ARCHAEOLOGICAL INVESTIGATIONS OF THE SALT CAVE LOCALITY: SUBSISTENCE UNIFORMITY AND CULTURAL DIVERSITY ALONG THE KLAMATH RIVER, OREGON

VOLUME II

by

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CHAPTER VIII

FLAKED STONE ARTIFACTS

Flaked stone tools were the most common artifacts recovered from the Salt Caves Locality. Much of the material could be characterized as used or worked flakes. The remainder of the flaked stone, aside from the cores, had been worked into various tools. These tools are here grouped into functional categories, the definition of which was based on size, weight, shape of the whole tool and shape of the working edge. A binocular dissecting scope was used to examine the edges of most tools to confirm their categorization.

The overall distribution of flaked stone tools was basically uniform between the sites. Within Klamath Shoal Midden there were few flaked stone artifacts in Strata I and II, which was consistent with the small amount of all material in these two strata. House Pit 1 in Border Village contained the greatest number of flaked stone artifacts of any house pit excavated. Within Big Boulder Village, House Pit 3 had the greatest number of flaked stone artifacts.

Obsidian and various cryptocrystalline stone were the common materials used for flaked stone tools; basalt

was also occasionally used. In order to assess the relative amounts of the different raw materials used, the debitage was counted and weighed (Table 4). Both measurements were necessary because of the size disparity between flakes of obsidian and other materials. Jasper and agate were separated out from the other cryptocrystalline materials because they were readily identifiable and upon rough sorting appeared to have a potential for different spacial and temporal distributions. Table 5 shows the number of cores of each material as well as the raw materials used in each tool category. It is evident that obsidian was used more commonly for some tools, such as projectile points and gravers, whereas, cryptocrystallines were more commonly used for drills and scrapers.

By studying the table it can be seen that though obsidian had the highest frequency, it did not represent the greatest amount by weight. There are at least two possible reasons for this situation both of which probably contributed to the frequencies recorded. First, obsidian may have been preferred for the more finely made tools, leaving a greater number of thin manufacturing flakes as debitage. Second, the cryptocrystalline material was probably more easily acquired than obsidian, which lead to a less intensive use, leaving fewer but larger pieces of debitage.

TABLE 4. --Debitage count

Location	Black Obsidian #	Black Obsidian Wg.	Red Obsidian #	Red Obsidian Wg.	Chert #	Chert Wg.	Jasper #	Jasper Wg.	Very Fine Grain Basalt #	Very Fine Grain Basalt Wg.	Agate #	Agate Wg.	Basalt #	Basalt Wg.	Quartz #	Quartz Wg.	Mudstone #	Mudstone Wg.
35KL16																		
H. P. 1																		
St. VI	1656	595.7g	29	6.7g	877	1321.4g	154	134.6g	12	2.7g	-	-	64	66.3g	-	-	-	-
St. VI&V	124	64.0g	4	3.9g	63	118.4g	14	13.7g	2	0.2g	-	-	12	27.6g	-	-	-	-
St. V	1657	605.7g	28	1.4g	815	1311.1g	160	135.4g	16	15.3g	-	-	80	153.6g	-	-	-	-
St. V&IV	43	21.1g	1	.1g	40	69.6g	5	20.3g	-	-	-	-	3	1.6g	-	-	-	-
St. IV	1864	698.9g	27	3.9g	1043	1667.3g	195	144.7g	37	15.6g	-	-	49	62.5g	-	-	-	-
St. IV&III	6	3.4g	-	-	6	6.4g	1	0.3g	1	0.2g	-	-	3	1.5g	-	-	-	-
St. III	1121	505.8g	23	3.1g	589	981.0g	121	95.4g	6	1.1g	-	-	44	110.3g	-	-	-	-
St. III&II	3067	1164.2g	49	7.9g	1275	2348.7	336	266.6g	113	78.5g	-	-	120	328.1g	-	-	-	-
St. II	540	243.7g	3	.8g	348	573.0g	53	45.9g	10	5.7g	-	-	30	35.4g	-	-	-	-
St. II&I	57	21.1g	-	-	22	24.6g	5	0.8g	2	2.7g	-	-	-	-	-	-	-	-
St. I	51	24.9g	-	-	58	104.3g	3	5.8g	-	-	-	-	7	8.0g	-	-	-	-
Mixed St.	888	387.5g	8	1.2g	531	978.8g	77	56.5g	2	4.0g	-	-	49	66.3g	-	-	-	-
Midden St. II&I	63	24.2g	-	-	76	171.0g	2	3.1g	1	0.2g	-	-	35	26.3g	-	-	-	-
Midden St. II	24	4.8g	-	-	21	50.4g	1	.2g	-	-	-	-	2	.9g	-	-	-	-
Total H. P. 1	11,161	4,364.9g	172	29.4g	5,764	9,726.0g	1,127	923.2g	202	126.2g	-	-	498	888.5g	-	-	-	-
H. P. 2																		
St. V	17	10.2g	-	-	2	0.8g	1	0.1g	-	-	-	-	-	-	-	-	-	-
St. V&IV	21	14.6g	-	-	15	53.9g	-	-	-	-	-	-	-	-	-	-	-	-
St. IV	528	246.7g	-	-	338	734.1g	47	71.2g	2	4.2g	-	-	59	145.8g	-	-	1	3.6g
St. IV&III	207	78.0g	-	-	93	190.4g	18	54.6g	-	-	-	-	8	17.5g	-	-	-	-
St. III	64	42.4g	-	-	33	130.0g	5	3.2g	-	-	-	-	2	1.0g	-	-	-	-
St. III&II	319	212.2g	1	.1g	131	276.1g	13	26.0g	-	-	-	-	37	49.0g	-	-	-	-
St. II	315	132.8g	2	.4g	129	237.8g	14	7.9g	-	-	-	-	26	70.2g	-	-	-	-
St. II&I	65	55.3g	-	-	22	44.3g	3	11.6g	-	-	-	-	7	21.6g	-	-	-	-
St. I	45	37.2g	-	-	9	19.6g	2	1.6g	-	-	-	-	10	21.9g	-	-	-	-
Mixed St.	515	249.3g	-	-	245	697.9g	28	45.7g	-	-	-	-	33	151.3g	-	-	1	2.9g
Midden St.	118	79.8g	-	-	59	100.8g	7	10.8g	-	-	-	-	28	33.5g	-	-	-	-
Total H. P. 2	2,214	1,158.5g		0.5g	1,076	2,485.7g	138	232.7g	2	4.2g	-	-	210	511.5g	-	-	2	6.5g
H. P. 16																		
St. V	61	30.0g	-	-	24	56.2g	16	18.7g	-	-	-	-	-	-	-	-	-	-
St. V&IV	18	9.7g	-	-	13	25.2g	4	4.3g	-	-	-	-	-	-	-	-	-	-
St. IV	138	108.9g	-	-	100	165.9g	36	86.7g	-	-	-	-	17	20.6g	-	-	-	-

TABLE 4. --Continued

Location	Black Obsidian #	Black Obsidian Wg.	Red Obsidian #	Red Obsidian Wg.	Chert #	Chert Wg.	Jasper #	Jasper Wg.	Very Fine Grain Basalt #	Very Fine Grain Basalt Wg.	Agate #	Agate Wg.	Basalt #	Basalt Wg.	Quartz #	Quartz Wg.	Mudstone #	Mudstone Wg.
St. IV&III	48	44.7g	-	-	25	38.4g	5	18.3g	-	-	-	-	2	1.1g	-	-	-	-
St. III	36	24.4g	-	-	14	52.7g	6	10.6g	-	-	-	-	-	-	-	-	-	-
St. II	7	4.7g	-	-	7	46.9g	3	13.3g	-	-	-	-	4	2.4g	-	-	-	-
St. I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mixed St.	1	.6g	-	-	3	4.8g	3	9.0g	-	-	-	-	-	-	-	-	-	-
Total H. P. 11	309	222.9g	-	-	186	390.2g	73	160.8g	-	-	-	-	23	24.1	-	-	-	-
Total 35KL16	13,684	5,746.4g	175	29.9g	7,026	12,601.8g	1,338	1,316.7g	204	130.5g	-	-	731	1,424.6g	-	-	2	6.5g
35KL18																		
H. P. 3																		
Surface Fill	414	191.2	5	1.6g	101	298.3g	5	7.7g	1	.7g	-	-	-	-	-	-	-	-
Sur. & H. P. Fill	1576	621.1g	-	-	135	219.3g	5	8.4g	5	4.3g	-	-	-	-	-	-	-	-
H. P. Fill	1726	865.0g	7	3.1g	307	612.8g	14	46.0g	2	3.6g	-	-	-	-	-	-	-	-
Floor Fill	398	224.1	-	-	84	264.9g	5	6.1g	1	1.1g	-	-	-	-	-	-	-	-
Total H. P. 3	4,114	1,901.9g	12	4.7g	627	1,395.3g	29	68.2g	9	9.7g	-	-	-	-	-	-	-	-
H. P. 11																		
Surface Fill	81	61.4g	2	7.4g	58	322.6g	2	7.1g	-	-	-	-	-	-	-	-	-	-
H. P. Fill 10-30cm	121	155.6g	-	-	106	396.6g	3	13.9g	-	-	-	-	4	7.1g	-	-	-	-
H. P. Fill 30-50cm	32	60.0g	-	-	38	153.7g	-	-	1	4.2g	-	-	3	10.9g	-	-	-	-
50cm - Floor	10	12.8g	-	-	2	13.4g	2	13.6g	-	-	-	-	2	3.9g	-	-	-	-
Total H. P. 11	244	289.8g	2	7.4g	204	886.3g	7	34.6g	1	4.2g	-	-	9	21.9g	-	-	-	-
H. P. 13																		
Surface Fill	318	253.5g	-	-	114	292.1g	3	8.4g	-	-	-	-	-	-	-	-	1	7.1g
Pot Hunter Fill	21	14.4g	-	-	12	27.3g	2	1.2g	-	-	-	-	-	-	-	-	-	-
H. P. Fill 10-30cm	92	101.7g	-	-	68	145.49	1	.8g	-	-	-	-	1	.9g	-	-	-	-
H. P. Fill or Rim 10-30cm	166	164.7g	1	.4g	143	391.4g	-	-	-	-	-	-	-	-	-	-	-	-
H. P. Fill, Rim, Floor 10-30cm	128	123.2g	-	-	71	271.9g	1	7.0g	-	-	-	-	2	3.9g	-	-	-	-
Outside Rim 10-30cm	57	48.2g	1	.1g	43	90.3g	4	36.3g	-	-	-	-	1	3.3g	-	-	-	-
Rim 30-50cm	64	57.1g	-	-	24	57.7g	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 4. --Continued

Location	Black Obsidian #	Black Obsidian Wg.	Red Obsidian #	Red Obsidian Wg.	Chert #	Chert Wg.	Jasper #	Jasper Wg.	Very Fine Grain Basalt #	Very Fine Grain Basalt Wg.	Agate #	Agate Wg.	Basalt #	Basalt Wg.	Quartz #	Quartz Wg.	Mudstone #	Mudstone Wg.
H. P. Fill & Floor 30-50cm	36	49.7g	-	-	29	85.8g	-	-	-	-	-	-	-	-	-	-	-	-
Floor & Rim Fill 30-50cm	115	106.6g	-	-	67	258.1g	1	.8g	-	-	-	-	5	45.1g	-	-	-	-
Floor Fill	29	29.2g	-	-	31	122.4g	-	-	-	-	-	-	-	-	-	-	-	-
Total H. P. 13	1,026	947.9g	2	.5g	602	1,742.4g	12	54.4g	-	-	-	-	9	53.2g	-	-	1	7.1g
Test Pit																		
St. A	28	11.3g	-	-	18	43.1g	4	17.0g	-	-	1	.8	-	-	1	1.7g	-	-
St. A&B	95	49.0g	2	1.5g	19	66.6g	1	2.1g	-	-	-	-	-	-	1	1.1g	-	-
St. B	132	82.3g	-	-	18	47.5g	-	-	-	-	1	3.1g	-	-	-	-	-	-
St. C 50-70	97	57.2g	-	-	14	21.6g	-	-	-	-	-	-	-	-	-	-	-	-
St. C 70-110	139	76.9g	-	-	15	22.2g	-	-	-	-	1	.9g	-	-	-	-	-	-
Unknown	65	30.8g	-	-	18	105.9g	-	-	-	-	-	-	-	-	-	-	-	-
Total Test Pit	556	307.5g	2	1.5g	102	306.9g	5	19.1g	-	-	3	4.8g	-	-	2	2.8g	-	-
Total 35KL18	5,940	3,477.1g	18	14.1g	1,535	4,330.9g	53	176.2g	10	13.8g	3	4.8g	18	75.0g	2	2.8g	1	7.1g
35KL21																		
Surface	8	12.5g	-	-	93	747.1g	1	3.1g	-	-	-	-	2	21.7g	-	-	-	-
St. IIId	858	542.3g	-	-	608	1916.8g	56	33.9g	3	5.5g	2	1.5g	11	26.4g	-	-	-	-
St. IIId&c	199	132.3g	-	-	189	527.3g	10	32.9g	1	.3g	-	-	-	-	-	-	-	-
St. IIIc	101	92.5g	-	-	74	317.7g	3	10.5g	-	-	-	-	2	2.7g	-	-	-	-
St. IIIb, c&d	771	632.5g	2	1.0g	613	2041.4g	26	92.5g	1	.2g	-	-	27	89.7g	-	-	-	-
St. IIIb&c	431	299.7g	1	.2g	278	754.1g	18	41.9g	-	-	-	-	-	-	-	-	-	-
St. IIIa-d	152	118.9g	-	-	63	168.7g	3	3.2g	-	-	-	-	2	27.6g	-	-	-	-
St. IIIa&b	136	99.7g	-	-	69	168.2g	4	6.4g	-	-	-	-	19	103.0g	-	-	-	-
St. IIIa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Black St. &IIIa&b	16	17.3g	-	-	16	91.8g	-	-	-	-	-	-	1	3.7g	-	-	-	-
Black St.	54	39.3g	-	-	60	172.1g	-	-	-	-	-	-	4	6.1g	-	-	-	-
St. II & III	15	17.3g	-	-	22	72.2g	1	5.3g	-	-	-	-	-	-	-	-	-	-
St. IIb	175	103.7g	-	-	226	360.2g	10	9.7g	-	-	-	-	51	158.7g	1	1.1g	-	-
St. IIIb	57	20.7g	-	-	28	35.1g	3	1.9g	-	-	-	-	2	2.1g	-	-	-	-
St. IIa-d	13	8.46g	-	-	2	1.1g	1	1.7g	-	-	-	-	1	10.5g	-	-	-	-
St. IIa	11	5.3g	-	-	16	30.3g	-	-	-	-	-	-	1	3.4g	-	-	-	-
St. I	14	8.4g	-	-	18	45.3g	1	.8g	2	17.9g	-	-	4	36.3g	-	-	-	-
Total 35KL21	2,987	2,139.7g	3	1.2g	2,371	7,447.4g	136	241.9g	7	23.9g	2	1.5g	127	492.5g	1	1.1g	-	-

TABLE 5. --Raw material of tools

Site Number	Black Obsidian	Red Obsidian	Jasper	Agate	Chert	Quartz	Quartzite	Very Fine Grain Basalt	Fine Grain Basalt	Basalt
Projectile Pts.										
35KL16 #1	262	-	20	3	4	6	-	1	-	-
35KL16 #2	38	-	8	5	-	-	-	1	-	-
35KL16 #16	21	-	5	1	1	-	-	-	-	-
35KL18 #3	166	1	2	4	3	-	1	1	-	1
35KL18 #11	55	1	2	1	1	-	-	2	-	-
35KL18 #13	109	-	1	-	-	2	-	3	-	-
35KL18 T. P.	12	-	-	-	1	-	-	-	-	-
35KL18 Surface	1	-	-	1	-	-	-	1	-	-
35KL21 - III	205	-	6	1	3	1	-	2	-	-
35KL21 - II	4	-	-	-	1	-	-	-	-	-
35KL16b	4	-	-	-	-	-	-	-	-	-
35KL19	2	-	-	-	1	-	-	-	-	-
35KL20	4	-	-	-	-	-	-	-	-	-
35KL22	1	-	-	-	-	-	-	-	-	-
35KL23	2	-	-	-	-	-	-	-	-	-
35KL25	3	-	-	-	-	-	-	-	-	-
Unifacial Flaked Tools										
35KL16 #1	270	2	23	9	131	1	-	6	-	-
35KL16 #2	39	-	4	1	10	-	-	1	1	-
35KL16 #16	13	-	3	-	3	-	-	-	-	-
35KL16 -S-	4	-	-	-	3	1	-	1	-	-
35KL18 #3	177	-	3	5	20	-	-	1	-	-
35KL18 #11	112	-	-	1	13	-	-	-	-	-
35KL18 #13	304	-	10	4	77	-	-	1	-	-
35KL18 T. P.	64	-	1	2	5	1	-	-	-	-
35KL18 - Surface	12	-	-	-	2	-	-	-	1	-
35KL21 - III	497	-	16	10	143	1	-	-	-	2
35KL21 - II	41	-	2	-	6	1	-	-	-	-
35KL21 - II & III	5	-	-	-	-	-	-	-	-	-
35KL21 - I	10	-	1	-	4	-	-	-	-	-
35KL21 - I & II	1	-	-	1	-	-	-	-	-	-
35KL21 - Mix	1	-	-	1	3	-	-	-	-	-
35KL16b	7	-	1	-	2	-	-	-	-	-
35KL19	23	-	-	-	2	-	-	-	-	-
35KL20	9	-	-	-	-	-	-	-	-	-

TABLE 5. --Continued

Site Number	Obsidian	Obsidian	Jasper	Agate	Chert	Quartz	Quartzite	Very Fine Grain Basalt	Fine Grain Basalt	Basalt
35KL22	3	-	1	2	8	-	-	-	-	-
35KL23	2	-	-	1	4	-	-	-	-	-
35KL24	-	-	-	-	2	-	-	-	-	-
35KL25	28	-	-	-	8	1	-	-	-	-
Scrapers										
35KL16 #1	20	-	3	-	17	1	-	-	-	-
35KL16 #2	4	-	2	-	1	-	-	-	-	-
35KL16 #16	1	-	-	-	1	-	-	-	-	-
35KL18 #3	10	-	-	-	4	2	-	-	-	-
35KL18 #11	5	-	-	-	1	-	-	-	-	-
35KL18 #13	13	-	3	-	5	-	-	-	-	-
35KL18 T. P.	7	-	-	-	-	-	-	-	-	-
35KL18 - Surface	2	-	-	-	-	-	-	-	-	-
35KL21 - III	20	-	1	3	8	1	-	-	-	-
35KL21 - II	1	-	-	-	3	-	-	-	-	-
35KL21 - Surface	1	-	-	-	1	-	-	-	-	-
35KL16b	1	-	-	-	-	-	-	-	-	-
35KL19	1	-	-	-	1	-	-	-	-	-
35KL23	-	-	-	-	2	-	-	-	-	-
35KL25	2	-	-	-	1	-	-	-	-	-
Cores										
35KL16 #1	39	-	10	-	81	-	-	-	1	-
35KL16 #2	6	-	1	-	7	-	-	-	-	-
35KL16 #16	-	-	2	-	6	-	-	-	-	-
35KL18 #3	6	-	-	-	12	-	-	-	-	-
35KL18 #11	6	-	2	-	8	-	-	-	-	-
35KL18 #13	11	-	2	1	37	-	-	-	-	-
35KL18 T. P.	4	-	1	1	5	-	-	-	-	-
35KL18 - Surface	2	-	-	-	3	-	-	-	-	-
35KL21 - III	16	-	3	2	50	-	-	-	-	-
35KL21 - II	1	-	-	-	7	-	-	-	1	-
35KL21 - Surface	-	-	-	-	5	-	-	-	2	-
35KL16b	2	-	-	-	-	-	-	-	-	-
35KL19	1	-	-	-	4	-	-	-	1	-
35KL20	-	-	-	-	1	-	-	-	-	-

TABLE 5. --Continued

Site Number	Black Obsidian	Red Obsidian	Jasper	Agate	Chert	Quartz	Quartzite	Very Fine Grain Basalt	Fine Grain Basalt	Basalt
35KL22	1	-	-	-	2	-	-	-	-	-
35KL23	-	-	-	-	1	-	-	-	-	-
35KL24	-	-	-	-	1	-	-	-	-	-
35KL25	1	-	-	-	3	-	-	-	-	-
Drills										
35KL16 #1	1	-	-	-	4	-	-	1	-	-
35KL16 #16	-	-	-	-	1	-	-	-	-	-
35KL18 #3	2	-	1	-	2	1	-	-	-	-
35KL18 #11	3	-	-	-	-	-	-	-	-	-
35KL18 #13	3	-	2	-	1	-	-	-	-	-
35KL21 - III	6	-	1	-	5	1	-	-	-	-
Gravers										
35KL16 #1	14	1	-	2	4	-	-	-	-	-
35KL16 #2	4	-	-	-	-	-	-	-	-	-
35KL18 #3	16	-	1	-	1	-	-	-	-	-
35KL18 #11	6	-	-	-	-	-	-	-	-	-
35KL18 #13	14	1	2	-	-	-	-	-	-	-
35KL18 - T. P.	8	-	-	-	-	-	-	-	-	-
35KL21 - III	35	1	1	3	3	1	-	-	-	-
35KL21 - II	1	-	-	1	-	-	-	-	-	-
35KL21 - Surface	2	-	-	-	2	-	-	-	-	-
35KL20	1	-	-	-	-	-	-	-	-	-
35KL22	1	-	-	-	-	-	-	-	-	-
35KL19	1	-	-	-	-	-	-	-	-	-
35KL25	1	-	-	-	-	-	-	-	-	-
Knives										
35KL16 #1	28	2	17	1	9	13	-	1	-	-
35KL16 #2	8	-	4	-	3	3	-	-	-	-
35KL16 # 16	5	-	-	-	-	1	-	-	-	-
35KL16 - Surface	1	-	-	1	-	1	-	-	-	-
35KL18 #3	28	-	1	1	1	4	-	-	-	-
35KL18 #11	9	-	1	1	3	5	-	-	-	-
35KL18 #13	22	2	2	-	9	6	-	-	-	-
35KL18 - T. P.	6	-	-	1	-	1	1	-	-	-
35KL18 - Surface	-	-	-	-	1	-	-	-	-	-
35KL21 - III	45	-	2	2	6	2	-	-	-	-

TABLE 5. --Continued

Site Number	Black Obsidian	Red Obsidian	Jasper	Agate	Chert	Quartz	Quartzite	Very Fine Grain Basalt	Fine Grain Basalt	Basalt
35KL21 - Black	1	-	-	-	1	-	-	-	-	-
35KL21 - II	9	-	-	-	1	-	-	-	-	-
35KL21 - I & II	1	-	-	-	-	-	-	-	-	-
35KL21 - I	1	-	-	-	-	-	-	-	-	-
35KL21 - Surface	9	-	1	-	2	-	-	-	-	-
35KL16b	-	-	-	-	1	-	-	-	-	-
35KL19	1	-	-	-	-	-	-	-	-	-
35KL20	1	-	-	-	-	-	-	-	-	-
35KL22	-	-	-	-	1	-	-	-	-	-
35KL23	1	-	-	-	-	-	-	-	-	-
35KL25	1	-	1	-	-	-	-	-	-	-
35KL26	-	-	-	-	1	-	-	-	-	-
Tool Frag. - Bifaces										
35KL16 #1	126	1	4	3	7	-	-	-	-	-
35KL16 #2	18	-	1	-	-	-	-	-	-	-
35KL16 # 16	9	-	-	-	1	-	-	-	-	-
35KL18 #3	68	-	1	1	1	-	-	1	-	-
35KL18 #11	24	-	-	1	-	-	-	-	-	-
35KL18 #13	55	-	-	1	5	-	-	-	-	-
35KL18 - T. P.	16	-	1	1	-	-	-	-	-	-
35KL18 - Surface	4	-	-	-	-	-	-	-	-	-
35KL21 - III	67	1	-	1	7	-	-	-	-	-
35KL21 - II	6	-	-	-	-	-	-	-	-	-
35KL21 - I	1	-	-	-	-	-	-	-	-	-
35KL21 - Black	2	-	-	-	-	-	-	-	-	-
35KL21 - Surface	9	-	-	1	-	-	-	-	-	-
35KL16b	1	-	-	-	-	-	-	-	-	-
35KL19	7	-	-	-	-	-	-	-	-	-
35KL20	3	-	-	-	-	-	-	-	-	-
35KL23	1	-	-	-	-	-	-	-	-	-
35KL25	7	-	-	-	3	-	-	-	-	-
Hammerstones and Choppers										
35KL21 - III	-	-	-	-	1	-	-	-	5	-
35KL21 - Surface	-	-	-	-	-	-	-	-	2	-
35KL23	-	-	-	-	-	-	1	-	-	-
35KL24	-	-	-	-	1	-	-	-	-	-

Projectile Points

A total of 594 projectile points were complete enough to be typed. The greatest number, 246, came from Big Boulder Village. There were 204 from Border Village, 130 from Klamath Shoal Midden, and 14 from the various collections of the tested and unexcavated sites. There were 358 projectile point fragment and 42 blanks, over half of which were from Border Village. Approximately 85% of the projectile points, blanks and fragments from Border Village were made from obsidian. Over 93% of the projectile points, blanks and fragments from Big Boulder Village and Klamath Shoal Midden were of obsidian (Table 5). All of the non-obsidian projectile points, except 2 from Border Village and 3 from Big Boulder Village were chronologically more recent point types, evidently arrow points (i.e., Gunther Barbed, the Rose Spring Series, Alkali Stemmed, Gunther Stemmed, Desert Side-Notched).

