1
Elk Antler Spoon	1	0	0	0	0	0	0	0	0	1	0	0
Tool Frag.	54	21	2	13	4	29	80	14	1	77	46	95
Totals	261	31	9	18	9	53	205	21	3	301	80	229

was probably a result of longer or heavier occupation at these two levels. Most of the classes were found on all 4 floors. Only one category seemed to concentrate near the center of the house, Category EE. This can be explained by the presence of a cremation or burial also in the center of the house pit. The pot hunter's pit in the center of the house made it impossible to associate the beads and the burial with a particular floor.

The bone and antler artifacts in Klamath Shoal Midden were concentrated in the Midden Stratum. Very few artifacts were recovered from the Cemented Gravel Stratum and the River Gravel Stratum. The difference can be explained by the fact that preservation was much better in the Midden Stratum, and more cubic meters of Midden Stratum were excavated as compared to the other strata.

In Big Boulder Village there were three times the number of bone and antler artifacts in House Pit 13 as in the other two. The only likely explanation was that House Pit 13 had a more intensive or extensive occupation as compared to House Pit 3 and 11. This site had the fewest total bone and antler tools. From the low number, it was postulated that bone as a raw material was not as important as in Border Village and Klamath Shoal Midden. Poorer bone preservation might be part of the explanation; however, there were over 400 pieces of identifiable faunal

remains from Big Boulder Village as compared to around 600 for Border Village. It seems that bone and antler tools and ornaments were much more important to the inhabitants of Border Village than those of Big Boulder Village.

It would appear that the proportionally greater amount of bone and antler artifacts at Border Village, when compared to Big Boulder Village and to a lesser extent when compared to Klamath Shoal Midden, indicate a cultural difference between the sites. The heavier use of bone and antler in Border Village allies it more closely to the Lower Klamath River, making it more likely to have been Shasta or Takelma. The carved elk antler spoon increases the likelihood of this. The more generalized tools for skin preparation, the gouges and the smoothers, were of types which were most often rare or absent from Big Boulder Village. This may reflect less need for this type of tool, therefore, less skin preparation and less woodworking. The two upriver sites reflect a cultural use of bone less intensive than that carried on at the downriver localities. This could point to occupation by the Klamath-Modoc, who used antler and bone, but apparently not to the extent of the Lower Klamath River tribes. It was most interesting that the differences between Border Village and Big Boulder Village were

not revealed by the types of bone tools, but by their quantity.

Similarities between the Klamath-Modoc and Shasta have been demonstrated by comparing trait lists or particular aspects of material culture (Reetz 1949; Voegelin 1942). There is no doubt that the Klamath Basin and the Upper Klamath River have many cultural ties to the Lower Klamath River and to a lesser extent to North-central California and Southwestern Oregon. The bone tool types tend to reflect this similarity, particularly when the artifacts were related to woodworking, fishing or use as ornaments. The few shell beads from Klamath Shoal Midden reinforce a cultural influence from the coast from a rather early period. This is consistent with the recovery of shell beads in various Great Basin archaeological sites.