A flaked stone tool was categorized as a projectile point if it was bifacially flaked with fairly even margins and had at least one pointed end. It also had to be no more than 80 mm long and no more than 9 mm thick. If there was any doubt the object was categorized as a bifacial blank or a knife.

The projectile points were grouped into known types

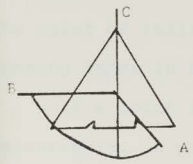
when possible. They were first rough-sorted, with 20 attributes recorded for each point. The apparent Great Basin types were then checked against Thomas's attribute key (1970:44-46) and Hester's (1973) definitions. Adjustments were made in the original groups. This procedure resulted in 30 types and subtypes, 16 of which were recognized Great Basin types. The remaining 14 classes include examples of Northern California and Southwestern Oregon point types, some of which were well defined, others not. A few types are defined or redefined here. This was necessary because of the lack of a definitive work on projectile point types for central California, Northern California or Western Oregon.

This method of determining point typology was used for two major reasons. One, it was obvious that most of the projectile points from these sites would readily fall into well-recognized types from the Northern Great Basin and Northern California. Two, it was more useful to an understanding of the time span of these sites and their possible aerial associations that types and subtypes with both temporal boundaries and strong regional association be used when possible. This allowed the projectile point data to be used to test hypotheses concerned with time and space, which projectile point categories without accepted temporal and spacial boundaries could not do.

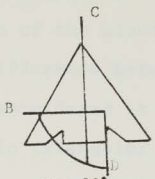
Type Criteria

The criteria used to define projectile point types included several in widespread use (Binford 1963) and many taken from Thomas (1970) (Figure 30). Those developed by Thomas included 1) The Distal Shoulder Angle (DSA), 2) The Proximal Shoulder Angle (PSA), 3) The Basal Indention Ratio (BIR), 4) The Maximum Width Position, 5) The Basal Width-Maximum Width Ratio, 6) The Blade Curvature Index (CB) and 7) The Notch Opening Index (Thomas 1970:38-41). The other criteria used were 1) Shouldered or unshouldered, 2) Triangular or leaf-shaped, 3) Stem Length-Barb Length Ratio, 4) Width at Notch, 5) Weight, 6) Length, 7) Thickness, 8) Width and 9) Base curvature.

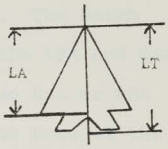
DSA is the angle formed between a line defined by the shoulder (A) and a line drawn perpendicular to the longitudinal axis of the point (B). PSA is the angle formed between a line defined by the stem (D) and a line drawn perpendicular to the longitudinal axis (LA) to the total length of the point (LT). The Maximum Width Position is the percentage of the total length (LT) between the base and the position of maximum width (LM). The Basal Width-Maximum Width Ratio is the ratio of the width at the widest portion of the base (WB) to the width of the point (WM). The BC is the ratio of the length of the line from the tip of the blade to its base (G) divided by



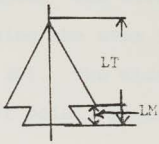
DSA=140°



PSA=90°

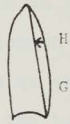


BIR=0.80

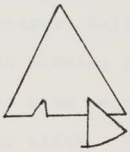


MAX W POS=19%

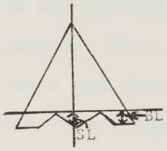
WB/WM=0.63



BC=+0.11



ND=50°



SL/BL=+0.1

Notch Width

FIGURE 30

DIAGRAM OF PROJECTILE POINT ATTRIBUTES
(Modified from Thomas 1970: 39-41)

the length of a line perpendicular to the first line from the point of inflection of the blade (H). The Notch Opening Index is the difference between the PSA and DSA.

If a point is unshouldered it has no DSA or PSA measureable. A point is triangular if the base of the blade is the widest part of the point, otherwise it is leaf-shaped. The Stem Length-Barb Length Ratio is found by dividing the stem length (SL) by the barb length (BL) (Figure 30). The Width at Notch was the width at the narrowest point, separating the two notches. The base curvature was either concave, notched, straight, convex or pointed. Length, width and thickness were measured to the nearest half millimeter. If a portion of the point was missing an estimate was done if enough of the blade and stem were present to extrapolate the expected length or width. Since all attributes were not required for each types' definition, some estimates were more critical than others to the typing of a particular projectile point. When projectile points were broken, measurements were estimated if there was enough of the projectile point present to allow measurement of key attributes. The critical attributes for each point type are listed in Appendix D.

Description of Types and Comparisons to Other Sites and Regions

Type 1 Gunther Barbed (Plates XXVI, XXVII, XXVIII, XXIX, XXXa, b; XXXVIIa; XXXVIIIa-oo, qq, tt)

This is a recognized type originally defined by Treganza (1958). His original definition was very broad, which has resulted in the type being redefined in later reports. It is usually described as a basally notched, barbed, triangular point, with the barbs often longer than the stem, which is usually rounded or pointed; sometimes barbs and blade are serrated. The blade margins may be straight, convex or concave. It is the most common point type in late prehistoric sites in Northern California and Southern Oregon, West of the Cascades. According to Treganza it is also found in the Northern Great Basin, the Willamette Valley and along the Columbia River. The criteria used here to define Gunther Barbed points would not include the Columbia River Basal Notch point which usually has an expanding stem, and it does not include those points often found in the Northern Great Basin, which are shouldered or slightly barbed. Gunther Barbed, Type 1, is the most common type in all three excavated Salt Cave Locality sites, being approximately 74% of the total in Border Village, 33% in Big Boulder Village and 20% in Klamath Shoal Midden.

As defined here, Gunther Barbed points are also the most common points at the Iron Gate site. Leonhardy's Classes 1-I through 1-L, 2-A, 2-C, 2-E, 2-F, 2-H and 3-B through 3-D would be defined as Gunther Barbed and included 119 of the 187 classifiable points (Leonhardy 1961). At 4-Sis-13, 106 of 193 projectile points were Gunther Barbed, which included Descriptive Groups 1 and 2 in the report (Wallace and Taylor 1952). Sites excavated further up the Klamath River in the Big Bend Locality and the Keno Locality have a lower number of Gunther Barbed points. In the Keno Locality, 35 KL 28 had 18 Gunther Barbed of its 52 typable points (Cole personal communication). The two main sites excavated for the Big Bend Project, 35 KL 13 and 14, had 8 Gunther Barbed points out of a total of 24 (Newman and Cressman 1959).

A few Gunther Barbed points are usually associated with recent deposits in the Klamath Basin. They are quite common in sites in North-central California and Southwestern Oregon. They are less common but still prevalent in sites from the Northwest California and Southwest Oregon coasts. They are found at a low frequency at sites from the Umpqua and Willamette River drainages and Northeastern California. They are rarely found in sites on the northwest fringe of the Northern Great Basin and the southern fringe of the Columbia-Snake River Plateau. In

order to facilitate comparison with published and unpublished material here follows a list of the sites or localities in which Gunther Barbed points, as defined here, have been found. Comparable Sites:

North-central California

Payne Cave (Baumhoff 1957)
Kingsley Cave (Baumhoff 1955)
Tri-47 and Tri-58 (Treganza 1958)
Tri-45 and Tri-57 (Treganza 1959)
Soda Springs (Du Bois 1935)
Cow Creek (Treganza n.d.)
Shasta Dam (Smith and Weymouth 1952)
Squaw Creek #1 (Clewett n.d.)
Yuki Territory (Treganza, Smith and Weymouth 1950)

Southwestern Oregon

Lost Creek (Davis 1968)
Elk Creek (Davis (1968)
Emigrant Dam Reservoir (Newman 1959)
Gold Hill (Cressman 1933)
JA 27 (Department of Anthropology, Oregon State University)
Cove Creek Rockshelter (Deich n.d.)
Snider Creek-JA-3 (Deich personal communication)

Klamath Basin

Medicine Rock Cave (Cressman 1956)
Kuwumkan Springs (Cressman 1956)
Petroglyph Point Cave #2 (Heizer 1942)
Lower Klamath Lake (Cressman 1942)
Lava Beds National Monument (Squier and Grosscup 1952; Hardesty and Fox 1974)
Nightfire Island (Sampson n.d.)

Northwest California Coast

Hum-118 and 169 (Elsasser 1965) Types 5 and 6
Point St. George Site (Gould 1966)
Wiyot Territory (Loud 1918)
T^{S}apek^{W} (Benson n.d.)

Umpqua and Willamette River Drainages

Sauves Island (Brown 1960) Type 32
Fall Creek (Cole 1968)
Siuslaw Falls (Pettigrew 1975)
Hurd Site (White 1975)
Lynch Site (Sanford 1975)
Lingo Site (Cordell 1975)
Benjamen Sites (Miller 1975)
Fanning Mound (Murdy and Wentz 1975)
Fuller Mound (Woodward et al. 1975)
Upper Umpqua (Marchiado 1965)

Northeast California

Cuppy Cave (Hughes 1973)
Tommy Tucker Cave (Fenenga and Riddell 1949)
Pla-5 (Heizer and Elsasser 1953)

Columbia-Snake River Plateau

The Dalles (Cressman 1960 and Cole 1954) Types II-H through II-J, III-B, III-E, III-F and IV-B.
Hell's Canyon Sites (Warren, Sims and Pavesio 1968)
Alderdale Site (Cole 1966)
Mack Canyon Site (Cole 1967)
Hook Site (Cole 1965)
35-GM-15 (Cole 1965)

Northern Great Basin

Coffee Pot Flat (Aikens and Minor 1977)
Burrell Site (Hughes 1977)

Though Gunther Barbed points have generally been recognized as being from the late prehistoric period, no specific dates have been assigned. The presence of Gunther Barbed points on a dated floor of Border Village, show it firmly established as a type west of the Cascades by A.D. 1400. On the eastern edge of the Cascades it is also common by A.D. 1400, as shown by its presence on the

floor dated to A.D. 1430 at Big Boulder Village

Type 2 Rose Spring Contracting Stem
(Plate XXXc-m)

This type was defined by Lanning (1963). It is a triangular point with a narrow contracting stem, a straight or rounded base and a long, narrow blade. The shoulders are horizontal, often with slight barbs when the blade edge is convex. According to Thomas (1970) the Basal Indention Ratio must be equal or greater than .90. Hester (1973) includes this type in the Rose Spring-Eastgate Series, which as a series is dated to between A.D. 500 and A.D. 1200. There are a few points of this type in each site, but they are not directly associated with any cultural feature.

Type 3 Rose Spring Corner-Notched
(Plate XXXo-yy; XXXIa-a; XXXVIIpp, rr, ss)

The Rose Spring Corner-Notched point was also defined by Lanning (1963). It is a small to medium-sized triangular point, usually well made. It has a parallel sided or slightly expanding stem, often with a rounded base. It may have horizontal shoulders or small, pointed barbs, with a tendency, for a long, narrow blade. Most of the points of this type from the Salt Cave Locality tend to have an equalateral triangular blade.

According to Hester (1973) the Rose Spring Corner-Notched points are the most common type in the Rose Spring Series. This is reflected in the Salt Caves Locality as well. This type is present in all the excavated sites; it is most common in Big Boulder Village, being 12% of the total, whereas it is 10% of the total in Klamath Shoal Midden and only 5% of the total in Border Village. Radiocarbon dates from the Great Basin for this type center between A.D. 600 to A.D. 1200, but the type may have persisted into the protohistoric period in the western Great Basin (Hester 1973).

Type 4 Desert Side-Notched: General and Sierra Subtypes (Plate XXXIo-ss; XXXVIIIuu-xx)

The type and subtypes were defined by Baumhoff and Byrne (1959). The type, a small triangular point with distinct side notches and a concave or notched base, is generally less than 26 mm in length. The General Subtype, 4a, has a concave base; the Sierra Subtype, 4b, has a base notch.

The General Subtype is the most common subtype in the Salt Cave Locality, present in all the excavated sites. The Sierra Subtype is present in Big Boulder Village and Klamath Shoal Midden. Desert Side-Notched points represent 2% of the points recovered from Border Village, 9% of the points from Big Boulder Village and 7% of the

points from Klamath Shoal Midden. As a type it is thus more common in the upriver sites. According to Baumhoff and Byrne the General Subtype begins to appear at sites in Northeastern California by A.D. 1600.

Type 5 Eastgate Expanding Stem
(Plate XXXItt-xx)

This is one of the two types defined by Heizer and Baumhoff (1961) in the Eastgate Series. It is a small triangular point, thin in cross-section. It has shallow basal notches, with a straight base. The barbs are usually broad and are squared or flattened at the tips. The stem is straight to slightly expanding.

Several researchers in the Great Basin have commented on the similar temporal context of Eastgate and Rose Spring Series points. The Eastgate Series is more restricted in distribution to northern and western Nevada (Hester 1973; O'Connell 1966). There are very few Eastgate Expanding Stem points in the Salt Cave Locality; one or two in each of the extensively excavated sites.

Type 6 Eastgate Split-Stem
(Plate XXXIuu-aaa)

This is the other point type in the Eastgate Series. It is also a small triangular point, flat in cross-section. It has straight or sloping shoulders with small barbs. The

stem is expanding and notched at the base.

There are 3 examples of this type from the Salt Cave Locality. All were found in the fill of House Pit 3 in Big Boulder Village.

Type 7 Surprise Valley Split-Stem
(Plate XXXIbbb-ccc)

The type was described and defined by O'Connell and Ambro (1968). It is a small triangular point with straight to convex sides. It has a short, slightly expanding stem and a notched base. As a type it is usually grouped with the Rose Spring-Eastgate Series, but it appears to have had a very restricted distribution within the Northern Great Basin.

There are only two specimens from the Salt Cave Locality. One was recovered from one of the lower floor fills of House Pit 1 in Border Village, and the other was recovered from Klamath Shoal Midden.

Type 8 Cottonwood Triangular
(Plate XXXIIa-m)

Defined by Lanning (1963), the Cottonwood Triangular point is a small, unshouldered, triangular point, with straight sides. It has a straight, concave or notched base. If the base is concave, it often has small barbs at the corners. This type is probably a blank for Desert Side-Notched points. There are a few of these in each site.

Type 9 Cottonwood Bipointed
(Plate XXXIJm-o)

This type was defined in 1968 by Heizer and Clewlow. It is a small, convex-sided point. Its maximum width is near the center with a slight shoulder usually about 1/3 the distance up from the base. Its base may be rounded, straight or pointed. There are only two of this type present in the Salt Cave Locality. One was recovered from Klamath Shoal Midden and the other from House Pit 3 of Big Boulder Village. The Cottonwood Series dates from A.D. 900 into the historic period (Hester 1973).

Type 10 Gunther Stemmed (Plate XXXIIp-11; XXXIIIa-t; XXXVIIb-d)

The Gunther Stemmed type was defined by Baumhoff and Olmstead (1963). It is a small, delicately made point. It has a narrow straight or contracting stem. Its shoulders project downward, but are not barbed. Examples of this type have been included in some reports as Rose Spring Contracting Stem or Alkali Stemmed. Gunther Stemmed can be easily separated from Rose Spring Contracting Stem points by the fineness of the flaking and the long, narrow stem. It can be distinguished from Alkali Stemmed by its contracting stem and its downward projecting shoulders. Baumhoff and Olmstead associated this point type with the plateau area of northeast

California. It is a popular point type in the Salt Caves Locality, particularly in the upriver sites, representing 1% of the points from Border Village, 20% of the points from Big Boulder Village and 14% of the points from Klamath Shoal Midden. A similar distribution occurs in other archaeological sites in the Klamath River drainage. Descriptive Class 3 at Sis-13 fits the criteria for Gunther Stemmed, which would be approximately 8% of the point collection (Wallace and Taylor 1952). Leonhardy's Types 2-B and 2-D correspond to Gunther Stemmed and make-up 10% of the points at Iron Gate (Leonhardy 1961). They make up 11% of the points from the Keno Development sites (Cole personal communication).

The Gunther Stemmed points are also quite common in the Klamath Basin and the Rogue River drainage just west of the Cascades. Gunther Stemmed points are also found in low frequency in the western fringe of the Northern Great Basin, North-central California, the Columbia-Snake River Plateau, the Willamette River drainage and the Northwest California coast. To facilitate comparison with published and unpublished data, a list of the sites or localities in which Gunther Stemmed points have been found is presented.

Comparable Sites:

North-Central California

Payne Cave (Baumhoff 1957) Type 3

Kingsley Cave (Baumhoff 1955)
Tri-47 and 58 (Treganza 1958)
Soda Springs (Du Bois 1935)
Cow Creek (Treganza n.d.)
Sha-20, 21 and 22 (Smith and Weymouth 1952)

Southwestern Oregon

Lost Creek (Davis 1968)
Gold Hill (Cressman 1933)
Ja-27 (Department of Anthropology, Oregon State University)
Cove Creek Rockshelter (Deich n.d.)

Klamath Basin

Lower Klamath Lake (Cressman 1942)
Lava Beds National Monument (Squiers and Grosscup 1952 and Hardesty and Fox 1974)
Nightfire Island (Sampson n.d.)

Northwest California Coast

Point St. George Site (Gould 1966)

Umpqua and Willamette Rivers' Drainages

Sauves Island (Brown 1960) Type 2, 4, 6, 15, 17, 20, 21, and 33)
Fall Creek (Cole 1968)
Siuslaw Falls (Pettigrew 1975)
Simon Site (Pettigrew 1975)
Hurd Site (White 1975)
Lynch Site (Sanford 1975)
Lingo Site (Cordell 1975)
Benjamin Sites (Miller 1975)
Fanning Mound (Murdy and Wentz 1975)
Fuller Mound (Woodward et al. 1975)
Upper Umpqua (Marchiado 1965)
Baby Rockshelter (Olsen 1975)

Northeast California

Cuppy Cave (Huges 1973)
Pla-5 and 9 (Heizer and Elsasser 1953)
Lorenzen Site (Baumhoff and Olmstead 1963)
Lassen County (Fenenga and Riddell 1949)

Columbia-Snake River Plateau

The Dalles (Cressman 1960; Cole 1954) Types I-N, II-E, III-H, V-C)
Hell's Canyon Sites (Warren, Sims and Pavesic 1968)
Alderdale Site (Cole 1966)
Mack Canyon Site (Cole 1967)
Hook Site (Cole 1965)
35 GM 15 (Cole 1965)
Benham Falls Reservoir (Osborne 1950)

Northern Great Basin

Burrell Site (Hughes 1977)
Surprise Valley (O'Connell 1966)
Spring Sites (Fagan 1974)

No specific date has yet been assigned for Gunther Stemmed. Baumhoff and Olmstead (1963) associated it with the late prehistoric period on the Plateau and in North-central California (Baumhoff 1957), with the Mill Creek Complex. In Big Boulder Village one was found in association with the floor of House Pit 3, dated to A.D. 1430 by radiocarbon assay. It was common throughout the Midden Stratum at Klamath Shoal Midden, which has radiocarbon dates of A.D. 700 and A.D. 1000. Baumhoff and Olmstead propose that Gunther Stemmed points represent a coastal influence. The presence of Gunther Stemmed points at the Lower Levels of the Point St. George Site dated at 310 B.C. (Gould 1972) support this hypothesis. This point type appears to have been adopted in the Salt Cave Locality by about A.D. 700 and continued in use until at least A.D. 1500. The low frequency of Gunther Stemmed at

Border Village is an anomaly, in terms of its relative high frequency in other sites along the Upper Klamath River and in Southwest Oregon.

Type 11 Alkali Stemmed (Plate XXXIIIu-ii; XXXVIIe, f)

Defined by O'Connell (1966), Alkali Stemmed is a small, triangular corner-notched point. It has a straight or slightly expanding stem, with square shoulders. The blade edge is slightly convex to slightly concave. This type is grouped into the Rose-Spring-Eastgate Series by Hester (1973). It is present in all three of the excavated sites in the Salt Cave Locality. However, only one was recovered from Border Village; whereas, 6 were recovered from Big Boulder Village and 10 from Klamath Shoal Midden.

Type 12 Rose Spring Side-Notched (Plate XXXn; XXXIIIjj-xx)

This type was defined by Lanning (1963). It is a triangular, side-notched point. The notches are low on the sides and fairly deep. The blade has a straight or convex edge and is usually long and narrow. The base of the point is always narrower than the base of the blade at the notch. This type is most frequent in the upriver sites. It includes 3% of the points at Big Boulder

Village and 4% of the points at Klamath Shoal Midden.

Type 13 Elko Corner-Notched
(Plate XXXIVa-k)

The Elko Corner-Notched type was defined by Heizer and Baumhoff (1961). It is a medium-sized, corner-notched triangular point, with an expanding stem, small barbs and sloping shoulders. It may have a slightly convex to slightly concave base. This type is one of the points in the Elko Series, which includes Elko Eared, Elko Side-Notched, and Elko Contracting Stem. The series is dated roughly between 2,000 B.C. and A.D. 1000. Elko Corner-Notched points possibly cover a longer time span in the Great Basin, but in the western Great Basin they date to between 1500 B.C. to A.D. 500 (Hester 1973). Elko Corner-Notched Points are restricted to the upriver sites in the Salt Cave Locality. They represent 5% of the points from Klamath Shoal Midden and 2% of the points of Big Boulder Village.

Type 14 Elko Eared (Plate XXXIVl-m)

This type was also defined by Heizer and Baumhoff (1961). It is a medium-sized, corner-notched, or side-notched point with an expanding stem bifurcated by a deep notch. The barbs usually are quite short. The time range for Elko Eared corresponds to that of the Elko Series as

a whole. There are only two specimens, both from house pit fills in Big Boulder Village.

Type 15 Elko Side-Notched (Plate XXXIVn-t; XXXVIIg)

Defined by Heizer, Baumhoff and Clewlow (1968), Elko Side-Notched points are medium-sized, side-notched points. The notches are near the base and usually quite open. The base is convex and is the widest part of the point. The date range for this type is the same as for the other Elko Series points. This type was also restricted in distribution to the upriver sites, Big Boulder Village and Klamath Shoal Midden.

Type 16 Northern Side-Notched (Plate XXXIVu-ee)

These were first defined by Gruhn (1961). They are a large to medium-sized side-notched point. The notches are low on the sides and extend diagonally upward or perpendicularly into the body. The base is straight to deeply concave, and the blade edge is straight to slightly convex. This type has also been called Madeline Side-Notched by Baumhoff and Olmstead (1963). Though Northern Side-Notched points were originally associated with the Columbia-Snake River Plateau, they are now recognized as a common type in the Northern Great Basin. The type dates

roughly between 5,000 and 2,000 B.C. (Hester 1973). Northern Side-Notched points were found in the house fills of both Border Village and Big Boulder Village and in the Cemented Gravel Stratum and the lower layers of the Midden Stratum of Klamath Shoal Midden.

Type 17 Black Rock Concave Base
(Plate XXXVv)

This type, defined by Clewlow (1968), is a large stemmed point with a slightly concave base. It shows parallel flaking and some grinding on the lower edges. The possible date for this type in the western Great Basin is before 5,000 B.C. (Hester 1973). There is only one of these points in the lowest stratum of Big Boulder Village.

Type 18 Humboldt Concave Base A
(Plate XXXVt, u)

The Humboldt Series was originally defined by Heizer and Clewlow (1968). Humboldt Concave Base A specimens are large leaf-shaped points, with convex blade edges and a slightly concave base. They exhibit fine parallel flaking and ground edges at the base. The Humboldt Concave Base A type dates roughly between 4,000 B.C. and 1,000 B.C., but it may be even earlier in the Northern Great Basin (Hester 1973). Both specimens in the Salt

Cave Locality are from the lowest stratum of Big Boulder Village.

Class 19 (Plate XXXVc-e)

These are medium-size, leaf-shaped bipoints. Their greatest width is near the center of the point. One specimen has a gound base, all are keeled. These may be Cascade points, however, they do not show a remnant of the striking platform at the base which is considered an essential diagnostic attribute of the type (Butler 1965). The specimens in this type fit within the size range for width and thickness of Cascade points, but are shorter than most specimens (Caldwell and Mallory 1967). There are one in Big Boulder Village and two in Klamath Shoal Midden.

Class 20 (Plate XXXVa, b, n; XXXVIIh)

These are medium-size thin, leaf-shaped bipoints. Their greatest width is near the center of the blade. Both base and tip are gently tapered. These may be Cascade points also; however, they do not show a remnant of the striking platform at the base, and are not keeled which is a diagnostic attribute (Butler 1965). They are also thinner and shorter than the usual Cascade points (Caldwell and Mallory 1967). Specimens were found at

Big Boulder Village and Klamath Shoal Midden.

Class 21 (Plate XXXVf)

This is a medium-size, broad, leaf-shaped point, with convex edges. Its maximum width position is in the upper half of the body. The angle of the tip is wider than the angle of the stem. The point most closely resembles the Martis Stemmed Leaf type (Elston 1971), known in sites from the western Great Basin and North-central and Northeastern California as part of the Martis Series. The Martis Series roughly dates to between 1000 B.C. and A.D. 500 (Baumhoff 1957; Hester 1973). This point was recovered from Klamath Shoal Midden.

Type 22 Gold Hill Leaf
(Plate XXXVg-l, o, p, r, s)

These are small to medium-sized leaf-shaped points, with a convex edge and a thick lenticular cross-section. The maximum width position is approximately midway on the point or about one-third of the distance from the base. The base is usually slightly rounded. The Gold Hill Leaf type has not been completely described and defined. It was first recognized by Cressman (1933), and has been partly described by Davis (1968, 1970) in various reports done on the upper Rogue River.

The Gold Hill Leaf points were 6% of the total

collection from Klamath Shoal Midden and less than 1% of the total from Border Village. The type is also found in the upper Willamette Valley, along the upper Klamath River and on the Northwest California coast. Its highest frequency is associated with archaeological sites within the Rogue River drainage, which may be the distribution center for the type.

Comparable sites:

Upper Klamath River

Iron Gate (Leonhardy 1961) Class I-B
Keno Development (Cole personal communication)
Sis-13 (Wallace and Taylor 1952) Descriptive Class 8

Southwestern Oregon

Lost Creek (JA 5) (Davis 1968)
Elk Creek (JA 10) (Davis 1968)
Uncanny Canyon Site (JA 14) (Davis 1970)
JA 26 and 27 (Department of Anthropology, Oregon State University)
Gold Hill (Cressman 1933)
Sams Valley (Museum of Natural History, University of Oregon)
Cove Creek Rockshelter (Seich n.d.)

Northwest California Coast

Hum-118 (Elsasser 1965) Type 1
Point St. George Site (Gould 1966)

Umpqua and Willamette River Drainages

Fall Creek (Cole 1968)
Hurd Site (White 1975)
Lynch Site (Sanford 1975)
Benjamen Sites (Miller 1975)
Baby Rockshelter (Olsen 1975)
Upper Umpqua (Marchiado 1965)

Gold Hill Leaf points are stratigraphically earlier in the Rogue River drainage than Gunther Barbed type. At one site which contained a Mt. Mazama ash deposit, they were associated with the component above the ash, thus dating to sometime about 5000 B.C. (Davis 1970). In Klamath Shoal Midden they are associated with the basal part of the Midden Stratum and the upper part of the Cemented Gravel Stratum. They were located below the charcoal dated to A.D. 700 and A.D. 1000. This is the same distribution as the Northern Side-Notched points at Klamath Shoal Midden.

Class 23 (Plate XXXVm, q)

These are medium-size leaf-shaped points, with a straight edged body and a convex base. The widest point on the blade is in the basal third of the point. The points have a length-width ratio > 2.7. Points of this general description are common in archaeological sites throughout the Northern and Western Great Basin and Northern California and Southern Oregon. There is one each in Big Boulder Village and Klamath Shoal Midden.

Class 24 (Plate XXXVIa-l; XXXVIIi)

These are small to medium-sized, unshouldered, triangular points with straight to convex bases. They

are finely finished and are easily separated from projectile point blanks, which tend to have irregular edges. Many of them are quite thin, being 2 mm thick. They represent 4% of the points from Border Village and 1% of the points from Big Boulder Village and Klamath Shoal Midden. They are similar to Type 3 and 4 at Hum-118 and 169, which were thought to be harpoon points by Elsasser (1965). These would correspond to Type 2 from $T^{S}apek^{W}$ on the northwest California Coast (Benson 1977).

Type 25 Siskiyou Side-Notched
(Plate XXXVIm-t)

These are finely flaked side-notched points, with straight to concave bases and U-shaped side-notches. This type resembles to some degree both the Northern Side-Notched and General Desert Side-Notched points. However, it differs from both by several criteria. It consistently is smaller than the Northern Side-Notched and larger than Desert Side-Notched. The ratio of blade width to the width at notch from Salt Cave Locality Sites is unique to Siskiyou Side-Notched, 2.0 to 2.5, mean 2.2, S.D. 0.18. The Northern Side-Notched points from the Salt Cave Locality sites range from 1.5 to 2.7, with a mean of 2.0 S.D. .38, and the Desert Side-Notched points from the Salt Cave Locality sites ranges from 1.2 to 2.8, mean 1.6 S.D. .35. Another difference between Siskiyou and Northern

Side-Notched is in the length-width ratio. Among Northern it is usually greater than 2.0, and among Siskiyou it is usually 1.5.

The distribution of the Siskiyou Side-Notched is much more limited than that for other types of side-notched points. They are known primarily from archaeological sites in the Siskiyou Mountains, including the upper drainages of the Klamath and Rogue Rivers. Points of this type were recovered from Border Village and Klamath Shoal Midden.

Comparable Sites:

Upper Klamath River

Iron Gate (Leonhardy 1961) Class 2-K
Keno Development (Cole n.d.)
Sis-13 (Wallace and Taylor 1952) Descriptive Class 5

Klamath Basin

Lava Bed National Monument (Squier and Grosscup 1953; Hardesty and Fox 1974)
Nightfire Island (Sampson n.d.)

Southwest Oregon

Emigrant Dam (Newman 1959)
Lost Creek (Davis 1968)
Sams Valley (Museum of Natural History, University of Oregon
Gold Hill (Cressman 1933)

Willamette and Umpqua Drainages

Baby Rockshelter (Olsen 1975)

The Siskiyou Side-Notched type has no direct association with radiocarbon dates. It is present in the

house fill of Big Boulder Village House Pit 3 and House Pit 1 of Border Village.

Class 26 (Plate XXXVIu-dd)

These are crudely finished side-notched points. They have straight to convex bases and deep v-shaped notches. The base of the point is the point of maximum width. These may be poorly made examples of Elko Side-Notched or Rose Spring Side-Notched points, but they do not fit the criteria of either type. They are common throughout Oregon and Northern California. Each excavated site in the Salt Cave Locality had a few specimens of Class 26.

Class 27 (Plate XXXVIee)

This is a triangular, shouldered point. It has slightly concave edges, straight shoulders and a short, parallel-sided stem with a convex base. It is very similar in size and shape to Variety III of the Sierra Stemmed Triangular points. This type is not part of the Martis Series, but dates to a more recent period in the same area, sometime after A.D. 500 (Elston 1971). Only one specimen of Class 27 was recovered in the Salt Cave Locality from Klamath Shoal Midden.

Class 28 (Plate XXXVIff, gg; XXXVIIj, k)

These are medium-sized, corner-notched points. They have expanding stems and straight to convex bases. These are similar to projectile points associated with the Northern Milling Stone Complex, which is related to the Early Phase of the Borax Lake Pattern (Fredrickson 1973). Obsidian hydration dates for components with similar projectile points at the Borax Lake Site date to between 3000 B.C. and 1000 B.C. (Fredrickson 1973). All four specimens in the Salt Cave Locality were recovered from Border Village.

Class 29 (Plate XXXVIhh-mm; XXXVIIl)

These are crude corner or side-notched points, with shallow notches near the base. The points are often asymmetrical with irregular edges. The base is straight to convex, and the shoulders are straight to slightly barbed. This type closely resembles the Martis Corner-Notched type which was defined by Elston (1971). The Martis Series which includes the Martis Corner-Notched point is dated to between 1500 B.C. and A.D. 500 (Elston 1971). Though the Martis Series is supposed to be restricted to the Sierra Nevada, Class 29 from the Salt Cave Locality fits the description of the Martis

Corner-Notch points exactly. There are a couple of these points from each excavated site.

Type 30 Eden (Plate XXXVIIm)

This type was defined by Wormington (1948). It is a long, narrow point, with very slight shoulders. It has a straight base and median ridge. It is characterized by horizontal, concoidal flake scars, which extend to the midline. It is basally ground. There is a single example from the Salt Cave Locality. It is made of a very fine-grain basalt. Because this point was a surface find, it is possible the point was dropped by a recent collector. However, it is made from volcanic material which is used for some projectile points in the region, and a material not common for Eden points found in the High Plains, where they are usually located.

Projectile Point Type Distribution

Tables 6 and 7 present the distribution of the various projectile point types. Possible cultural differences between the sites is indicated by the differences in the intersite distributions, and the differences in intrasite distribution implies some possible temporal differences.

Within Border Village Gunther Barbed points dominate

the distribution in all 3 house pits and in all strata of each house pit. However, the distribution of the other point types show possible changes through time. In House Pit 1, Rose Spring Series points and Desert Side-Notched points only occur at Floor 3 or above. At and below Floor 3 the harpoon points, Class 24, and Siskiyou Side-Notched points are present. Though the numbers involved are small, less than 10, for any one type, it appears that the use of harpoon points and Siskiyou Side-Notched points ends around A.D. 1400. After that time Desert Side-Notched and Rose Spring Series points were occasionally used, probably indicating a recent influence from the western Great Basin.

Assuming that the projectle point distribution does reflect change through time, then it can be proposed that House Pit 2 was occupied later than House Pits 1 and 16. House Pit 16 contains only one Rose Spring Series point. House Pit 2 has both Rose Spring Series and Desert Side-Notched Points. Again, the total number of points is few, but the higher percentage of these types in House Pit 2 seems significant. A chi-square test supported the significance of the association at a 0.05 level, with a ϕ = 1.0373.

The differences in point type distributions between the 3 house pits in Big Boulder Village is a bit more

difficult to sort out. Each house has only one floor, but the house fill of each house contains material from occupations previous to house construction and after the house floor was abandoned. The floor of House Pit 3 was C-14 dated to around A.D. 1400. The projectile points in the floor fill were overwhelmingly Gunther Barbed but one example from each of five other types was also recovered from the floor fill. The surface fill and house fill of House Pit 3 contains points of 20 different types. Again, Gunther Barbed is most common, but the Rose Spring-Eastgate Series, Desert Side-notched and Gunther Stemmed points are also present in moderate numbers. The Desert Side-notched points likely represent post-house occupation of the house pit area. The Rose Spring-Eastgate Series and Gunther Stemmed points probably represent occupation previous to house construction though post-occupation of the site may also have added to the specimens of these types.

The situation in House Pit 11 is very similar to that of House Pit 3. Gunther Barbed points are found in the floor fill, with only one specimen of another type. The surface and house fills of House Pit 11 also had Rose Spring-Eastgate Series, Desert Side-notched and Gunther Stemmed points. Though there is no radiocarbon date for House Pit 11, it is proposed that it also dates

to A.D. 1400, because its artifact assemblage is similar to House Pit 3.

House Pit 13 shows a much different distribution pattern. This pattern is not as clear as in the other two house pits because the excavation procedure in House Pit 13 did not consistently separate the floor fill from the house fill. In those levels that clearly represent some floor fill, there are no Gunther Barbed points present. The only points definitely associated with the floor are Gunther Stemmed, Alkali Stemmed and Rose Spring Side-Notched. Within a level which contained a very small amount of floor fill along with house and rim fills, there were 2 Gunther Barbed points along with 3 other types. The remainder of the house fill of House Pit 13 was similar to the other two houses, except that it contained twice as many Desert Side-Notched points as either of the other houses. The difference between House Pit 13 and the other 2 may be chronological, cultural, or both.

The test pit within Big Boulder Village showed clearly that the older point types (i.e., Elko Series, Northern Side-Notched and Humboldt) were the result of occupation previous to house construction. Gunther Barbed were present only in the upper 20 cm of the midden.

Because of the excavation procedure used at

Klamath Shoal Midden, stratigraphic differences were blurred. However, Table 6 makes it clear that projectile point type distribution reflects chronological changes within the site. For example, Desert Side-Notched points are only found within the top layer of the Midden Stratum, and Gold Hill Leaf points are only found in the lower layers. Though Gunther Barbed, the Rose Spring-Eastgate Series, Cottonwood Series, Gunther Stemmed and Alkali Stemmed are found throughout the Midden Stratum, their frequency increases in the upper layers. The Elko Series and Northern Side-Notched points are present throughout the Cemented Gravel Stratum and the Midden Stratum, but are more frequently found in the Cemented Gravel Stratum and the lower layers of the Midden Stratum.

Horizontal differences are also present at Klamath Shoal Midden. This is certainly indicated by the presence of the Black Stratum on the eastern edge of the site and the lack of the Cemented Gravel Stratum in the same area. Horizontal differences are also present within the Midden Stratum. This is illustrated by the concentration of all 8 General Desert Side-Notched points within the top 50 cm or less of an area bound within 3 square meters, on the northwestern edge of the Midden Stratum.

The Midden Stratum has been C-14 dated to A.D. 650 and A.D. 940 and the River Gravel Stratum to 5000 B.C.

TABLE 6. --Projectile point distribution

Location	Types and Classes																												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
35KL16 H. P. 1																													
St. VI	17	-	2	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1
St. VI&V	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
St. V	24	-	3	2	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
St. IV	21	-	1	-	-	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-	-	-	-	3	1	-	-	-	-
St. IV&III	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
St. III	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-
St. III&II	14	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	2	1	-	1	-
St. II	18	-	-	-	-	-	1	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	1
St. II & I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
St. I	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mixed St.	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-
Total	126	0	6	2	1	0	1	1	0	3	1	2	0	0	0	2	0	0	0	0	0	2	0	6	4	2	0	3	2
35KL16 H. P. 2																													
St. IV	6	0	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Occ. L. 3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
St. IV&III	1	-	1	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
St. III	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
St. III&II	3	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
St. II&I	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
St. I	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mixed St.	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Total	15	2	3	2	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0

TABLE 6. --Continued

Location	Types and Classes																													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
35KL16 H. P. 16																													
St. V	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
St. V&IV	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
St. IV	5	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
St. III	3	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Mixed St.	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	10	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
35KL16																													
Total	151	3	9	4	2	0	1	4	0	3	1	2	0	0	0	2	0	0	0	0	0	2	0	8	4	2	0	4	2
35KL18 H. P. 3																													
Surface Fill	4	0	4	2	1	1	0	1	0	3	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surface & H. P. Fill	15	2	1	3	-	1	-	-	-	6	-	1	1	1	1	1	-	-	-	-	-	-	-	1	-	-	-	-	-
H.P. Fill	11	2	9	1	-	-	-	2	-	7	1	-	-	-	-	1	-	-	-	2	-	-	-	1	3	-	-	-	1
Floor Fill	11	-	-	-	-	1	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	41	4	14	6	1	3	0	3	1	12	2	2	1	1	1	2	0	0	0	2	0	0	0	2	3	0	0	0	1
35KL18 H. P. 11																													
Surface Fill	7	-	1	1	1	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 6. --Continued

Location	Types and Classes																												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
H. P. Fill 10-30cm.	6	-	2	2	-	-	-	1	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H. P. Fill 30-50cm.	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Floor Fill	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Total	17	0	3	3	1	0	0	1	0	12	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0
35KL18 H. P. 13																													
Surface Fill	10	1	5	3	-	-	-	-	-	4	3	2	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
H. P. Fill 10-30cm.	2	-	1	1	-	-	-	-	-	4	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-
H. P. or Rim Fill 10-30cm.	4	1	6	1	-	-	-	1	-	5	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
H. P., Rim or Floor Fill 10-30cm.	2	0	0	5	-	-	-	-	-	1	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Outside Rim 10-30cm.	-	-	-	1	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rim Fill 30-50cm.	3	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H. P. &Floor Fill 30-50cm.	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 6. --Continued

Location	Types and Classes																												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Floor & Rim Fill																													
30-50cm.	-	-	-	-	-	-	-	-	-	2	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Floor	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	21	2	12	12	0	0	0	2	0	19	4	5	3	1	1	1	0	0	0	0	0	0	1	0	0	3	0	0	1
35KL18 Test Pit																													
St. A.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
St. A&B	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
St. B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
St. C. 50-70cm.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	1	-	-	-
St. C. 70-110cm.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	1	-	-	-	-	-	-	-	-	-	-	-
Unknown	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	2	0	1	0	0	0	0	0	0	0	0	0	0	0	2	1	1	2	0	0	0	0	0	0	0	1	0	0	0
35KL18 Surface	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35KL18 Total	83	6	30	21	2	3	0	6	1	48	6	7	4	2	4	4	1	2	1	2	0	0	1	3	3	4	0	0	2
35KL21																													
St. IIId	9	-	4	7	1	-	-	4	1	6	4	2	2	-	-	-	-	-	1	1	-	-	-	1	-	1	-	-	-
St. IIIc&d	1	-	2	-	-	-	-	-	-	2	2	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
St. IIIc	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
St. IIIb, c, d	10	2	1	-	-	-	1	-	-	3	1	-	-	-	-	1	-	-	-	-	1	2	-	-	-	1	1	-	-

TABLE 6. --Continued

Location	Types and Classes																												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
St. III b&d	1	-	1	1	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
St. III b&c	3	-	3	-	-	-	-	-	-	1	1	2	-	-	1	-	-	-	1	1	-	-	1	-	-	-	-	-	1
St. III a-d	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
St. III a&d	2	-	2	-	-	-	-	-	-	3	1	-	-	-	2	-	-	-	-	-	-	4	-	-	-	-	-	-	1
St. III a, b& Black	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Black St.	-	-	1	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	26	2	14	8	1	0	1	4	1	17	10	5	6	0	4	2	0	0	2	2	1	7	1	2	0	3	1	0	3
35KL21																													
St. III&II	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
St. IId	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Total	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Surface	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
35KL21 Total	27	2	14	9	1	0	1	4	1	18	10	5	7	0	5	3	0	0	2	2	1	8	1	2	0	3	1	0	3
35KL16b	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
35KL19	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
35KL20	-	-	1	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35KL22	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35KL23	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35KL25	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-
Total-All Sites	262	11	53	36	5	3	2	14	2	72	17	16	11	2	9	11	1	2	3	4	1	10	2	13	8	10	1	4	7

as noted in Chapter III. The projectile point distribution may allow for some hypothesis as to the dating of the Cemented Gravel Stratum and the individual layers of the Midden Stratum. The upper layer of the Cemented Gravel Stratum contains 2 Elko Series points and a Gold Hill Leaf. There are no reliable dates for Gold Hill Leaf, but according to Hester (1973) the Elko Series dates from 1500 B.C. to A.D. 500. Since a radiocarbon date of A.D. 650 comes from the middle layers of the Midden Stratum, it seems likely that at least the upper layer of the underlying Cemented Gravel Stratum can be placed between 1500 B.C. and A.D. 500.

Though the charcoal samples taken from the Midden Stratum included material from 3 layers, it primarily is associated with layers b and c and the lower part of d. The upper part of layer d may be dated to around A.D. 1400 to A.D. 1600 with the presence of many Gunther Barbed points dated to 1400 A.D. at Border Village and Big Boulder Village by C-14, and Desert Side-Notched points according to Baumhoff and Byrne (1959) dated to A.D. 1600.

The different point distributions between the 3 excavated sites in the Salt Caves Locality point to a cultural difference between Border Village and the two upriver sites, Big Boulder Village and Klamath Shoal

Midden. The frequency of Gunther Barbed points has already been discussed. As Table 7 shows, this type represents 74% of the points at Border Village. No other point type is nearly as frequent, in that site. Rose Spring Corner-Notched with 6% and harpoon points with 4% are the next most frequent. In contrast Big Boulder Village, which has a similar temporal position for house pit occupation has 33% Gunther Barbed, which, while still the most frequent, is close in frequency to the 20% of Gunther Stemmed points within the site.