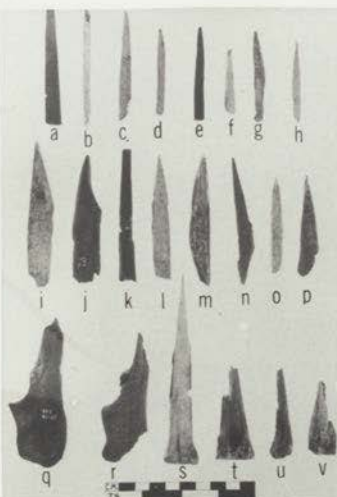


Plate IX Bone Tools

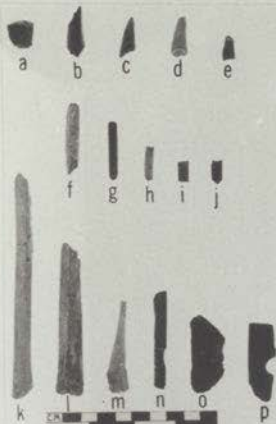


Plate XI Bone Tools

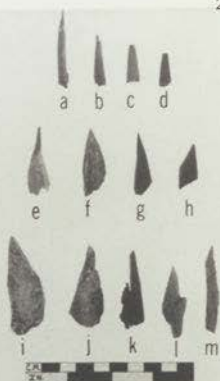


Plate X Bone Tools



Plate XII Bone Tools

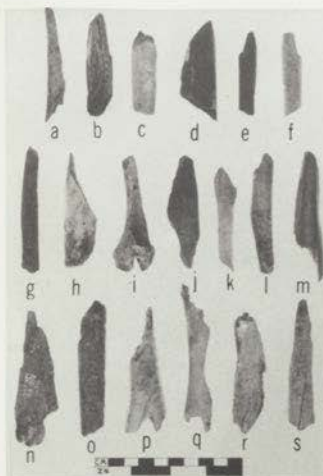


Plate XIII Bone Tools



Plate XIV Bone Tools

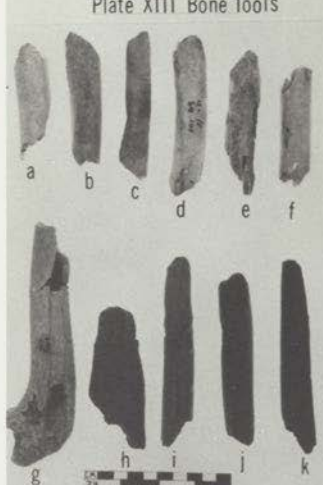


Plate XV Bone Tools

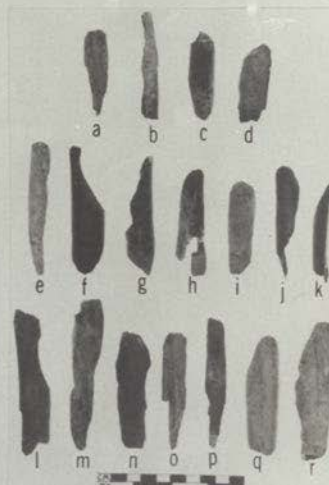


Plate XVI Bone Tools

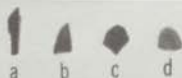


Plate XVII Bone Tools

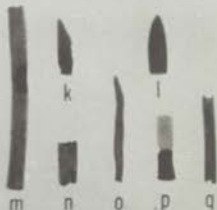
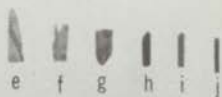
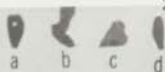


Plate XVIII Bone Artifacts

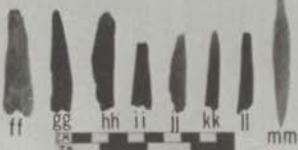
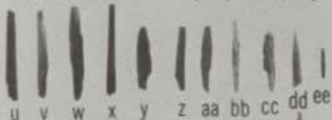


Plate XIX Bone Tools

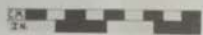
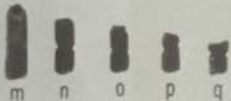
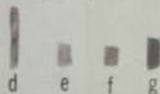


Plate XX Bone Artifacts

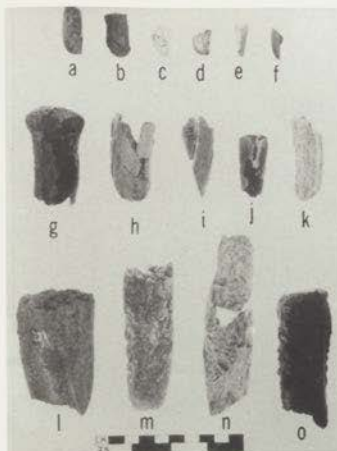


Plate XXI Antler Tools



Plate XXIII Cut Antler



Plate XXII Carved Elk Antler Spoon

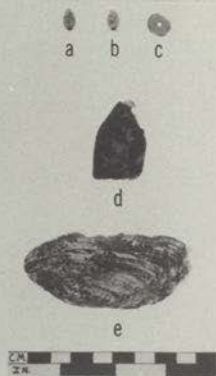


Plate XXIV Shell Artifacts

CHAPTER VII

BASKETRY

Four impressions of twined baskets on irregular pieces of baked clay were found in Border Village. Three were found in House Pit 1 and one was found in House Pit 16. Three resembled baskets made by the Klamath-Modoc. The other resembled baskets made by the Upper Umpqua, Yamhill and Umatilla.

Descriptions

SC1 D4 4/4 -1 (Plate XXVd)

This is a piece of baked clay, 4.0 cm by 3.2 cm by 1.0 cm, with twined basketry impressions on both faces. The impression is deep and clear, indicating the clay was very plastic when it received the impressions. About half of the periphery of the object is squeezed down to a thin edge, as though it had been pinched in the fold of a flexible basket. The basketry impression is similar on both sides, enough to suggest the same basket is represented twice. It is twined basketry with weft turns down-to-the-right, weft rows spaced about 18 mm apart on the average. The warp elements appear to be tule rush

strands somewhat constricted by the weft turns, but not twisted or plied into cordage. There are about four warp elements every 2.5 cm. The weave of the three weft rows is plain twining, but there is also one row of simple three-strand twining. In details of weave and texture the impression closely resembles, 1-12568, an oval shaped, flattened food serving tray made of tule rushes, in the Lowie Museum's Klamath Lake collection (Dawson, personal communication).

SCL E4 2/3 -3 (Plate XXVa)

This is a thin piece of baked clay with a basketry impression on one side, measuring 1.8 cm by 1.2 cm by 0.3 to 0.4 cm. The impression, which is fairly deep but not sharp and clear, is of twined basketry with weft rows spaced at least 14 mm apart. The slant of the turns is down-to-the-right, and the weave is irregular but probably plain twining over one warp at a time. Only two turns of one weft row are present. The condition of the impression does not permit an identification of the materials but it appears to be split tules. A basket of openwork twining with split tule rushes and other baskets made by the Klamath are the only kind of basketry that seems comparable to this piece in the ethnographic collection of the Lowie Museum, 1-27176 (Dawson, personal communication).

SCL Bl2 1/ -1 (Plate XXVc)

This piece of baked clay is from House Pit 16 and is 3.2 cm by 2.2 cm by 0.6 to 0.9 cm. It bears an impression of twined basketry on a portion of one side. The back of the piece looks pressed and rubbed as though the clay were pressed with the fingers against a basket. The impression, none too sharp or clear, is about one centimeter square of close plain twined basketry with pitch of stitch down-to-the-right. There are about three warp rows and 4.5 weft rows per centimeter. The texture and scale of the weaving is similar to many ethnographic Klamath-Modoc baskets in which the weft strands are of the basal leaf of tule rush (Lowie Museum # 1-2809). However, the impression is not clear enough to be sure of this identification (Dawson, personal communication).

SCL D2 /2 -22 (Plate XXVb)

This is the one basket impression not of a Klamath-Modoc type. It is on a piece of baked clay 2.4 cm by 1.2 cm by 0.45 cm. One face bears a deep, clear impression; the clay must have been sticky-moist when it adhered to the basket. The impression is of twined basketry with spaced weft rows about 5 to 7 mm apart. The weave is an irregular plain or twilled twining over 2 or 3 warp elements per turn; the warp strands are somewhat crushed by

the weft turns. The slant of turns is down-to-the-left. The materials appear to be whole juncus rushes for both warp and weft, probably Juncus effusus. The material, weave and pitch of stitch are all reminiscent of the ethnographic twined basketry of juncus rush known from some northern and central Oregon tribes: Upper Umpqua, Umatilla and Yamhill. Comparable baskets in the Lowie Museum collection are 2-10804 an Upper Umpqua basked and 2-13359 an Umatilla basket (Dawson, personal communication).