The difference between Big Boulder Village and Klamath Shoal Midden are minor and probably represent heavier occupation of Big Boulder Village in more recent time. This is demonstrated by the slightly lower percentage of Gunther Barbed (21%) and Gunther Stemmed (14%) points in Klamath Shoal Midden. There is only one significant difference in point distribution between these upriver sites. This is the total lack of Gold Hill Leaf points at Big Boulder Village, while they represent 6% of the collection from Klamath Shoal Midden. Since Gold Hill Leaf points are most strongly associated with prehistoric groups in the Rogue River drainage, their presence at Klamath Shoal Midden during a period dated roughly by the association with Elko Series points between 1500 B.C. and A.D. 700 indicates use of the north side of

TABLE 7. --Percentage distribution of projectile point types and classes

Types	35KL16								35KL18										35KL21						Total All Sites	
	H. P. 1		H. P. 2		H. P. 16		Total		H. P. 3		H. P. 11		H. P. 13		Test Pit		Total		St. III		St. II		Total			
	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n
1	77	126	54	15	71	10	74	151	38	41	44	17	24	21	20	2	33	83	22	26			21	27	44	262
2			8	2	7	1	2	3	4	4			2	2			2	6	2	2			2	2	2	11
3	5	6	15	3			5	9	13	14	8	3	14	12	10	1	12	30	11	14			11	14	9	53
4a	1	2	8	2			2	4	3	3	3	1	10	7			5	11	7	8			6	8	4	25
4b									3	3	5	2	6	5			4	10	1	1			1	1	1	11
5	.6	1	4	1			1	2	1	1	3	1					1	2	1	1			1	1	1	3
6									3	3							1	3							.5	3
7	.6	1					.5	1											1	1			1	1	.3	2
8	.6	1	4	1	14	2	2	4	3	3	3	1	2	2			2	6	3	4			3	4	2	14
9									1	1							.4	1	1	1			1	1	.3	2
10	2	3					2	3	16	7	31	12	22	19			20	48	14	17			14	18	12	72
11	.6	1					.5	1	2	2			5	4			2	6	8	10			8	10	3	17
12	1	2					1	2	2	2			6	5			3	7	4	5			4	5	2	16
13									1	1			3	3			2	4	3	6	33	1	5	7	2	11
14									1	1			1	1			1	2							.3	2
15									1	1			1	1	20	2	2	4	3	4	33	1	4	5	1	9
16	1	2					1	2	2	2			1	1	10	1	2	4	1	2			2	3	2	11

TABLE 7. --Continued

	35KL16								35KL18										35KL21						Total
	H. P. 1		H. P. 2		H. P. 16		Total		H. P. 3		H. P. 11		H. P. 13		TestPit		Total		St. III		St. II		Total		All Sites
	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n
17															10	1	.4	1							.2	1
18															20	2	1	2							.3	2
19											3	1					.4	1	2	2			2	2	.5	3
20									2	2							1	2	2	2			2	2	.7	4
21																			1	1			1	1	.2	1
22	1	2				1	2												6	7	33	1	6	8	2	10
23													1	1			.4	1	1	1			1	1	.3	2
24	4	6	4	1	7	1	4	8	2	2	3	1					1	3	2	2			2	2	2	13
25	2	4					2	4	3	3							1	3							1	8
26	1	2					1	2					3	3	10	1	2	4	3	3			3	3	2	10
27																			1	1			1	1	.2	1
28	2	3	1	1			2	4																	.7	4
29	1	2					1	2	1	1			1	1			1	2	3	3			3	3	1	7
30																	.4	1							.2	1

the river by groups with a western Oregon affiliation during that time. It is possible that such groups did not cross the river to the south at least with any frequency.

Conclusions: Projectile Points

The age of the archaeological sites in the Salt Cave Locality ranges from 5000 B.C. to A.D. 1400, on the basis of radiocarbon dates. The projectile point types found in the various sites support these dates and allow an expansion of the chronology at some of the sites. From the projectile points at Border Village we can be sure that house pit construction at that site began by at least A.D. 1300 and lasted at least a hundred years. The presence of large expanding stem points, which resemble Borax Lake Pattern points indicate that the midden deposit into which the houses were dug probably dates back to around 3000 B.C. The radiocarbon date places occupation for one floor in one house pit around A.D. 1400. The overwhelming use of Gunther Barbed points is linked to that time. Another house pit and the upper layers of House Pit 1 contain Desert Side-notched points, which extend the occupation to around A.D. 1500.

At Big Boulder Village the presence of Humboldt Concave Base A and a possible Black Rock Concave Base

point indicate occupation of this site back as far as 4000 B.C. House pit construction dates to A.D. 1400 for one and possibly two houses, with post-house occupation to at least A.D. 1600, indicated by Desert Side-notched points of the Sierra subtype. The presence of various point types dated between 4000 B.C. and A.D. 1200 indicates more or less continuous use of Big Boulder Village for a long time before the house pits were constructed.

The projectile point types present at Klamath Shoal Midden indicate a possible date for the Cemented Gravel Stratum of 1500 B.C. to A.D. 500. The concentration of Desert Side-Notched points in one area of the site, indicate occupation through at least A.D. 1500.

The various projectile point types present also indicate diverse regional influences on the Salt Cave Locality. The upriver sites seem associated with the Northern Great Basin from 4000 B.C. to around A.D. 1400. However, downriver influence which may ultimately have extended from the Northwest California coastal area are present sometime before A.D. 1400. This is supported by the presence of Gunther Stemmed and Gunther Barbed points in all sites. There also seem to have been use of Klamath Shoal Midden by groups from western Oregon sometime around A.D. 100, witnessed by the presence of Gold Hill Leaf points.

Border Village shows little influence from the Northern Great Basin, as indicated by the presence of only a few Northern Side-Notched points, and Desert Side-Notched points representing a much later period. The overwhelming dominance of Gunther Barbed points there indicates influence from North-central California or Southwestern Oregon. The presence of large stemmed points also show a possible early link to the North Coast Ranges of California.

This dominance of Gunther Barbed points at Border Village as compared to the lesser number of this type at Big Boulder Village and Klamath Shoal Midden, support the hypothesis of a split between the two areas. The upriver sites show projectile point assemblages linked to the Klamath Basin, while the downriver site shows links to North-central California and Southwestern Oregon, where overwhelming dominance of Gunther Barbed points is common in the late prehistoric assemblages.

Unifacially Flaked Tools
(Plate XXXIV-XLVI)

This category includes those artifacts with working edges formed by unifacial flaking. Most of the flaking was done intentionally; but, several edges have been flaked by use. The category has been divided into 8 classes based on the character of the worked edge, a

TABLE 8. --Projectile point measurements by type or class

Type	Length			Width			Thickness			Weight			N
	Range	M	S. D.	Range	M	S. D.	Range	M	S. D.	Range	M	S. D.	
1	15-45mm	24. 8	5. 3	9-28mm	16. 1	3. 2	1. 5-7mm	3. 3	. 7	. 3-2. 4gr.	. 8	. 5	262
2	20-29. 5mm	24. 7	3. 1	12-19mm	16. 1	2. 2	2-5mm	3. 6	. 9	. 6-1. 3gr.	. 9	. 2	11
3	15-36mm	22. 7	4. 5	10-21mm	14. 9	2. 3	2-5mm	3. 2	. 7	. 4-2. 4gr.	. 9	. 5	56
4a	12-27mm	20. 9	3. 6	10-17mm	12. 3	3. 1	2-3. 5mm	2. 7	. 5	. 1-1. 1gr.	. 6	. 2	25
4b	16-23mm	19. 9	2. 2	10-15mm	11. 4	1. 4	2-4mm	2. 7	. 6	. 4-. 8gr.	. 6	. 1	11
5	19-35mm	28. 0	7. 0	13. 5-20mm	17. 7	2. 9	2. 5-5mm	3. 3	1. 0	. 5-2. 1gr.	1. 3	1. 1	5
6	20-28mm	24. 3	4. 0	16-17mm	16. 6	. 6	2. 5-3mm	2. 8	. 3	. 8-. 9gr.	. 9	. 1	3
7	19-21. 5mm	20. 2	1. 8	17-17. 5mm	17. 3	. 4	3-4mm	3. 5	. 7	. 8-1. 3gr.	1. 0	. 4	2
8	14-25mm	19. 8	2. 9	9-17mm	13. 1	2. 3	2-4mm	2. 6	. 6	. 4-1. 0gr.	. 6	. 3	14
9	26-29mm	27. 5	2. 1	11-12mm	11. 5	. 7	4-5mm	4. 8	1. 1	1. 1-1. 6gr.	1. 4	. 4	2
10	14-32mm	22. 9	4. 3	8-18mm	12. 8	2. 2	2-5mm	3. 3	. 7	. 1-2. 0gr.	. 7	. 4	72
11	16-31mm	26. 1	3. 9	8-18mm	13. 1	3. 1	2. 5-6mm	4	. 9	. 4-1. 9gr.	1. 1	. 5	17
12	25-33mm	29. 3	2. 9	13-17mm	15. 1	1. 6	3-6. 5mm	4. 5	. 9	1. 2-2. 8gr.	1. 7	. 6	14
13	33-58mm	37. 8	8. 0	17-25mm	20. 6	2. 5	4-7mm	5. 2	. 9	2. 8-5. 1gr.	3. 3	. 6	11
14	35mm			21. 5			5-5. 5mm	5. 3	. 4	27+gr.			2
15	23-38gr.	31. 5	7. 4	15-18mm	17. 1	1. 0	3. 5-6mm	4. 6	. 8	1. 4-2. 3gr.	1. 7	. 5	9
16	23-45mm	35. 3	6. 5	17-23mm	19. 7	2. 0	3-6mm	4. 4	1. 0	1. 7-4. 2gr.	3. 1	1. 2	11
17	39mm			17mm			7mm			3. 3+gr.			1
18	73-79mm	79. 0	4. 2	18-25. 5mm	21. 8	5. 3	7-8. 5mm	7. 8	1. 1	9. 4-15. 8gr.	12. 6	4. 5	2
19	35-44mm	40. 2	4. 7	12. 5-14mm	13. 2	. 8	6. 5-7mm	6. 8	. 3	2. 6-4gr.	3. 3	1. 0	3
20	34-49mm	40. 5	7. 7	12. 5-14mm	13. 5	1. 0	4-6mm	5. 0	. 9	1. 9-3. 8gr.	2. 6	1. 0	4
21	31mm			16mm			5mm			2. 1gr.			
22	24-35mm	29. 7	3. 2	12-16mm	14. 3	1. 3	4-7mm	5. 5	1. 0	1. 3-2. 6gr.	1. 9	. 4	10
23	35-37mm	36. 0	1. 4	13. 5mm			6-6. 5mm	6. 3	. 4	2-2. 5gr.	2. 3	. 6	2
24	20-35mm	24. 1	8. 2	15-22mm	18. 2	2. 0	2-5mm	3. 5	. 9	. 9-1. 7gr.	1. 2	. 3	13
25	22. 5-30mm	27. 5	4. 1	16. 5-20mm	18. 1	1. 1	3-5mm	3. 9	. 8	1. 5-1. 8gr.	1. 7	. 2	8
26	24-35mm	29. 7	4. 1	12-18. 5mm	14. 9	2. 1	3-6mm	4. 7	. 9	1. 2-3. 4gr.	1. 6	. 3	10
27	31mm			17mm			4. 5mm			2. 1gr.			1
28	34-43mm	38. 7	4. 5	19-25mm	21	2. 7	5. 5-6mm	6. 1	. 5	3. 6-4. 1gr.	3. 7	. 3	4
29	21-42mm	27. 2	7. 3	13. 5-21. 5mm	16. 1	2. 6	4. 5-7mm	5. 9	1. 0	1. 1-5. 7gr.	2. 4	1. 6	7
30	128mm			36mm			13. 5mm			55. 4gr.			1

scheme taken directly from Pettigrew (1975). The scheme uses the configuration of the flaked edge. There are 9 categories which are listed on Table 9. Many times a single artifact would have more than one edge class, and the total on Table 9 therefore, represent the number of working edges and not the number of artifacts.

Obsidian is the most common material for these unifacially flaked tools. Chert is also frequently used, particularly at Border Village and Klamath Shoal Midden. Other cryptocrystalline material and fine grain basalts are only rarely used.

There are few differences in the distribution of unifacially flaked edge classes in the 3 excavated sites (Table 9), but the high proportion of straight edge tools in Klamath Shoal Midden is one significant difference. They are also more common in Big Boulder Village than in Border Village than would be expected by chance, as indicated by a chi-square comparison based on Table 9 that was significant at the .001 level. Also significant is the very low percentage of tools at Klamath Shoal Midden which were pointed by the intersection of 2 flaked edges on opposite sides. The presence of this class in both Border Village and Big Boulder Village which date to A.D. 1400 indicate it may be a more recent method for manufacturing pointed tools.

TABLE 9. --Unifacial flaked tool distribution

Location	Incurvate Edge	Straight Edge	Excurvate Edge	Pointed by Intersection of 2 Flaked Edges	Pointed by Intersection of a Flaked and Unflaked Edge	Pointed by Intersection of 2 Flaked Edges on Opposite Sides	Single Notch	Double Notch	Total
35KL16 H. P. 1	131	81	257	22	18	6	12	7	534
35KL16 H. P. 2	29	5	32	5	0	1	5	2	79
35KL16 H. P. 16	6	5	10	1	1	0	2	0	25
35KL16 Surface	1	3	5	0	0	0	2	0	11
35KL16 Total	167	94	304	28	19	7	21	9	649
35KL18 H. P. 3	70	46	115	9	10	3	15	4	272
35KL18 H. P. 11	34	33	73	2	5	0	6	0	153
35KL18 H. P. 13	101	118	193	19	4	3	19	5	462
35KL18 Test Pit	23	27	32	3	1	1	3	0	90
35KL18 Surface	4	5	7	1	0	0	1	0	18
35KL18 Total	232	229	420	34	20	7	44	9	995
35KL21 Stratum III	149	241	304	25	15	1	29	6	770
35KL21 Stratum II	6	29	18	3	0	1	0	0	57
35KL21 Stratum I	4	6	6	0	0	0	0	1	17
35KL21 Surface	2	3	1	0	0	0	0	0	6
35KL21 Total	161	279	329	28	15	1	30	7	850

TABLE 9. --Continued

Location	Incurvate Edge	Straight Edge	Excurvate Edge	Painted by Intersection of 2 Flaked Edges	Painted by Intersection of a Flaked and Unflaked Edge	Painted by Intersection of 2 Flaked Edges on Opposite Sides	Single Notch	Double Notch	Total
35KL16b	3	3	5	0	1	0	0	0	12
35KL19	10	3	12	1	0	2	1	0	29
35KL20	1	2	6	0	0	0	1	0	10
35KL22	2	2	7	0	1	0	1	2	15
35KL23	3	0	6	0	0	0	0	0	9
35KL24	1	0	1	0	0	0	0	0	2
35KL25	13	7	19	0	3	0	0	1	43
Salt Cave Locality: Total	593	619	1059	91	69	17	103	29	2580

The distribution of flake tool classes within each site is recorded in Figures 31-33. These figures allow one to see which class of used flake tools was most frequent in each stratum at each site, and they also allow one to compare the frequency over time of any particular class in each house pit and in the cultural layers of Klamath Shoal Midden and Big Boulder Village.

When looking at the frequency of different classes in the various strata, it is clear that excurvate edge tools are the most common in all strata of the houses in Border Village, which have a sample size of over 10 items. It is also the most common class in the house pits of Big Boulder Village. In the earlier deposits of Big Boulder Village it is not the most frequent. In Strata B and C the straight, incurvate and excurvate classes are almost equal, with the straight edge being the most common. At Klamath Shoal Midden the excurvate edge is most common in the Midden Stratum, the straight edge is the most common in the Cemented Gravel Stratum, and the two are of equal frequency in the River Gravel Stratum.

An attempted comparison of the frequencies of each class over time was not productive, because sample sizes were too disparate, particularly between the cultural layers in Klamath Shoal Midden. This was also true to a lesser extent of the house pit strata of both village

FIGURE 31
UNIFACIAL FLAKED TOOLS: DISTRIBUTION WITHIN BORDER VILLAGE

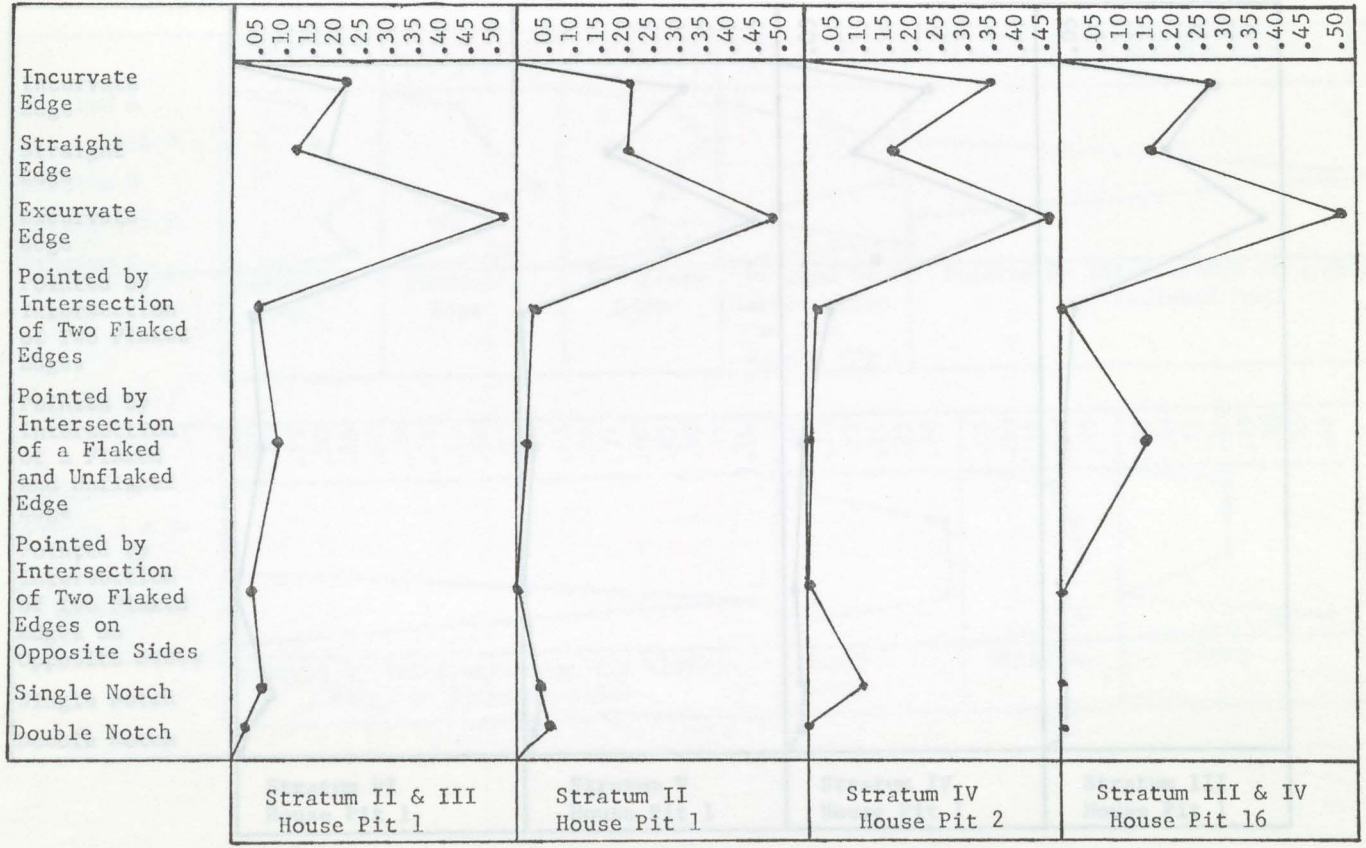


FIGURE 31--(Continued)
UNIFACIAL FLAKED TOOLS: DISTRIBUTION WITHIN BORDER VILLAGE

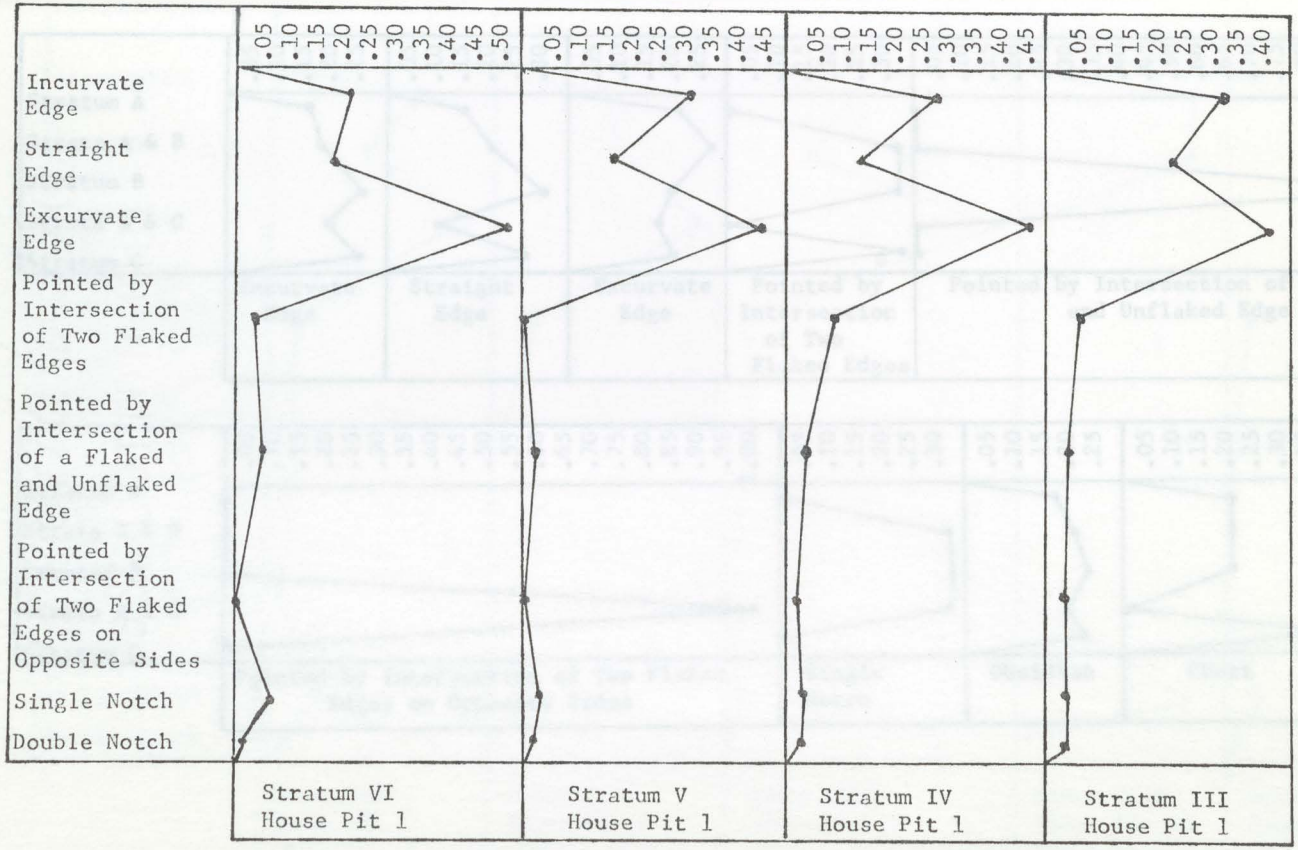


FIGURE 32--(Continued)
UNIFACIAL FLAKED TOOLS:DISTRIBUTION WITHIN BIG BOULDER VILLAGE

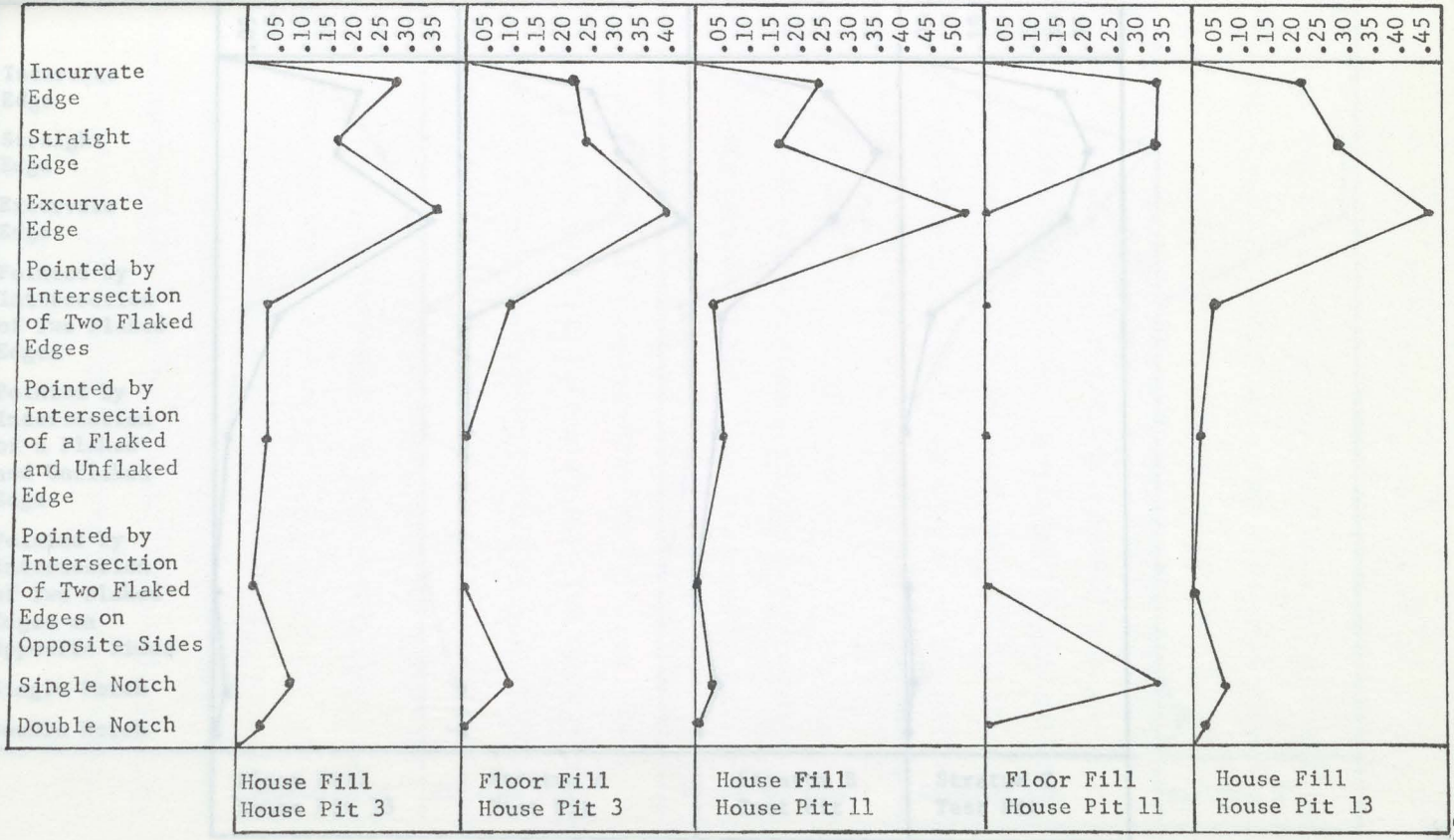


FIGURE 32--(Continued)
UNIFACIAL FLAKED TOOLS: DISTRIBUTION WITHIN BIG BOULDER VILLAGE

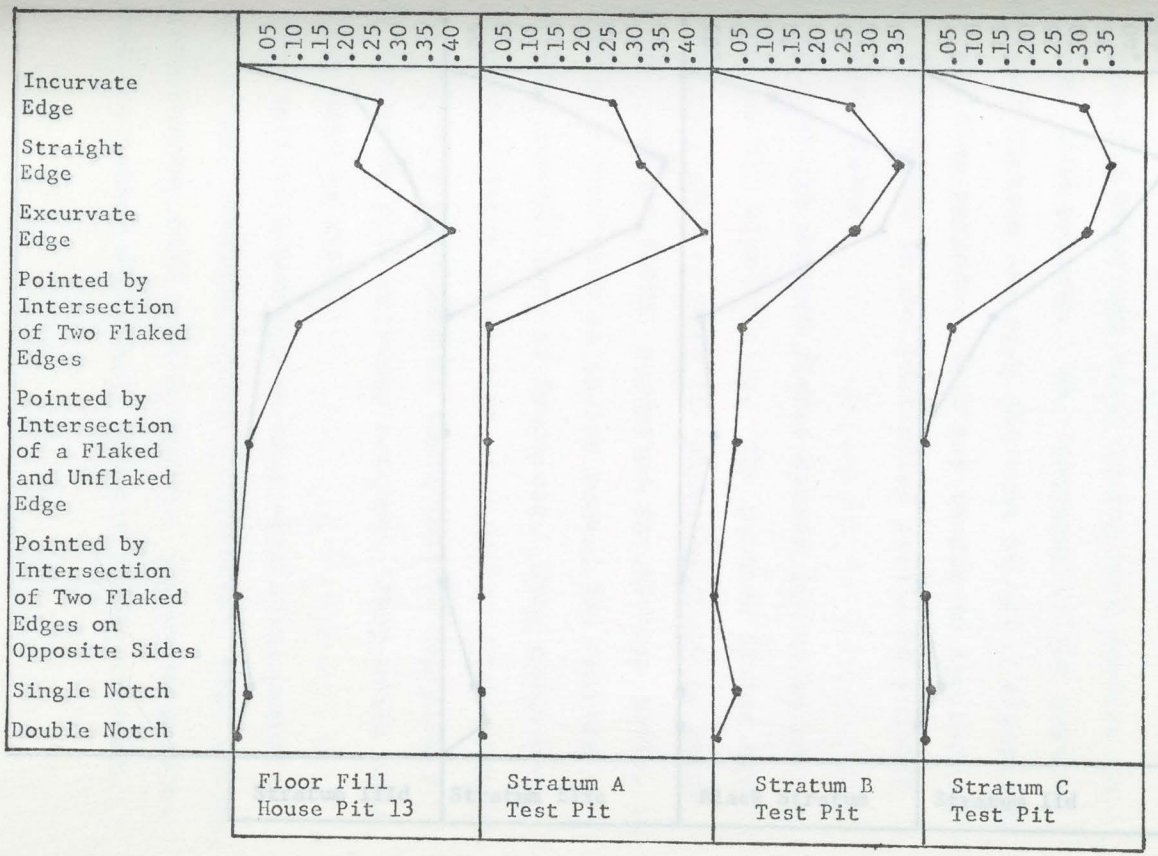
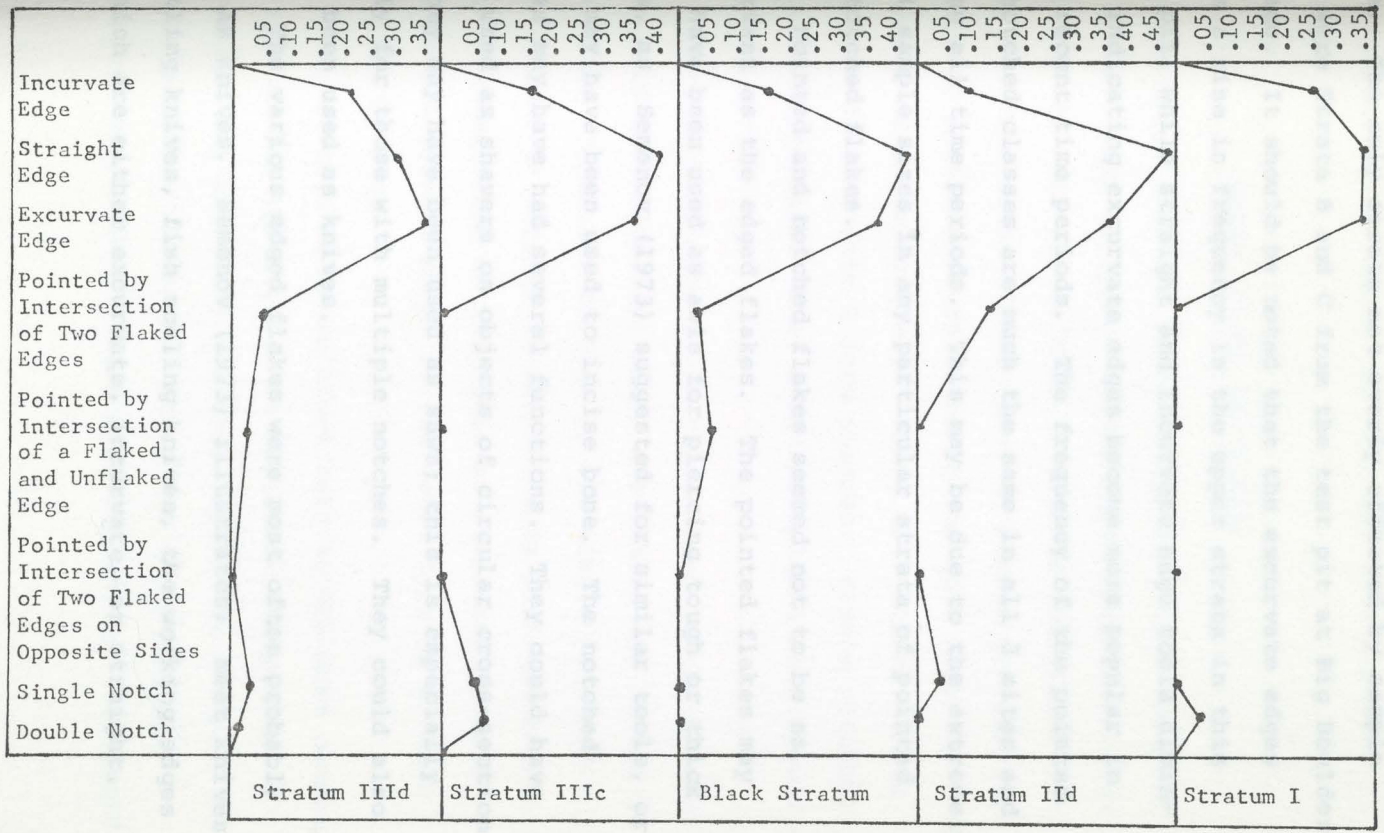


FIGURE 33
UNIFACIAL FLAKED TOOLS: DISTRIBUTION WITHIN KLAMATH SHOAL MIDDEN



sites. The only strata not overly effected by sample size were Strata B and C from the test pit at Big Boulder Village. It should be noted that the excurvate edges shows a rise in frequency in the upper strata in this test pit, while straight and incurvate edge tools diminish, indicating excurvate edges become more popular in more recent time periods. The frequency of the pointed and notched classes are much the same in all 3 sites and during all time periods. This may be due to the extremely small sample sizes in any particular strata of pointed and notched flakes.

Pointed and notched flakes seemed not to be as important as the edged flakes. The pointed flakes may well have been used as awls for piercing tough or thick skins, as Semenov (1973) suggested for similar tools, or they may have been used to incise bone. The notched flakes may have had several functions. They could have been used as shavers on objects of circular cross-section, or they may have been used as saws; this is especially likely for those with multiple notches. They could also have been used as knives.

The various edged flakes were most often probably used as knives. Semenov (1973) illustrates: meat knives, whittling knives, fish scaling knives, the working edges of which are either excurvate, incurvate, or straight.

Some excurvate edge flakes may also have been used as scrapers.

Cores (Plate LXI-LXIII)

The cores from the sites of the Salt Cave Locality were divided into 11 types. These types were taken from Fagan (1974). His scheme uses 3 criteria for classifying cores: "1) The shape of the core, 2) Number and position of striking platform in relation to the core mass, 3) Techniques of flake removal." Using this scheme, cores were first divided into 2 form classes: single platform or multiple platform. They were then placed into specific types.

There were 11 core types represented in the sites of the Salt Cave Locality; their attributes are listed in Appendix E. Types 1A1 through 1C are single platform cores. Types 2A through 2E are multiple platform cores, which are subdivided on the basis of striking platform position and general shape of the core; type 2C is also subdivided by size.

The multiple platform block core is the most common core type in all the sites. It dominates every site, every house pit and every cultural layer. In general multiple platform cores as a class are overwhelmingly common when compared to single platform edges. It should

be recognized that Type IC is the most common single platform core present, and it can be seen as the first step in the creation of a multiple platform block core. Table 10 illustrates the frequency of each type within house pits and cultural layers.

Cores were distinguished from core tools by their lack of battered edges. These cores showed sharp, uncrushed edges, indicating they had not been used as tools. Several of these cores had broken edges, but were basically intact, so that the majority of the core mass was present.

There was a total of 357 complete cores from the Salt Cave Locality and 44 core fragments. The majority were made from chert or agate, with obsidian being second in frequency. There were a few jasper and fine grain basalt cores (Figures 34 and 35). The consistently higher percentage of chert cores than obsidian cores is probably due to 2 interrelated factors. Obsidian was not obtainable within the immediate vicinity, whereas chert was available locally. The nearest known obsidian sources are Glass Mountain and the Medicine Lake Highlands to the southeast of the Salt Caves Locality. Thus because of distance obsidian was probably brought to the site in the form of blanks and preforms more often than in the form of large cores. Second, obsidian cores were worked down

TABLE 10. --Core distribution by type

Provinience	1A1	1A2	1B1	1B2	1C	2A	2B	2C1	2C2	2D	2E	Total
35KL16 H. P. 1												
Stratum VI	1	0	0	0	0	0	0	0	0	8	2	11
Stratum VI&V	0	0	0	0	0	0	2	0	0	1	0	3
Stratum V	0	0	0	0	1	0	0	0	0	10	2	13
Stratum IV&V	0	0	0	0	1	0	1	0	0	1	0	3
Stratum IV	1	1	0	0	0	0	2	1	0	17	0	22
Stratum III&IV	0	0	0	0	0	0	0	0	0	2	0	2
Stratum III	1	0	1	0	0	0	3	0	0	6	2	13
Stratum III&II	0	0	0	0	3	0	3	1	0	29	8	44
Stratum II	0	0	0	1	0	0	1	0	2	6	1	11
Stratum I	0	1	0	0	0	0	0	0	0	0	0	1
H. P. 1 Total	3	2	1	1	5	0	12	2	2	80	15	123
H. P. 2												
Strata IV&V	0	0	0	0	0	0	0	0	0	1	0	1
Stratum IV	0	0	0	0	1	0	0	0	0	5	1	7
Strata IV&III	0	0	0	0	0	0	0	0	0	3	0	3
Strata II&I	0	0	0	0	1	0	0	0	0	0	0	1
H. P. 2 Total	0	0	0	0	2	0	0	0	0	9	1	12
H. P. 16												
Strata IV&V	0	0	0	0	0	0	0	0	0	3	0	3
Stratum IV	0	1	0	0	0	0	0	0	0	1	0	2
Strata III&IV	0	0	0	0	0	0	0	1	0	0	0	1
Stratum I	0	0	0	0	0	0	0	0	0	0	2	2
H. P. 16 Total	0	1	0	0	0	0	1	0	0	4	2	8
35KL16 Total	3	3	1	1	7	0	12	3	2	93	18	143
35KL18 Test Pit												
Strata A&B	0	0	0	0	0	0	0	0	0	2	0	2
Stratum B	0	0	0	0	0	0	0	0	0	2	0	2
Strata B&C	0	0	0	0	0	0	0	0	0	1	0	1
Stratum C	1	0	0	0	1	0	0	0	0	2	1	5
Test Pit Total	1	0	0	0	1	0	0	0	0	7	1	10

TABLE 10. --Continued

Provinience	1A1	1A2	1B1	1B2	1C	2A	2B	2C1	2C2	2D	2E	Total
35KL18 H. P. 3												
Surface Fill	0	0	0	0	0	1	0	0	0	5	0	6
H. P. Fill	1	1	0	0	1	0	1	0	0	7	0	11
Floor Fill	0	0	0	0	0	0	0	0	0	1	0	1
H. P. 3 Total	1	1	0	0	1	1	1	0	0	13	0	18
H. P. 11												
Surface Fill	1	0	0	0	2	0	0	0	0	3	0	6
H. P. Fill	0	0	0	0	0	0	2	0	0	3	2	7
H. P. Fill and Floor Fill	0	0	0	0	0	0	0	0	0	2	0	2
H. P. 11 Total	1	0	0	0	2	0	2	0	0	8	2	15
H. P. 13												
Surface Fill	0	0	0	0	3	0	1	0	0	14	1	19
H. P. and Rim Fill	0	0	0	0	1	0	0	0	0	12	1	14
H. P., Rim and Floor Fills	1	0	0	0	4	0	1	0	0	5	5	16
Floor Fill	0	0	0	0	0	0	0	0	0	2	0	2
H. P. 13 Total	1	0	0	0	8	0	2	0	0	33	7	51
35KL18 Total	4	1	0	0	12	1	5	0	0	61	10	94
35KL21												
Stratum IIId	1	0	0	0	0	0	4	0	0	11	5	21
Strata IIId&c	0	0	0	0	1	0	0	0	0	5	2	8
Stratum IIIc	0	0	0	0	0	0	0	0	0	2	1	3
Strata IIIb&c	0	0	0	0	0	0	0	0	0	11	2	13
Strata IIIa&b	0	0	0	0	0	0	1	0	0	3	2	6
Strata IIIb-2	0	0	0	0	0	0	1	0	0	14	0	15
Black Stratum	1	0	0	0	0	0	0	0	0	4	0	5
Midden Total	2	0	0	0	1	0	6	0	0	50	12	71
Stratum IId	1	0	0	0	0	0	0	0	0	6	1	8
Strata IIa-d	0	0	0	0	0	0	0	0	0	1	0	1
Cemented Total	1	0	0	0	0	0	0	0	0	7	1	9
35KL21 Total	3	0	0	0	1	0	6	0	0	57	13	80