Discussion

The kinds of baskets represented by the basketry impressions at Border Village are comparable to known ethnographic types as well as some archaeological basketry material from Northeast California and Southcentral Oregon. Ethnographic information indicates that the people who lived on or near the upper course of the Klamath River all made soft twined baskets. There were differences, however, in the materials and some of the techniques used. The basketry of the Klamath-Modoc is the best known and the most completely described of the groups in Northeast California and South-central Oregon (Barrett 1910, Spier 1930, Voegelin 1942). Their baskets were close twine or open twine with either a flexible or rigid warp; most, however, were flexible. Tule fiber was the most common

material for flexible baskets. They made larger and coarser baskets of unsplit tule. The conical burden basket was made of willow twigs or split juniper root. Basketry hats were made of twisted tule for the warp but had finely, rolled nettle cords as the weft for the top and strips of cane and tule strand for the weft on the sides. The warp was often a two-ply twisted strand of flexible material, but when the rigid materials were used a single-rod or double-rod warp resulted. The weft was either two-strand or occasionally three-strand.

Different types of twining were used as well. Most commonly work was plain two-strand twining. However, also used were plain three-strand, diagonal three-strand, twilled, cross-wrap and wrapped twining. In all Klamath-Modoc baskets the pitch of the stitch was down-to-the-right. Most baskets were begun by bundles of warps which were progressively separated by the wefts as the base expanded. The sides of the baskets had single warps. This created a radiating, circular warp pattern. Warps were added by simple insertion. At the juncture of the base and side a ridge was produced by three-strand diagonal twining to give some rigidity at that point. The finished edge was a round of diagonal twine crossing pairs of warps. Alternate warp pairs were left standing to be cut. The other pairs were woven into the edge of the basket. Some

baskets have all warps cut off at the rim. The rigid willow warp and coarse unsplit tule warps were looped into a rim base or gathered together parallel to each other. Decoration was not common but when used was a plain twine overlay (Spier 1930).

The basketry of the Lowland Takelma is almost unknown. Their technique was plain twining with a base warp of 4 short hazel twigs perpendicular to 4 cross pieces. The weft was some root or grass generally on a hazel or willow warp. Rushes were used to make one type of basket. They did not make their own women's basketry hats, but acquired them from the Shasta (Sapir 1907, Douglas 1947). The Upland Takelma reportedly used spruce root and tule for their basketry (Drucker 1936).

There is somewhat more information on Shasta basketry, but, it cannot be considered as complete or as well documented as Klamath-Modoc. This is due to the cessation of basket-making by the Shasta before Dixon worked with them in the early 1900's. Also, many of the Shasta had lived on the Siletz reservation in Oregon, where their basketry could have been influenced by northern and central Oregon techniques. Their basketry was both closed and open twine with a single-rod, rigid warp. The warp was either peeled hazel or willow twigs. The weft was almost always yellow pine root. Grass was used in the basket hat.

The weft had either two or three strand. As with the Klamath-Modoc, different types of twining were used. Most common was the plain two-strand twine. Also used were plain three-strand, diagonal three-strand, cross-warp and wrapped twining. Almost all of the Shasta baskets had the pitch of stitch down-to-the-left. However, occasionally down-to-the-right was also used in Shasta baskets. There are two of these in the ethnographic collection of the Lowie Museum (1-27187 and 1-27189). Dixon (1907) illustrated a basket rim with two rows of twining down-to-the-right and two rows down-to-the-left. Baskets were begun by bundles of warps which are progressively separated by the wefts as the base expands. The sides of the baskets had single warps. This created a radiating, circular warp pattern which was found on all types of baskets. At the juncture of the base and sides three-strand plain or diagonal twining was often used, probably for rigidity. The last few rounds at the rim were also often three-strand twining. Most baskets were finished by cutting the warp close to the rim edge. However, Dixon notes that openwork burden baskets and mortar-baskets had the warp rods bent over and twined into the edge. He also mentions this technique for cooking baskets and trays. Decoration was by overlay twining, usually double overlay (Dixon 1907, Holt 1947, Voegelin 1942).