FIGURE 34
CORE MATERIALS AND TYPES: DISTRIBUTION BY PERCENTAGE

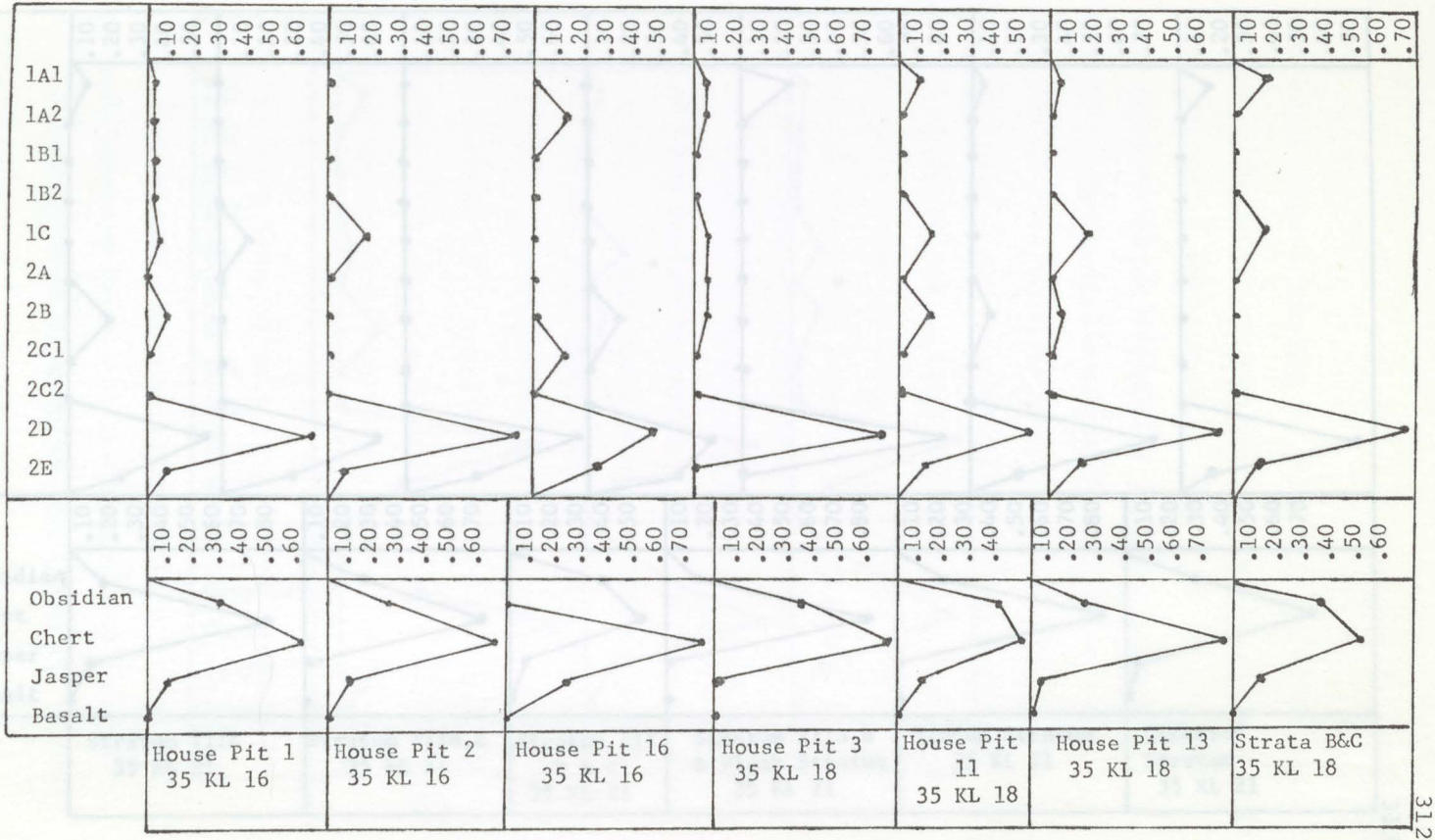


FIGURE 34--(Continued)
CORE MATERIALS AND TYPES: DISTRIBUTION BY PERCENTAGE

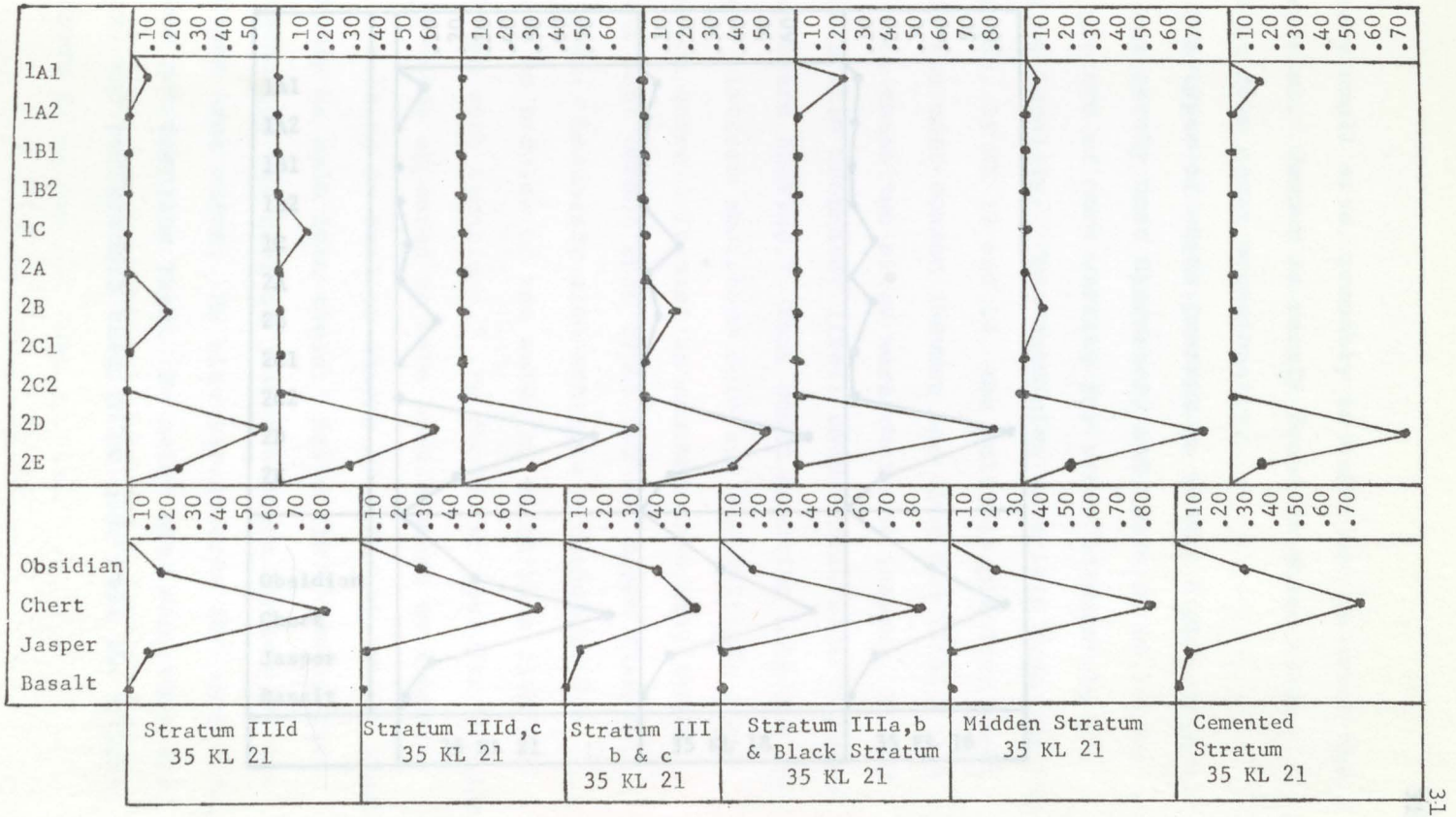
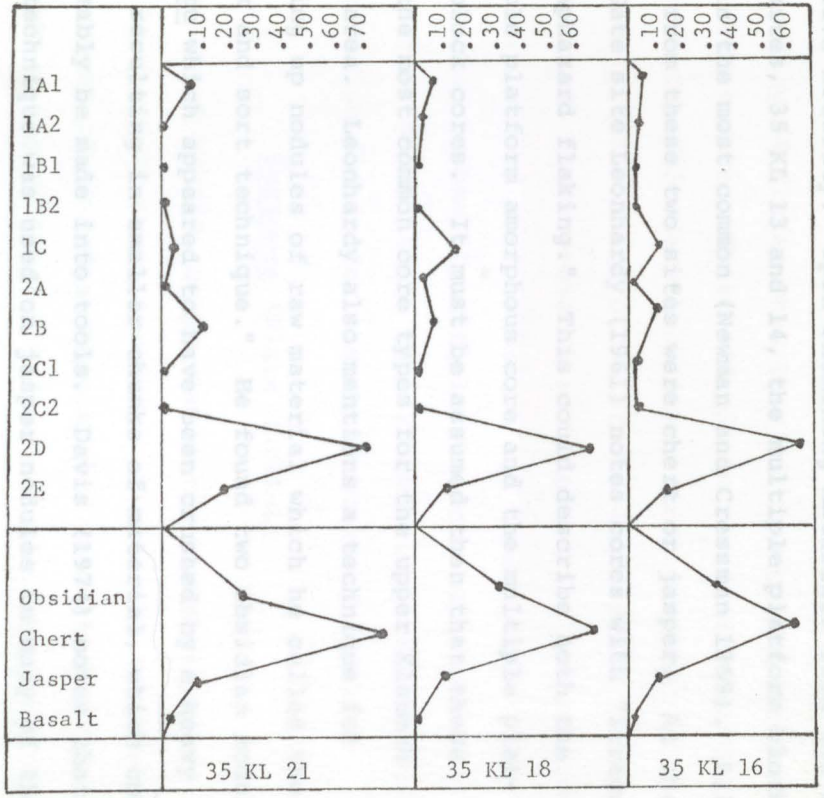


FIGURE 35
CORE MATERIALS AND TYPES: DISTRIBUTION BY SITE



to a very small size, probably in order not to waste the raw material. Jasper is rarely found in these sites, though it does occur occasionally.

The types of cores present in nearby archaeological sites has rarely been discussed, and there is an incomplete picture of core working for areas adjacent to the Salt Cave Locality. Upon examining materials from the Big Bend sites, 35 KL 13 and 14, the multiple platform block core is the most common (Newman and Cressman 1959). All cores from these two sites were chert or jasper. At the Iron Gate site Leonhardy (1961) notes cores with "irregular haphazard flaking." This could describe both the multiple platform amorphous core and the multiple platform block cores. It must be assumed then that these were the most common core types for the upper Klamath River area. Leonhardy also mentions a technique for breaking up nodules of raw material which he called the "chunk and sort technique." He found two obsidian nodules in situ which appeared to have been crushed by a heavy blow, resulting in smaller chunks of material, which could presumably be made into tools. Davis (1974) notes that this technique was used on jasper nodules in many of the Lost Creek area sites. He also lists cores for each site, but does not describe them. He notes that many scrapers, gravers, and perforators seem to be made from the chunks of jasper.

There is no clear evidence for the use of the "chunk and sort technique" in the Salt Cave Locality. Tools are made on flakes, not on chunks. There are occasionally odd angled pieces and flakes which are lacking bulbs of percussion, but their numbers are small. They can just as easily be explained by the possibility of accidental breakage of cores while attempting to remove flakes, or the breaking of flakes when they hit the ground after removal from a core. These odd pieces are invariably obsidian in the Salt Cave Locality. Since obsidian is notoriously friable and often breaks accidentally while being worked, there seems no solid proof for the presence of "the chunk and sort technique" in these sites. The overwhelming number of multiple platform block cores in these sites, makes it the most frequently used technique for producing flakes for the manufacture of tools.

Scrapers (Plate XLVII-L)

A total of 150 scrapers were recovered from the sites in the Salt Caves Locality. A tool was categorized as a scraper if it had a steep angled retouched working edge, which had at least a 30° edge angle. Most specimens were plano-convex, but there were a few bifacially worked specimens, also. There was almost an equal number of scrapers from Border and Big Boulder Villages, whereas Klamath Shoal Midden had less specimens (Table 11).

TABLE 11. --Distribution of scraper types

Sites	A1a	A1b	A2a	A2b	A3a	A3b	B1a	B1b	B3a	B4	Ca	Cb	Da	F1a	F1b	F3a	F3b	F7a	F7b	Total
35KL16																				
H. P. 1	1	1	9	3	0	0	1	0	11	1	3	3	1	0	1	1	2	2	1	41
H. P. 2	2	0	1	0	0	0	0	0	3	0	0	0	1	0	0	0	0	0	0	7
H. P. 16	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2
35KL16 Total	3	1	10	4	0	0	1	0	14	1	3	3	2	0	1	1	2	3	1	50
35KL18																				
H. P. 3	0	2	0	0	0	1	1	0	3	2	0	4	0	2	0	0	0	1	0	16
H. P. 11	1	0	0	0	0	0	0	0	1	1	1	1	0	0	0	1	0	0	0	6
H. P. 13	0	0	2	0	1	1	0	0	5	0	4	0	1	0	2	0	2	0	3	21
Test Pit	0	1	1	2	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	8
Surface	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
35KL18 Total	1	3	4	2	1	2	1	1	11	3	7	5	1	2	2	1	2	1	3	53
35KL21																				
Midden Strata	2	0	3	1	0	0	0	0	12	1	3	1	0	0	0	1	1	4	0	29
Black Stratum	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1	0	0	0	4
Cemented Strata	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	0	1	0	4
Surface	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2
35KL21 Total	2	0	3	1	0	0	0	0	15	2	4	1	0	1	1	2	1	5	1	2
35KL16b	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
35KL19	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
35KL23	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	2
35KL25	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	3
Salt Cave Locality Total	6	4	19	8	1	2	2	1	42	7	16	9	4	3	4	4	5	9	5	150

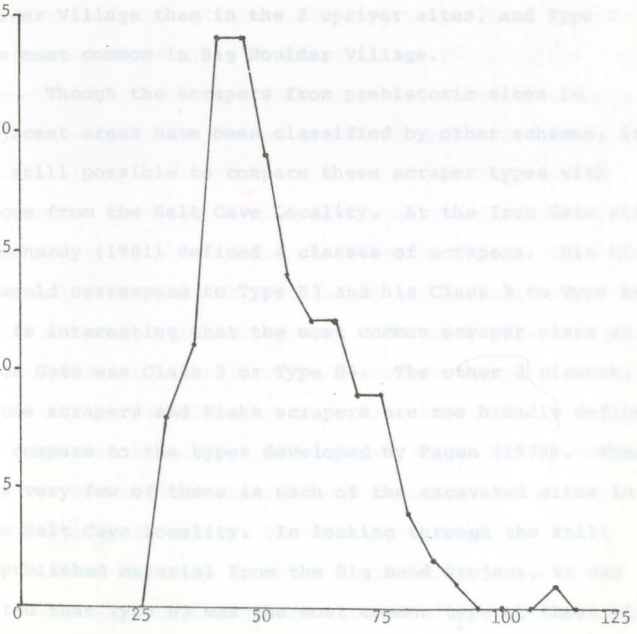
Obsidian was the most common material used for scrapers, with chert also often used. Jasper and quartz were rare. In Border Village the number of obsidian scrapers equals the number of scrapers made from cryptocrystalline materials (Table 5). In Big Boulder Village obsidian was overwhelmingly used for scrapers.

The scrapers were divided into 10 types based on the scheme used by Fagan (1974). In this typology the position of the working edge and its shape are the defining criteria. An attempt was made to further subdivide the types by the degree of edge angle as done by Bedwell (1973). Bedwell's data produced a bimodal distribution of edge angles, which he used to justify dividing scrapers into two basic categories. The scraper edge angles from the Salt Cave Locality did not produce a bimodal curve. Instead a skewed curve was produced, showing the majority of scraper edges to be between 40° and 50°, with a gradual lowering of frequency of edges from 55° to 90° (Figure 36). Because of this distribution, edge angles did not become an attribute used in the present typology of scrapers.

All scraper types which begin with the letter A are side scrapers. All of those which begin with B are end scrapers. The number following designates the shape of the working edge in profile. Those which begin with C are

FIGURE 36

SCRAPER EDGE ANGLES



oval scrapers, D are corner scrapers, and those which begin with F are combination scrapers. The attributes for each type are listed in Appendix E. The lower case letter "a" indicates edge angle < 59°, "b" indicates > 59°.

Most common was Type B3, equally abundant in all 3 excavated sites. Types A2 and C were also common, but their distribution was not equal. A2 was more common in Border Village than in the 2 upriver sites, and Type C was most common in Big Boulder Village.

Though the scrapers from prehistoric sites in adjacent areas have been classified by other schemes, it is still possible to compare these scraper types with those from the Salt Cave Locality. At the Iron Gate site Leonhardy (1961) defined 4 classes of scrapers. His Class 2 would correspond to Type B3 and his Class 3 to Type B4. It is interesting that the most common scraper class at Iron Gate was Class 3 or Type B4. The other 2 classes, Crude scrapers and Flake scrapers are too broadly defined to compare to the types developed by Fagan (1974). There are very few of these in each of the excavated sites in the Salt Cave Locality. In looking through the still unpublished material from the Big Bend Project, it was noted that Type B3 was the most common type at those sites.

Within the upper Rogue River area, work done by

Davis (1969, 1972, 1974) showed that sites along Elk Creek and Lost Creek have many scrapers, mostly end scrapers. Though his descriptive categories divide the end scrapers into snub-nose, keeled, crescentric and crude types, they would all fit into Type B3. He also noted the presence of side scrapers and ovoid scrapers, which correspond to Types A1-A3 and Type C.

From sites within the Klamath Basin, both end scrapers and side scrapers are reported. There is little in the way of detailed description for the scrapers from these sites. Nightfire Island has end scrapers on blades particularly during Phases 2 and 3 (Sampson n.d.). Rather thick, blocky end scrapers are present throughout the sequence. At Medicine Rock Cave both triangular and ovoid scrapers were recovered (Cressman 1956). The scrapers from Kawumkan Springs and the various houses excavated at Long, Lalo and Sprague River were classified as spall, flake or shaped, which makes them comparable only generally to Salt Cave Locality materials. It is noted that many of the over 2,000 scrapers from the Kawamkan Springs midden were small, thumb-nail size. This kind of scraper is very rare in the Salt Cave Locality.

Sites from the Northern Great Basin and the Columbia-Snake River Plateau show the same variety of scrapers as the Salt Cave Locality sites. It is obvious

that more work has gone into the description of scraper forms in these two areas. Aside from the end and side scrapers these sites have oval, corner and combination scrapers (Caldwell and Mallory 1967; Cressman 1942; Cole 1968; Cressman 1960). In those sites west and south of the Salt Cave Locality in Northern California, scrapers are classified or described only as end or side scrapers. It can only be assumed that there is some similarity between these scrapers and those from sites further east and north.

Generally, scraper forms are very wide spread and similar throughout the Pacific Coast Region. The only possible differences in distribution occurs with corner scrapers, which are reported for the Northern Great Basin and the Columbia-Snake River Plateau. They do not appear to be present in North-central and Northwestern California. Therefore, their presence at the Salt Cave Locality sites may be due to influence from the Northern Great Basin.

Drills and Gravers

Drills and Gravers are those tools with sharp projections which could be used to engrave, bore, drill, incise or score. Drills were separated from gravers by their diamond-shaped cross-sections, which contrast with the triangular, rectangular and oval cross-sections of

gravers. There was a total of 35 drills and 127 gravers from the sites in the Salt Cave Locality. Twice as many gravers and drills occurred in Big Boulder Village and Klamath Shoal Midden than in Border Village.

Obsidian was the most commonly used material for gravers, though cryptocrystallines were occasionally used. Drills in contrast at Border Village were all made of chert but two, there being one each of very fine grain basalt and of obsidian. At Border Village and Klamath Shoal Midden half the drills were chert and jasper and half were obsidian.

The drills were divided into 12 categories based on 2 criteria: 1) the shape of the drill base and 2) length of the bit. Gravers were divided into 20 categories based on 3 criteria: 1) the construction of the bit, 2) kind of point, and 3) the length of the bit.

All drills with expanding bases were categorized in group A. They were further divided by separating oval (A1) from angular (A2) shapes. Length of bits were divided into 3 groups: a) $<$ .5 mm long, b) .9 to 1.3 mm long, and c) $\geq$ 1.6 mm long. Most drills fell into Category A (Plate LIj, LIIa, c, f, m).

Category B comprised drills with key or T-shaped bases. The 3 length of bit categories were the same as for A (Plate LIa; LIId).

Category C comprised those drills that tapered outward slightly, giving a slight triangular shape to the whole drill. It also included the three bit length categories (Plate LIb, c, e, f, h; LIIb).

Category D were reworked projectile points (Plate LId; LIIe) and Category E were drills which had rounded bases or appeared to be leaf-shaped (Plate LIg).

Gravers were first subdivided into categories by bit construction. Category A had tapered bits, B had protruding bits, C had bits made from at least one natural edge and D had two or more bits. Within Categories A and B gravers were further divided into those with a sharp point (1) and those with a blunt point (2). Lastly these groups were divided on the basis of bit length. A distribution of bit length showed four separate peaks. These were the basis for the division: a) 0.1 to 0.3 mm, b) 0.4 to 0.7 mm, c) .8 to 1.2 mm, and d) > 1.5 mm. Graver categories and their attributes are given in Appendix G (Plates LIII, LIV, LV).

The drill categories were devised primarily on the basis of shape, which probably does not indicate functional differences. The graver categories in contrast, may have some relationship to function, but it would be necessary to do a microscopic analysis to pursue this hunch. There was no great difference between the graver

categories in each site. The only difference between the sites in drill distribution concerned Category B which was present at Big Boulder Village and Klamath Shoal Midden, but not at Border Village. Tables 12 and 13 give the distribution of drill and graver categories at each site.

Drill and graver typology have been developed for the reporting of most archaeological work in the Great Basin and the Columbia-Snake River Plateau. They have not been developed to the same extent in northern California or southern Oregon reports. However, plates and figures in most reports allowed comparisons with these areas as well.

Expanding base drills seem to be the most common type in the Salt Cave Locality and in all the cultural areas adjacent to the Salt Cave Locality, such as sites in the Northern Great Basin (O'Connell 1966; Cressman 1942, 1956) and at Sis-13 (Wallace and Taylor 1952), Hum-169 (Elsasser 1965) and at the Lost Creek sites (Davis 1968 and 1972). Drills with slightly triangular outlines and those reworked on projectile points are also found in sites within all the adjacent cultural areas. Only one drill type which occurs in the Salt Cave Locality, appears to be limited in distribution, the key or T-shaped base, Category Ba and Bc. These appear to be

TABLE 12. --Distribution of drills by class

Provinience	A1b	A1c	A2b	A2c	Ba	Bc	Ca	Cb	Ca	Db	Dc	E	Frag.	Total
35KL16														
Stratum III	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Stratum II	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Mixed Strata	1	0	1	2	0	0	0	0	0	0	0	0	0	4
H. P. 1 Total	2	0	1	2	0	0	0	0	1	0	0	0	0	6
H. P. 16 Total	0	0	0	0	0	0	0	0	0	0	0	0	1	1
35KL16 Total	2	0	1	2	0	0	0	0	1	0	0	0	1	7
35KL18														
H. P. Fill	1	1	1	0	0	0	1	1	0	0	0	1	0	6
H. P. 3 Total	1	1	1	0	0	0	1	1	0	0	0	1	0	6
H. P. Fill	0	0	0	0	0	1	0	0	0	0	0	0	1	2
Floor Fill	0	0	0	0	0	0	0	1	0	0	0	0	0	1
H. P. 11 Total	0	0	0	0	0	1	0	1	0	0	0	0	1	3
H. P. Fill	0	1	0	1	0	1	0	0	0	0	1	0	0	4
Floor Fill	0	0	0	0	0	0	0	1	0	0	0	0	1	2
H. P. 13 Total	0	1	0	1	0	1	0	1	0	0	1	0	1	6
35KL18 Total	1	2	1	1	0	2	1	3	0	0	1	1	2	15
35KL21														
Midden Strata	0	4	2	2	1	0	0	1	0	1	0	1	1	13
35KL21 Total	0	4	2	2	1	0	0	1	0	1	0	1	1	13
Total	3	6	4	5	1	2	1	4	1	1	1	2	4	35

TABLE 13. --Distribution of gravers by class

Provinience	A1a	A1b	A1c	A1d	A2a	A2b	A2c	A2d	B1a	B1b	B1c	B1d	B2a	B2b	B2c	B2d	Ca	Cb	Da	Db
35KL16																				
H. P. 1																				
Stratum V	0	1	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0
Stratum IV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
Stratum III	0	1	1	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	1	0
Stratum II	0	0	1	2	1	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0
Mixed Strata	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
H. P. 1 Total	0	3	2	2	1	0	1	1	2	0	1	0	1	1	1	3	0	1	1	0
H. P. 2																				
Stratum IV	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Stratum II	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mixed Strata	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0
H. P. 2 Total	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0
35KL16 Total 1:25	1	3	2	2	1	1	1	1	2	0	1	0	2	1	1	3	0	2	1	0
35KL18																				
H. P. 3																				
H. P. Fill	2	2	2	2	1	1	1	0	1	1	0	0	1	1	1	0	0	0	1	0
Floor Fill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
H. P. 3 Total	2	2	2	2	1	1	1	0	1	1	0	0	1	1	1	0	0	0	2	0
H. P. 11																				
H. P. Fill	0	0	1	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0
Floor Fill	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
H. P. 11 Total	1	0	1	0	0	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0
H. P. 13																				
H. P Fill	2	4	1	0	0	1	1	1	1	0	0	1	1	0	0	1	0	0	0	1
Floor Fill	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
H. P. 13 Total	2	4	1	0	0	1	2	1	1	0	0	1	1	0	0	1	0	0	1	1
Test Pit																				
Strata A&B	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Strata B&C	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Stratum C	0	0	0	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Test Pit Total	2	0	1	1	0	2	0	1	0	0	0	0	1	0	0	0	0	0	0	0
35KL18 Total	7	6	5	3	1	4	5	2	2	1	0	1	3	1	3	1	0	0	3	1

TABLE 13. --Continued

Provinience	A1a	A1b	A1c	A1d	A2a	A2b	A2c	A2d	B1a	B1b	B1c	B1d	B2a	B2b	B2c	B2d	Ca	Cb	Da	Db
35KL19	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35KL20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
35KL22	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
35KL25	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35KL21																				
Strata III	1	7	2	5	2	2	1	0	6	1	2	0	2	1	0	2	1	3	3	0
Black Stratum	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Stratum II	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Surface	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	1	0	0
35KL21 Total	1	9	2	5	2	2	1	0	8	2	2	0	3	2	0	2	1	4	3	0
Salt Cave Locality Total	9	18	10	11	4	7	7	3	12	3	3	1	8	5	4	6	1	6	8	1

limited to sites in the Columbia-Snake River Plateau and the Northern Great Basin (Cole 1968, Caldwell and Mallory 1967, Bonnichson 1964).

The graver categories were modified from a scheme used first by Cole (1954) at the Dallas site. The great variety of gravers there is repeated at the Salt Cave Locality. It also seems to be repeated in almost every archaeological site in surrounding cultural areas, except on the Northwest California coast, where gravers and drills are less frequent.

Conclusions: Drills and Gravers

The distribution of gravers and drills within the Salt Cave Locality is quite uniform. However, a few minor differences conform to relationships already indicated by other tool types. The presence of the key or T-shaped drill at the upriver sites adds to the evidence tying these sites more closely to the Northern Great Basin than to Central California, and the lack of this type of at Border Village is expected since the site seems to be more closely tied to northern California and the Rogue River Valley.

The presence of a greater number of drills and gravers at Klamath Shoal Midden and within the house fills of Big Boulder Village than at Border Village or the house

floors of Big Boulder Village may indicate a greater use of stone piercing tools prior to the late prehistoric period in the area. Or it may indicate that the use of stone piercing tools was rarely carried out within occupied houses. The later hypothesis might be supported if excavation within the midden at Border Village produced a larger number of drills and gravers than did the house pit excavations.

The obvious preference for cryptocrystalline material for drills at Border Village and their equal popularity with obsidian at Big Boulder Village and Klamath Shoal Midden is probably related to the use of these tools. Drills are used with a more direct pressure at a steeper angle to the working surface than are gravers. The greater stress on a drill point is better endured by cryptocrystalline material, which is less brittle than obsidian.

Knives

An artifact was considered to be a knife if it had a sharp cutting edge, with an edge angle of less than 30°. Most edges were bifacially worked, though a few unifacially worked faces were present. Of the 293 knives, only 50 were unshaped. There were roughly an equal number of knives in the 3 extensively excavated sites (Table 14).

TABLE 14. --Distribution of knife types

Provinience	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7	Type 8	Type 9	Type Unknown	Total
35KL16 H. P. 1											
Stratum VI	1	0	0	0	0	0	1	2	0	0	4
Stratum V	3	0	0	0	1	1	2	0	0	2	9
Stratum IV	2	0	0	0	1	3	0	0	0	3	9
Stratum III	0	0	0	0	0	0	0	0	0	1	1
Stratum II	3	1	0	0	6	1	2	4	2	4	23
Mixed Strata	4	0	1	1	3	0	1	1	4	8	23
H. P. 1 Total	13	1	1	1	11	5	6	7	6	18	69
H. P. 2											
Stratum IV	0	0	0	1	0	0	1	0	0	4	6
Stratum II	0	0	0	0	0	0	0	0	0	1	1
Mixed Strata	2	1	1	0	2	3	0	0	1	1	11
H. P. 2 Total	2	1	1	1	2	3	1	0	1	6	18
H. P. 16											
Stratum IV	0	0	0	0	1	0	0	0	0	4	5
Mixed Strata	0	0	0	0	0	0	0	0	0	1	1
H. P. 16 Total	0	0	0	0	1	0	0	0	0	5	6
Surface	1	0	0	0	0	0	0	0	0	2	3
35KL16 Total	16	2	2	2	14	8	7	7	7	31	96
35KL18 H. P. 3											
H. P. Fill	3	1	0	0	7	3	0	1	2	15	32
Floor Fill	0	0	0	0	0	0	0	0	0	3	3
H. P. 3 Total	3	1	0	0	7	3	0	1	2	18	25
H. P. 11											
H. P. Fill	5	2	0	0	1	0	0	0	1	7	16
Floor Fill	0	0	0	0	1	0	0	0	0	2	3
H. P. 11 Total	5	2	0	0	2	0	0	0	1	9	19
H. P. 13											
H. P. Fill	6	1	0	2	2	1	1	0	5	14	32
Floor Fill	1	1	0	0	1	1	1	0	1	3	9
H. P. 13 Total	7	2	0	2	3	2	2	0	6	17	41

TABLE 14. --Continued

Provinence	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7	Type 8	Type 9	Type Unknown	Total
35KL18 Test Pit											
Stratum A	1	0	0	0	1	0	0	0	0	0	2
Stratum B	0	0	0	0	0	0	0	0	0	2	2
Stratum B&C	0	0	0	0	0	0	0	0	0	1	1
Stratum C	0	0	0	0	1	1	0	0	0	2	4
Test Pit Total	1	0	0	0	2	1	0	0	0	5	9
Surface	0	0	0	0	0	0	1	0	0	0	1
35KL18 Total	16	5	0	2	14	6	3	1	9	49	105
35KL21											
Stratum III	2	2	15	0	6	3	3	7	4	16	58
Black Stratum	0	0	0	0	0	0	0	1	0	1	2
Stratum II	0	0	0	2	1	0	0	1	0	6	10
Stratum I	0	0	0	0	0	0	0	0	0	1	1
Mixed Strata	0	0	0	0	0	0	0	1	0	1	2
Surface	0	1	4	0	0	1	2	0	0	3	11
35KL21 Total	2	3	19	2	7	4	5	10	4	28	84
35KL16b	0	0	0	0	1	0	0	0	0	0	1
35KL19	0	0	0	0	0	1	0	0	0	0	1
35KL20	0	0	0	0	0	0	0	0	0	1	1
35KL22	0	0	0	0	0	0	0	0	1	0	1
35KL23	0	0	0	0	0	0	0	0	0	1	1
35KL25	0	0	0	0	0	0	0	0	0	2	2
35KL26	0	0	0	0	0	1	0	0	0	0	1
Salt Cave Locality Total	34	10	21	6	36	20	15	18	21	112	293

Both obsidian and various cryptocrystallines were used to make knives, but the distribution of knives made of these materials was not the same in the 3 sites. Obsidian and cryptocrystalline were equally important as a material for knives in the village sites, while in contrast, at Klamath Shoal Midden obsidian was overwhelmingly the preferred material for knives. The difference can not be explained by a lack of cryptocrystalline material in the older strata of Klamath Shoal Midden or Big Boulder Village; both debitage and cores of cruptocrystalline material were common in the older strata. Possibly, the ease of resharpening obsidian knives lead to a preference over cryptocrystalline, which is not as easily flaked.

Knife Typology

Of the 293 knives, 181 were complete enough to classify. These were divided into 9 types.

Type 1 (Plate LVIIa-c, m, n, r; LIXa, p)

Knives of this type were made of vein chalcedony or obsidian. They were bifacially flaked on the edges only. Whole specimens were triangular in shape. Most were made from quartz veins, a few were made from veins of chert or obsidian. 34 specimens.

Type 2 (Plate LVIs, y-dd)

These knives were stemmed bifaces. A few may have been reworked projectile points. 10 specimens.

Type 3 (Plate LVIa-c; LVIIIa-c, i, q, r)

The knives of this type were leaf-shaped and bifacially worked. There were a few large, finely made specimens which may be examples of ceremonial blades, though they are not constricted in the center. Most are small, rather crudely worked specimens. 21 specimens.

Type 4 (Plate LVId-g, x)

These knives were leaf-shaped but unifacially worked. Most were on blades. 6 specimens.

Type 5 (Plate LVIh, i, l, u, w; LVIIf, q; LVIIId, e, j, l-n; LIXc, d, g, o)

These were triangularly shaped knives with straight sides. They were commonly of jasper and chert at Border Village. They ranged in length from 2.0 to 8.2 cm, but most specimens were between 3.0 and 4.0 cm in length. 36 specimens.

Type 6 (Plate LVIm, p. t; LVIId, e, i, s; LVIIIg; LIX)

Knives of this type are triangular with convex edges.

They are most frequently made of obsidian. These range in length from 2.0 to 5.2 cm. 20 specimens.

Type 7 (Plate LVIk, q, r; LVIIk; LVIIIo, LIXh, m)

These are ovate in shape, either bifacially or unifacially worked. Most are made of obsidian, but there are a few chert and jasper examples. Most are fairly small knives between 2.0 and 3.0 cm in diameter. 15 specimens.

Type 8 (Plate LVIo; LVIIl, o; LVIIIf; LIXf, l)

These knives are either rectangular or trapezoidal in shape. They may be either bifacially or unifacially worked. Obsidian is the most common material though there are several of jasper and chert. 18 specimens.

Type 9 (Plate LVIj, v; LVIIg, h, j, p; LVIIIk, p, s; LIXb, c, i, j)

These are knives made on flakes or blades, with only the edge modified. There are both bifacially and unifacially worked samples. Most are made of cryptocrystalline materials, though there are several of obsidian. Most are medium to large in size, over 3.5 cm in length. 21 specimens.

There is some variation in the distribution of

these types between the 3 major sites. Type 1 is found in equal numbers in Border Village and Big Boulder Village, but is very scarce in Klamath Shoal Midden. This difference can most easily be explained by the dates of the house pit occupations and the probably much earlier dates of the Midden Stratum at Klamath Shoal Midden. The use of vein chalcedony for knives may be fairly recent, post A.D. 1000. The distribution pattern of Types 5 and 9 are similar, though Klamath Shoal Midden has a few more specimens of these 2 types.

Type 3's distribution pattern is just the opposite of Type 1's distribution. It was fairly common in Klamath Shoal Midden but rate or absent in the 2 house pit sites. It may be a type relatively rare in more recent times.

Comparisons: Knives

Several of the knife types from the Salt Cave Locality sites can be compared to knives found in Archaeological sites in adjacent areas. The vein chalcedony knife, Type 1, is common in all the sites excavated in the upper Rogue River Valley (Davis 1968a, 1968b, 1970, 1974). It was the most common type at Iron Gate (Leonhardy 1961) and was apparently present in all phases of Nightfire Island (Sampson, n.d.), though those tabular knives may not be of vein chalcedony. No such knives

were found at Kawumkan Springs (Cressman 1956). The only archaeological occurrence of this type outside the upper courses of the Rogue and Klamath Rivers, occurred at the Hells Canyon sites (Caldwell and Mallory 1967); those knives were described as plate chalcedony.

Most of the other knife types are found in various sites in differing combinations. Stemmed knives, Type 2, were recovered from Surprise Valley (O'Connell 1966), the Big Bend Project sites (Newman and Cressman 1959), Wildcat Canyon (Cole 1968), and The Dalles (Cole 1954). Leaf-shaped knives are quite common in the area around Salt Cave. They have been found at Kawumkan Springs (Cressman 1956) where they were large, bipointed forms, Hells Canyon (Caldwell and Mallory 1967), Surprise Valley (O'Connell 1966), Rose Spring Site (Lanning 1963), Wildcat Canyon (Cole 1968), The Dalles (Cole 1954), Hum-118 and 169 (Elsasser 1965), Rattlesnake Canyon (Bonnischsen 1964), and some of the upper Rogue River sites (Davis 1974). Knives made on flakes and blades, Type 9, are common in too many areas to make comparison meaningful. The same is true of triangular, ovate and rectangular knives.

Conclusions: Knives

The rather large number of knives present in all

the extensively excavated sites of the Salt Cave Locality indicates a reliance on hunting and fishing. Both activities require knives to process the meat and skins of the animals caught and killed. The high number of knives correspond to the high number of projectile points in all sites and the rather frequent occurrence of bone tools associated with fishing.

The vein chalcedony knives were very common in the more recent occupations of the sites in this area, linking them to the sites on the Rogue River, directly north of the Salt Cave Locality. The remainder of the knife types point to possible influence from the Northern Great Basin and Northwest and North-central California. The large ceremonial blades with constricted centers associated with the California-Oregon coast are not present, but a few large bipointed bifacially worked knives were recovered. These are not uncommon in the Klamath Basin and Northeastern California.

Miscellaneous Tool Fragments

There were a large number of bifacially worked pieces, which were too fragmentary to categorize. Some may be unfinished tools and others just fragments. There were 173 such pieces from Border Village, 180 from Big Boulder Village, 95 from Klamath Shoal Midden and 22 from

the surface of the tested and unexcavated sites. The vast majority from all sites were obsidian.

Choppers, Picks and Hammerstones
(Plate LX)

This category is made up of heavy stone tools. All have flaked and battered working surfaces. All but 2 of the specimens come from the surface of the Midden Stratum of Klamath Shoal Midden. There is one hammerstone from the surface of 35 KL 23 and a possible pick from the surface of 35 KL 24.

There are 4 heavy choppers, all from Klamath Shoal Midden. They are made from a fine grain basalt. The edge of the tool is bifacially flaked with one edge unworked and flat, presumably for a handhold. One specimen appears to be a core, which was used as a chopper. The other 3 are rather flat pieces of basalt with only the working edges flaked (Plate LXb).

There are 5 hammerstones. Four are from Klamath Shoal Midden and are old cores with heavily battered edges and surfaces; 3 are fine grain basalt and one is of chert. One of quartzite is from 35 KL 23. It has a few flakes removed, which may have occurred as a result of use.

The possible pick is made of chert (Plate LXa). It was found under guano at Salt Cave. All the edges are

smoothed and rounded, presumably from water washing over the tool when the river was high. It is also possible that the pick is an ecofact. The presence of the core hammerstones and choppers only at Klamath Shoal Midden would seem to indicate a temporal difference in the use of heavy choppers in the Salt Cave Locality. It also seems to indicate that ground stone hammerstones were more common in recent times. The core hammerstones seem to date to a period prior to A.D. 900.

Quartz Crystals

There were 2 quartz crystals recovered from House Pit 1 at Border Village. One complete specimen was found in Stratum VI above the last occupation level. The other was broken. It was found in Stratum IV on or just above Floor 3. No other crystals were found at Border Village or at the other sites in the Salt Cave Locality.

Quartz crystals were associated with shamanistic paraphernalia in Northern California. They were sometimes attached to wands and used in healing rituals (Elsasser 1961). They are not limited to any particular group or tribe, but are valued by many different groups such as the Achomawi-Astsugewi, Shasta and Yuki (Garth 1953; Dixon 1907, Kroeber 1925).

Conclusions

The various categories of flaked stone tools support the hypothesis proposed earlier, that Klamath Shoal Midden and Big Boulder Village were more influenced by Great Basin culture than Border Village. The stronger influence of Great Basin culture on the 2 upriver sites is reflected by the projectile point types present in these sites throughout their occupation, as well as the presence of other particular types of drills, scrapers and knives. The lack of or lower frequency of these same types at the downriver sites show it was more closely tied culturally to another cultural area.

Specifically, the following distributions link Border Village with cultural areas west of the Cascades. First, referring to Table 4, a much heavier use of chert and jasper at Border Village than at the upriver sites is evident. These materials, particularly jasper, are commonly used for most types of artifacts in archaeological sites west of the Cascades. Though they are not unknown in sites from the Northern Great Basin, their frequency is always much lower. Both jasper and chert are easily attainable in areas west of the Cascades, whereas material of volcanic origins is more common in the Great Basin. Drills as a category were the only exception to this trend. Apparently, the greater strength of chert was preferred

for this one functional tool category in all sites.

The very high frequency of Type 1, Gunther Barbed, projectile points at Border Village also links it culturally to the area west of the Cascades. The few points resembling Borax Lake Stemmed points, Class 28, suggest that the site was culturally linked to North-central California for at least 3,000 years, based on the age of the Northern Milling Stone Complex, which had the same point type included in its assemblage. The difference in type distributions of used flakes, gravers, scrapers, and knives is less clearly a reflection of cultural differences between the upriver sites and Border Village. The lack of recorded data on scrapers, used flakes, knives, drills and gravers from archaeological sites in North-central California and Southwest Oregon makes comparisons difficult and uncertain.

The data tie the 2 upriver sites, Big Boulder Village and Klamath Shoal Midden, to the Northern Great Basin. Not only do the presence of particular projectile point types (i.e., Gunther stemmed, the Rose Spring Series, the Elk Series and Desert Side-notched) in these sites indicate a strong Great Basin influence but the presence of some other tool categories' types reflect the same cultural ties. The presence of the key-shaped drill, Category Ba and Bc reflect the cultural ties of the

upriver sites to both the Plateau and the Northern Great Basin. This same relationship is reflected by the presence of corner scrapers in the Salt Cave Locality.

There are also some types within the tool categories which show the influence of areas both west and east of the Cascades on all 3 sites. These often reflect change through time as well. The most striking instance is the high frequency of Gunther Barbed, Type 1, points in all sites. This clearly shows influence of the North-central California-Southwestern Oregon culture area on the upper Klamath River within the last 600 years. The same is true of certain Great Basin point types which are present in the upper floors of the house pits in Border Village. The presence of Rose Spring Series and Desert Side-Notched points on these floors shows that cultural traits from the Northern Great Basin were spreading down the Klamath River. The presence of Northern Side-Notched points at Border Village indicates moreover that such influence was not restricted to the most recent prehistoric period. The presence of Gold Hill Leaf points, Type 22, at Klamath Shoal Midden indicate a period of influence at that site and the area immediately north of the Klamath River by the culture of the Rogue River area possibly sometime prior to A.D. 900.

There are also differences in tool type distribution

which are best explained as change through time. These include the prevalence of excurvate edge unifacially flaked tools in the recent prehistoric period, which had apparently replaced a higher use of straight edge unifacially flaked tools in an earlier period. The Type 1 knives, those of vein chalcedony, apparently are limited to the recent prehistoric period. It is very common in both village sites, and almost absent from the older midden site. It is also the one flaked stone artifact type that is strongly represented in Rogue River sites and sites from the southern Klamath Basin. Type 3 of the knives has just the opposite distribution, with almost all the examples being from Klamath Shoal Midden. A similar distribution is followed by the Category B1 gravers.

Looking at the flaked stone artifacts as a whole, their use apparently changed very little through time in the Salt Cave Locality. The distribution of some stylistic types change through time, but not the functional categories. The only indication of some slight change in flaked stone is the higher incidence of gravers in Klamath Shoal Midden. It is possible that piercing or boring was done more frequently with flaked stone in the early occupation of the Salt Cave Locality, while a use of bone piercing tools increased at the expense of stone gravers in the later prehistoric period.

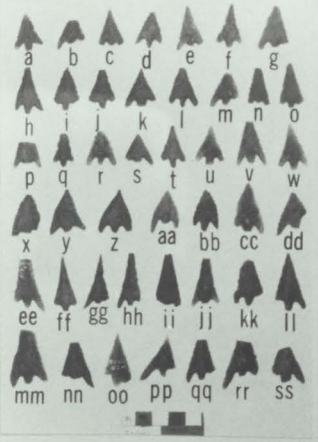


Plate XXVI Projectile Points

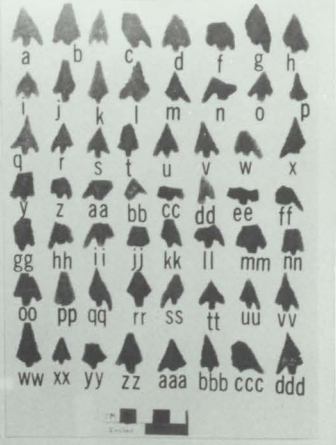


Plate XXVII Projectile Points

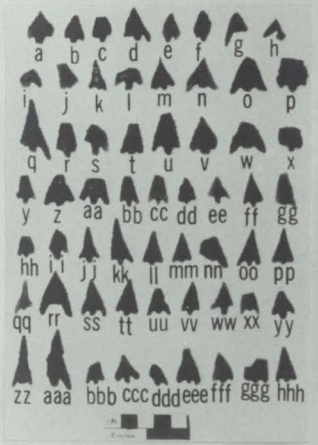
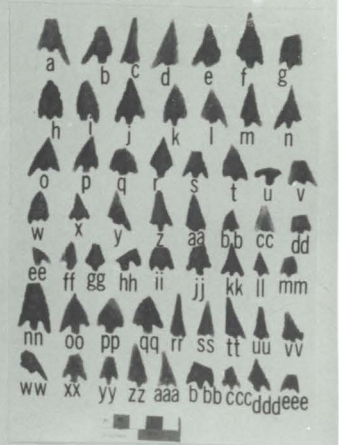


Plate XXVIII Projectile Points



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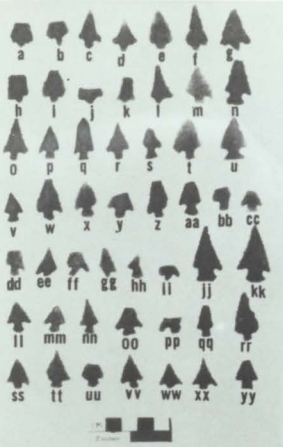


Plate XXX Projectile Points

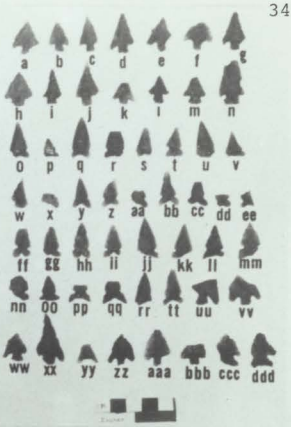
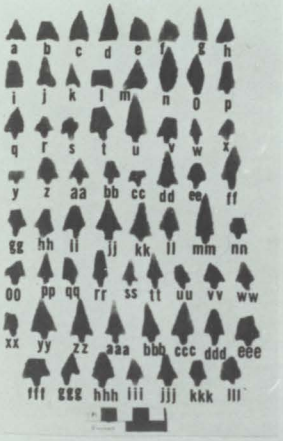


Plate XXXI Projectile Points



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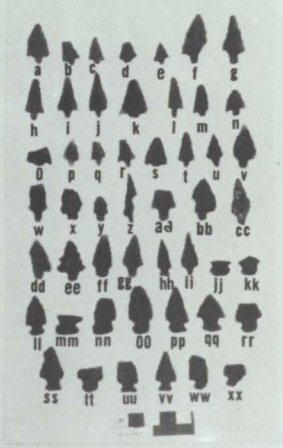

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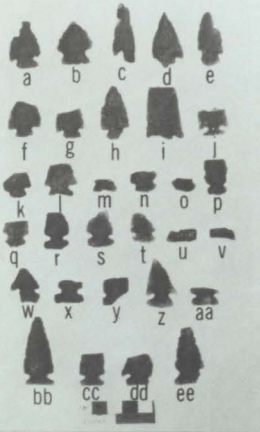

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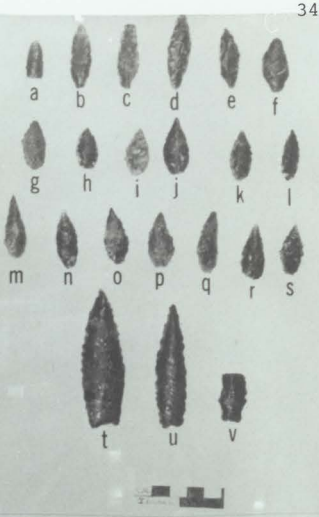

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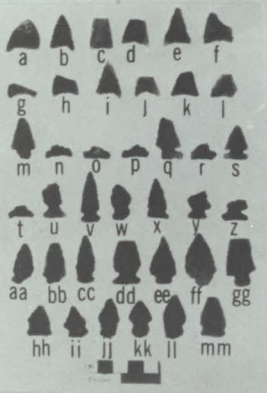


Plate XXXVI Projectile Points

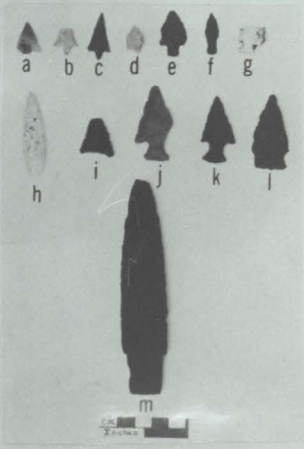


Plate XXXVII Projectile Points

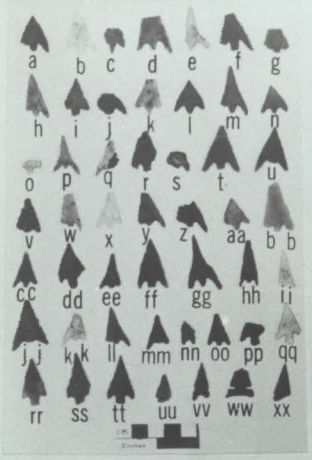


Plate XXXVIII Projectile Points

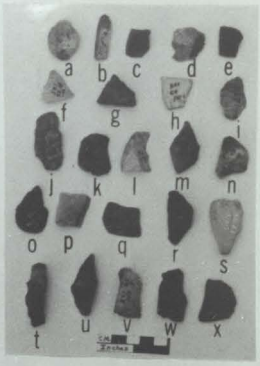


Plate XXXIX Unifacial Flaked Artifacts

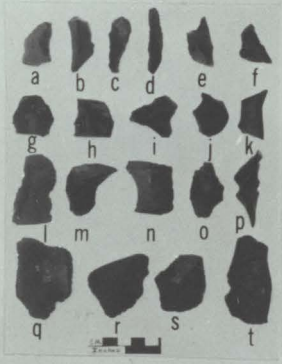


Plate XL Unifacial Flaked Artifacts

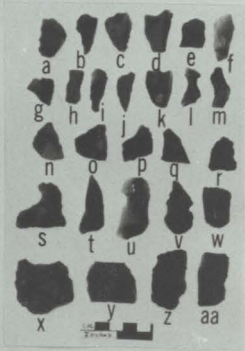
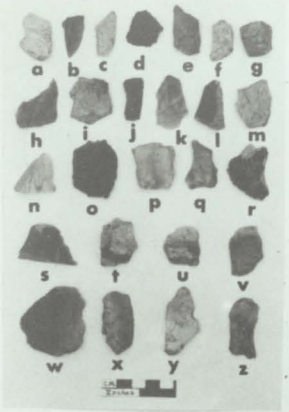