The basketry of the Achomawi-Atsugewi is very similar to the Klamath-Modoc and Shasta. They used tule for warp and weft in some flexible baskets, willow for burden baskets and roots and grasses for others. Almost all their baskets had a down-to-the-left pitch of stitch (Dixon 1908).

Generally, the use of tule in baskets is associated with the Klamath-Modoc and to a lesser extent with the Achomawi-Atsugewi and Upland Takelma. The only exception is the use of tule to weave mats by the Shasta, Karok and probably the Lowland Takelma. The large, rush basket mentioned for the Lowland Takelma may be of tule (Douglas 1947). Therefore, the three basketry impressions from Border Village with a pitch of stitch down-to-the-right would most likely be associated with Klamath or Modoc. However, Shasta, Upland Takelma and Achomawi affiliations can not be eliminated, nor can Lowland Takelma, since their material culture is described as being very similar to Shasta.

Archaeological sites within the area of Northeastern California and South-central Oregon, indicate a great deal of continuity in basket-making techniques from at least 5000 b.p. to the ethnographic present. The greatest amount of material comes from the Roaring Springs Cave and the Catlow Caves. The most common type of basketry found in

these caves is called Catlow Twine. It was a basket type of plain twine with tule for warp and weft; the warp was a two-ply twisted strand. The pitch of the stitch was down-to-the-right. New warps were added by simple insertion. At the rim the warp stubs were simply cut-off flush. Decoration was done in plain overlay in one or two strands, wrapped twined overlay, false embroidery and dyes. This basketry seems very similar to many of the Klamath-Modoc baskets and has been considered to be the basic stratum from which Klamath-Modoc basketry developed (Cressman 1956).

There were other techniques of basket manufacture associated with the Catlow Twine in the same levels. In Catlow Cave #1, there was a different rim finish; each warp bent over and down between the top weft stitch. In Roaring Springs Cave 3 fragments had down-to-the-left pitch of stitch on unpeeled bark. There were pieces of diagonal twining with down-to-the-left pitch and several pieces of twilled twining. There was also diagonal twining with a stiff warp, which was probably a product of Paiute manufacture (Cressman 1942).

At Petroglyph Point Caves near Tule Lake, baskets found had two-ply twisted warps using plain twining. They are described as Catlow Twine. One had a twined overlay decoration. From caves along the shore of Tule

Lake, twined baskets, some described as Catlow Twine, were recovered. Plain, diagonal, and twilled twine were the techniques used, with two-ply twisted warps. Two were made with the loop-warp method of warp insertion. Decoration was by wrapped twine overlay, and tule was the primary material. There was also one example of open-work diagonal twining of juncus, which appeared to be a hood attached to a basket hat (Heizer 1942).

South of Tule Lake in the area of Honey Lake, sites such as Tommy Tucker Cave and the Karlo Site have produced basketry and basket impressions, which indicate the use of twined basketry of the Catlow Twine type, as well as diagonal twining. The basketry fragments are of tule, some two-ply twisted warps with pitch of stitch down-to-the-right. Other similarities to the Catlow Twine from southeast Oregon include addition of warps by simple insertion, trimming warps flush with the rim and decoration by wrapped twine and plain twine overlay. Generally, plain twined baskets made of tule with the pitch of stitch down-to-the-right is not an uncommon find in archaeological sites in Northeastern California and South-central Oregon. This particular set of basketry attributes was apparently much more widespread than in the historical period when ethnographic information was gathered.

One archaeological find of basketry from a site in northern California, Sis-13, is from a rockshelter only a few miles south of Border Village (Wallace and Taylor 1952). Fragments of 4 types of basketry were recovered. There were 18 fragments of Catlow Twine. The material was of tule, with a two-ply twisted warp. The texture ranged from 14 to 19 warps and 15 to 30 wefts per 5 cm. The rim was finished by bending warps over to the right and catching them in the last round. Decoration was by twined overlay. On one tray enough remained to determine the method of starting the basket as a bundle or warps, encircled with weft and spread out radially. New elements were added by simple insertion.

There is one fragment of close diagonal twining on a two-ply twisted warp of tule. It had a texture of 15 warps and wefts per 5 cm.

There were 6 fragments of plain close twining on a single warp which was of peeled hazel or willow with a weft of pine root. Texture ranged from 12 to 15 warps and 17 to 20 wefts per 5 cm. The pitch of stitch was down-to-the-left. The rim was finished with the warps cut flush to the rim.

There was one fragment of a crudely woven object in open twine. The fragment was of unpeeled willow twigs held together by a single course of diagonal twine. The

object looked like a miniature cradle and may have been a toy. The basketry techniques represented would seem to indicate both Modoc and Shasta use of this rockshelter.

The nearest archaeological find of basketry to Border Village is from 4-Sis-262. This site is a Shasta burial site known as the Foster Site, just south of the Klamath River on Bogus Creek. It is at the location of a massacre of a group of Shasta by a Modoc raiding party in 1864. The basketry fragments from the burials show an interesting variety. There were 43 fragments of basketry which generally can be described as plain twining with a down-to-the-left pitch of stitch; the warp was peeled twigs. This appears to have been typical Shasta basketry. There were also 2 pieces of twined basketry with twig warps and the pitch of stitch is down-to-the-right. There were also 2 pieces of twine basketry made of twisted tule, with a pitch of the stitch down-to-the-right. The materials are stored in the Lowie Museum of Anthropology (nos. 1-163672, 1-163698, 1-163710, 1-163712-15, 1-163719, and 1-163723). The materials were excavated in 1955 by Bennyhoff and Elsasser, but no report was written. Their field notes are available at the University of California Archaeological Research Facility, Berkeley. This site indicates that particular basketry techniques and materials may not be clearly associated with a particular ethnographic tribe.

Conclusions

The 4 basketry impressions in Border Village were probably caused by clay adhering accidentally to baskets which were brought into houses. The clay may have been picked off the baskets in cleaning and thrown into a fire to get rid of it.

The 4 impressions are all of soft twine basketry. Two impressions are almost surely tule and one is of juncus. The fourth is not clear enough to determine the material. It has been assumed in the past that twined basketry with a pitch of stitch down-to-the-right is best associated with Klamath-Modoc culture, especially in recent archaeological assemblages in Northeastern California (Wallace and Taylor 1952). This is a much too simplistic view. From both the ethnographic and archaeological data reviewed here, it must be conceded that pitch of stitch down-to-the-right can also be found in Shasta basketry, Achomawi-Atsugewi basketry and possibly also Takelma. Also the use of twisted tule for twined baskets, though most common among Klamath-Modoc, is also found among Atsugewi-Achomawi basketry and possible Shasta and Upland Takelma as well. The tule basketry at the Foster Site and Sis-13, may be samples of such Shasta work, if it does not represent trade. Therefore, the basketry impressions from Border Village do not clearly represent any

particular tribal group. The tule examples may point to a relationship with Klamath-Modoc basketry, as may the questionable tule piece though they may all be Shasta, Achomawi, or Takelma. The down-to-the-left juncus may be Takelma, but from what little is known of their basketry one cannot be sure. The juncus sample does not fit into either Klamath-Modoc or Shasta basketry as far as can be determined, but is usually associated with northern and central Oregon groups.

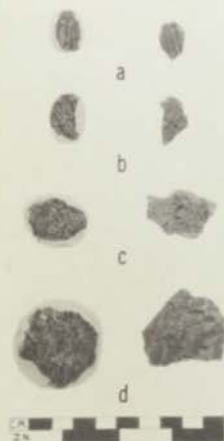


Plate XXV. Basketry Impressions