Plate XLI Unifacial Flaked Artifacts



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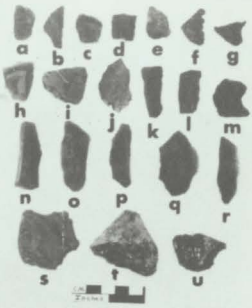

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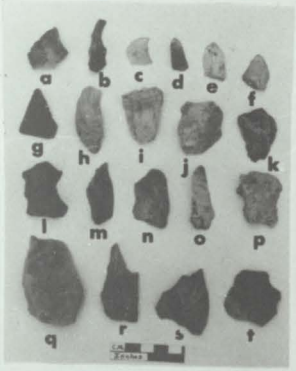


Plate XLIV Unifacial Flaked Artifacts

Plate XLV Unifacial Flaked Artifacts

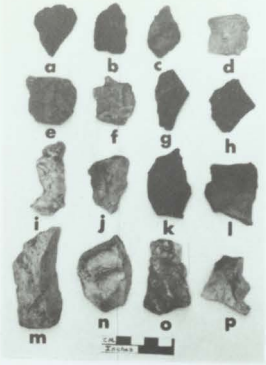


Plate XLVI Unifacial Flaked Artifacts

Plate XLVII Scrapers

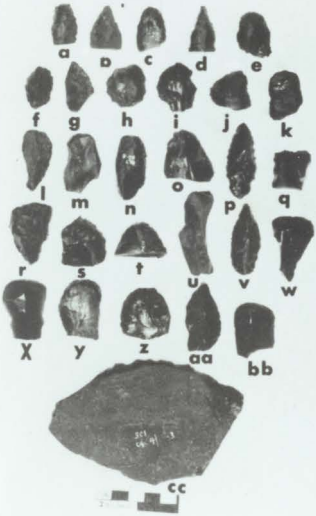


Plate XLVIII Scrapers

Plate XLIX Scrapers

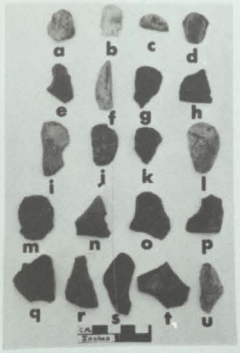


Plate L Scrapers

Plate LI Drills

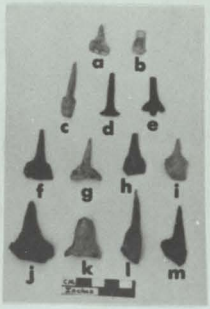


Plate LII Drills

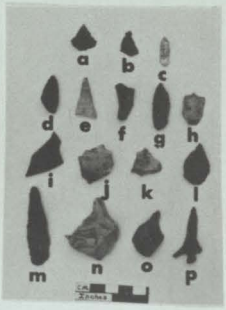
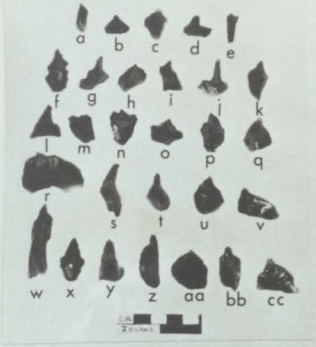


Plate LIII Gravers



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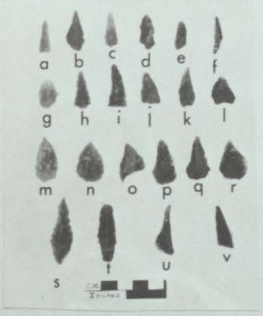

Plate LV Gravers

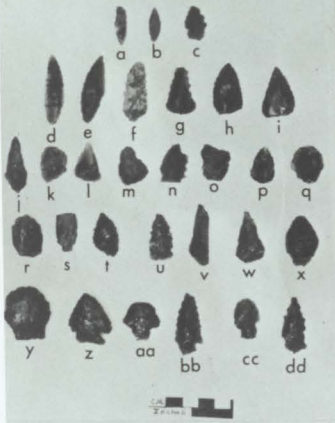

Plate LVI Knives

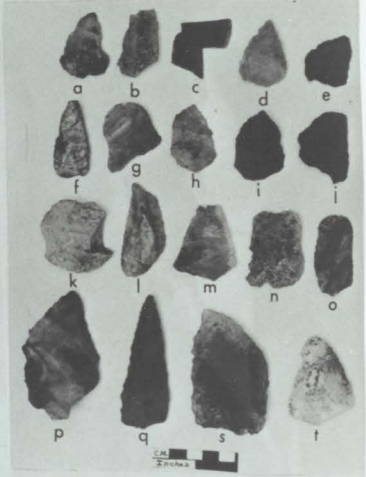

Plate LVII Knives

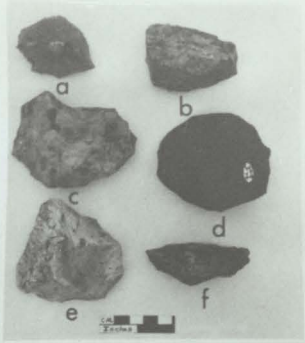

Plate LXII Cores

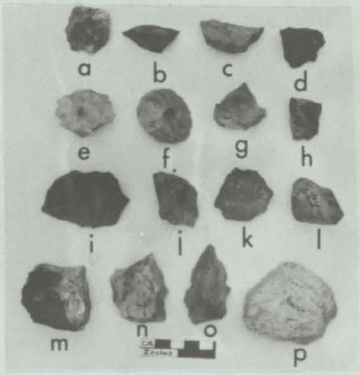

Plate LXIII Cores

CHAPTER IX

DICUSSION AND CONCLUSIONS

The archaeology of the Salt Cave Locality gives an overall impression of uniformity, both temporally and spatially. However, close examination of the archaeological sites and the data they contained modifies this impression; the locality shows influence from two or three major cultural areas and in most recent time appears to have been utilized simultaneously by two or three ethnographic groups. The presence of both uniformity and diversity are partly due to particular characteristics of the environment and the geographic location of the area.

The Salt Cave Locality is part of the Cascade Range, narrowly pinched between the Great Basin and the Klamath Mountains. This places the study area adjacent to different environments, which have been linked to different culture areas. Therefore, its geographical position fosters cultural variety. The uniformity in the archaeological data is molded by both the environment and a cultural factor. The cultural factor is simply that all human groups within or adjacent to the Salt Cave Locality were hunters and gatherers, therefore their basic life

style, though often originally adapted to different environments, is similar. The environment supports uniformity by providing varied resources, with no overwhelming abundance of any one resource. The presence of the varied resources is due to the location of the Klamath River in a low section of the Cascade Range. As explained in Chapter II, the presence of the rather steep, narrow canyon and the river provide two interlocking life zones and several microenvironments within a small area.

Because of its geographical position the Salt Cave Locality has probably always been a fringe area for cultural groups. Therefore, though occupation has occasionally been heavy, there were undoubtedly periods when the area was used neither for semi-permanent nor permanent settlements. The archaeological data are as yet too incomplete to prove this contention; however, apparent abandonment of the area at some time previous to white contact supports it. There was no real use of the Salt Cave Locality in historic and probably protohistoric times, when it was used merely by groups in transit, either for trade or warfare. The only indication of recent aboriginal use of the area is an ethnographic reference to a joint Shasta and Klamath fishing site just below Klamath Canyon (Spier 1930). This may be Klamath Shoal Midden, 35 KL 21.

Three types of change have occurred in the Salt Cave Locality through the 7,000 years of aboriginal use. There are changes associated with technological development, such as the shift from atlatl to bow and arrow, and changes in settlement type, such as the shift from open camps to semi-permanent or permanent house pit villages. The other type of change is in the extent of cultural influence from adjacent areas, such as the Klamath Basin.

Cultural Uniformity in Subsistence and Settlements Patterns

Subsistence

The cultural uniformity of the Salt Cave Locality is most clearly seen in the subsistence pattern and the settlement pattern of the archaeological populations. The subsistence pattern includes hunting, fishing and gathering. Evidence for these activities includes both artifactual and non-artifactual remains from all 3 excavated sites. The significance of each of these activities can be inferred from the quantity and quality of data in each site, as well as from ethnographic analogy, using data from adjacent groups. These techniques allow for a rather complete picture of subsistence activities in the Salt Cave Locality.

The evidence for hunting is the most complete including both artifacts and faunal remains. If quantity of remains alone were used as the main criterion of importance, hunting would appear as the dominant activity. However, the open condition of the sites, the inconsistent excavation methods used, and the low degree of preservation of plant remains preclude this conclusion. There is no doubt, however, that hunting was important to the inhabitants of the Salt Cave Locality throughout its occupation.

The number of individual animals recovered from the Salt Cave Locality sites is listed in Appendix B, Tables 19-21. Small, medium and large animals were hunted. The bones of deer (Odocoileus sp.) were the most frequently recovered of the large animals. Other species of large mammals were present, but the frequency is low (Appendix B). The importance of deer seems about the same in all 3 excavated sites; deer is always represented by the largest number of individuals. It is also the large animal most frequently represented within individual strata and houses of each site. There were several different medium-sized animals hunted, with no single species seemingly more important than any other. The fur-bearing mustelids are represented by the greatest variety of species among the medium-size animals hunted. The two

most frequently recovered small animals were turtle (Clemmys marmorata) and ground squirrel (Citellus beecheyi). The frequency of turtle remains is more or less uniform in all 3 sites, but the number of ground squirrels varies greatly within sites. At the Klamath Shoal Midden ground squirrel is the most frequently encountered species within the middle excavation units in both Strata II and III, but it is much less frequent in the deposits at the western and eastern edge of the site. It is possible that the concentration of ground squirrel remains is not due to hunting but to the natural activities of ground squirrels within the midden during periods of human abandonment. However, some of the bones are charred, leading to the conclusion that they were used in the context of human activity.

The bones of birds indicate that they, too, were hunted. The number of bird bones within all 3 sites is small, indicating they were not commonly taken. However, bird bone is fragile and likely to be broken up into unidentifiable pieces in archaeological sites. Therefore, the small number of identifiable bird bones may be misleading.

It is difficult to prove from the archaeological data the use of each species hunted, but the location and condition of the faunal remains do give some indications.

The following conditins imply that a particular species was used as a food source: 1) charred or burned bone, usually only partly burned, 2) long bones split and broken-up, and 3) cut-marks and chopping marks near or at the joints. If an animal is hunted only for its skin and/or oil, the bones are likely to remain whole and unburned. The only cut marks expected would be those needed for skinning and would most likely be found on the lower leg bones: carpals, tarsals, distal tibia and distal radius, and perhaps on the mandible and skull (Frison 1970). By adopting this set of assumptions about the condition of animal bone, it is possible to tentatively suggest the use of the species present in the Salt Cave Locality sites. Ethnographic evidence for the general region, and the Klamath, Modoc and Shasta specifically, further support these statements.

As stated earlier, probably the single most important food mammal of all 3 sites was deer (Odocoileus sp.). The deer bones from the sites were always broken-up and split. They often had chopping or cut marks and many pieces were partly burned. This is also true of other ungulate bones found at the sites, including bones of elk, big horn sheep, and antelope. Ungulate bones were also used as a source of raw material for making tools. The great majority of bone tools were made from

deer bone, as reported in Chapter VI. The antler of both the deer and elk were used as raw material for spoons, wedges and chisels. Ethnographic information on Klamath, Modoc and Shasta confirm these uses and adds others, the evidence for which is rarely if ever found archaeologically. It is reported ethnographically that deer bone was ground up into meal and made into cakes to be cooked and eaten, often in soup (Holt 1947), by the Klamath, Modoc and Shasta (Voegelin 1942, Dixon 1907 and Holt 1947). The skins of deer, particularly, were tanned for use as clothing. Rawhide was used for many purposes, particularly by the Shasta. Sinew was also an important resource taken from the deer carcass. Elk teeth were used for necklaces by all three groups, and the Shasta used elk hide for armour.

Human use of the felids, canids and mustelids present in the sites is less clear from the archaeological evidence. This is perhaps due to the small sample of bone from the species represented. Generally, the mustelid bone is broken-up and charred much like the bones of ungulates, and this is true also of the bones of raccoon. Except for lynx and fox, the bones of the canids and felids are not often broken or burned. It seems that mustelids, raccoon, fox and lynx were probably hunted for skins, oil and food, whereas the larger felids and canids

were hunted only for their skins. Aside from meat and skins these animals also were used for making bone implements and ornaments. Cut limb bones of a candid and a mustelid indicate they were the source of thick bone beads such as those found at House Pit 1 at Border Village. Ethnographically, very few of these animals are mentioned as food sources, most, such as the otter, were taken for skins and oil only. Either there has been a change over time in attitudes toward eating mustelids, or the ethnographic information is not accurate. Some hint of the latter is suggested by the contradiction between Dixon (1909), Voegelin (1942) and Holt (1947) in regard to the eating of felids. Holt reports the Shasta did not eat felid meat, but used cats for fur and oil, while Voegelin and Dixon report that the Shasta ate both puma and wildcat.

Though there are many bones of smaller mammals present in these sites, it is very difficult to determine if they were used for food. The rabbits and larger rodents such as the beaver, marmot and porcupine were clearly a food source, because their bones were charred and broken. Of the smaller rodents, the bones of gound squirrels (Citellis), squirrels (Sciurus), and woodrats (Neotoma) are sometimes broken-up and charred as if used for food. However, many specimens are whole, and some are almost

completely articulated, leading to the conclusion that the animals died on the site in their burrows. Most of the small rodents thus could be in the sites because of their own activities and not because of human action. However, ethnographic reports indicate the Shasta used ground squirrels and tree squirrels for food, often roasting them whole with the skins on. This sort of cooking would tend to leave bones with no real evidence of food use, and the rather heavy concentration of Citellus and Sciurus bones in the Klamath Shoal Midden may be an example of this type of activity.

The bird and turtle bones from the sites are almost all broken and charred, indicating their use as food. Bird bone was also a source for ornaments. There are several decorated pieces of bird bone, as well as a bird bone whistle. Though there is no archaeological evidence of the use of feathers, ethnographic material on the Shasta indicates that many species of large and medium-sized birds, such as woodpeckers and eagles, were used only for their feathers (Voegelin 1942).

Faunal remains do not show direct evidence of the methods of taking game. Hunting with either bow and arrow or atlatl and dart would seem to have been the most common method, as suggested by the large number of both kinds of projectile points in each site. It is likely

that small mammals, turtles, and birds were snared, though there is no direct evidence for it.

The condition of the faunal remains, as well as the stone tools give some indication of how animals were prepared after killing. Cut marks on the bones of many of the larger animals indicate how they were butchered. Cut and chop marks on scapulas, humerii, pelvic bones and femora indicate that the fore and hind quarters were removed from the torso. Some of the medium-sized animals also show the same basic patterning of butchering. The small rodents and rabbits often show bone breakage, but not in a uniform manner. Turtle carapaces and plastrons were broken apart at their juncture.

Long bones from all the medium and large mammals were broken, often into many pieces. This indicates a possible use of marrow for food. Some bones are charred, but many are not. Since the cooking of meat over an open fire often chars the bone, it seems likely that the meat was often cut from the bone and cooked in containers. There are numerous implements which could have served for cutting up meat in all the sites. Used flakes and shaped knives are very common, and some of these implements undoubtedly were used for cutting up meat.

The processing of animal skins for clothing and decoration is indicated by the presence of certain tools.

All sites had some scrapers, which may have been used to prepare skins, and many of the bone tools also are similar to tools known ethnographically to have been used in the preparation of skins. Among most tribes, deer skins were the major source of clothing, although the pelts of canids, mustelids and rabbits were important as outer garments for winter dress. Among the Shasta, fur pelts from various animals were a necessary part of a shaman's equipment (Dixon 1909).

Fishing was another major subsistence activity. The number of fish bones is small in all 3 sites, but the importance of fish is reflected in the number of harpoon parts and fishhooks recovered. There are two possible factors that may have skewed the number of fish bones in each site. First, the excavation technique, which used only 1/4 inch mesh screens, would allow most fish bone to slip through and be lost. Second, it is possible that the technique for catching and preparing fish cut down on the number of fish bones preserved in a site.

Ethnographically the preparation of salmon and steelhead was not done at the villages, but at the fishing spots. Therefore, bones of these 2 species would rarely be carried to the house area. It was also customary among the Shasta to pound up fish bone into powder, which was stored and later eaten. This type of activity, if

practiced by the inhabitants of the Salt Cave Locality, would drastically reduce the number of fish bones likely to survive for later excavation. This activity was particularly practiced on salmon bone, which is cartilagenous, and this may explain the presence of only a few salmon bones in the midden site, and their almost total lack in the 2 village sites, while the bones of minnow and sucker were present. The very small number of bones in Big Boulder Village is probably due to the poorer conditions for bone preservation at that site, coupled with the use of recovery techniques that would have allowed small bones to go unrecovered.

The fish remains recovered at the sites represent the larger fish of the Upper Klamath River. The salmon vertebrae recovered were probably all of the Chinook salmon, though only a few could be conclusively attributed to that species. Only a single trout or steelhead vertebra was identified; it was not possible to determine which species of Salmo it represented. Most of the bones recovered were of Catostomus and Gila. At least 3 species of Catostomus, including synderi and luxatus, were recovered from the Klamath Shoal Midden. Only C. snyderi was identifiable at Border Village; another species, probably C. rimiculus, was present but could not be definitely identified. Minnow bones, both Gila bicolor and

G. coerulea, were also present in the sites. A single pharyngeal from the genus Mylocheileus was recovered from the Midden Stratum of the Klamath Shoal Midden. This genus is not presently found in the Klamath River and its presence in the midden indicates it may have been an inhabitant of the river some time within the last 1,500 years.

Ethnographic reports on the tribes which lived adjacent to the Salt Cave Locality list several techniques for catching fish. Netting was the most common, with use of fish spears and hook and line also being fairly common. Trapping or poisoning of fish was rarely practiced. The archaeological data indicate that spearing and hooking of fish were also practiced in the Salt Cave Locality. Among the bone tools, parts of fish spears and fish hooks were found in all sites. There is no direct archaeological evidence for nets; however, the presence of suckers and minnows in fairly large numbers indicates that netting was probably used, since these fish are usually too small to effectively catch by spearing. There is no archaeological evidence for the methods of preparation. The presence of sucker and minnow bones in House Pit 1 at Border Village and in Klamath Shoal Midden, indicates that these species were brought back to the living area for preparation. The preparation of salmon may well have been

carried out at the fishing site, since their bones are rarely found in the living area. This was the common ethnographic practice.

The third subsistence activity of importance to the inhabitants of the Salt Cave Locality was the gathering of plants. There is no direct archaeological evidence for species used or the method of gathering, but the ground stone tools found at the sites give a good indication of the methods of preparation, while the plants used and how they were collected may be inferred through the use of ethnographic analogy and consideration of the environmental setting of the sites.

The Shasta and Takelma gathered acorns to a large extent, with ipos being an important secondary plant. Various seeds and berries were also used. The Klamath and Modoc use primarily wocus seeds and ipos, which were supplemented with other seeds and berries. Acorns were not an important part of their diet. The ground stone tools from the Salt Cave Locality indicates that all these plants may have been used, but not at every site. The rather specialized mullers ethnographically associated with the preparation of wocus seeds were found in both Big Boulder Village and the Klamath Shoal Midden. The flat grinding slab associated with wocus preparation was also found at Big Boulder Village. Though wocus does

not grow in the immediate area, it could have been obtained by gathering expeditions eastward or by trade. The latter seems less likely, for wocus preparation usually includes immediate processing. Of course the mullers could also be used for the processing of other types of seeds.

Less specialized mullers and grinding slabs were found at all the sites. These were probably used for grinding seeds from grasses and various herbaceous plants. Mortars and pestles, also recovered from the sites, were probably used for the preparation of acorns and bulbs. The mortars include both the shaped, free-standing type and the hopper mortar type. The hopper mortar was used by the Shasta, Takelma and Modoc, particularly for the preparation of acorns among the Shasta and Takelma. The free-standing mortar was ethnographically used by the Klamath and Modoc for the preparation of bulbs and other foods. The number of ground stone tools associated with the preparation of vegetable foods is high in all the Salt Cave Locality sites. It indicates that gathering was probably as important as fishing and hunting.

Generally, it seems that the inhabitants of the Salt Cave Locality were about equally dependent on hunting, fishing and gathering for their food. The only exception to this may be those people represented by the remains of Strata I and II at the Klamath Shoal Midden.

A radical drop in the number of ground stone tools in Stratum II implies a lesser role for gathering at this time period. Of course the sample size is much smaller for Strata I and II than for Stratum III, and may be biased.

An equal reliance on these three subsistence activities is known for ethnographic groups in areas adjacent to the Salt Cave Locality. According to Voegelin (1942) deer and fish were of equal importance as food to the eastern Shasta and acorns were the staple plant food. Most other tribes tended to rely primarily on two main resources for subsistence. The Klamath depended on fish and wocus seeds, hunting being of minor importance. The Karok depended primarily on fishing and acorns, with deer not as important. The Takelma are supposed to have been similar to the Shasta (Sapir 1907).

As discussed in Chapter II, the Salt Cave Locality can be described as a secondary acorn land and game land, with the Upper Klamath River classified as a secondary salmon stream (Baumhoff 1963). Therefore, it is not unexpected that groups living in such an area would not put primary dependence on any one resource. Baumhoff classifies the Shasta as being a group not dependent on a single resource. The other group in the area that came closest to this equal use of 3 major resources, aside

from the Takelma, are the Modoc. Though the Modoc are described as depending on fish and ipos (Voegelin 1942), hunting was much more important to them than to the Klamath. Therefore, when one looks for ethnographic parallels to the inhabitants of the Salt Cave Locality, the Shasta, Takelma and Modoc would seem the closest for comparison. From the archaeological evidence it is probable that this multi-use subsistence system was practiced for hundreds of years in this locality. Because of the few grinding implements in Strata I and II of the Klamath Shoal Midden, it is assumed that prior to 500 B.C. hunting was more important than gathering, but the data base is so limited that this picture may change with further excavation.

Settlement Pattern

Only 3 types of sites were recorded within the Salt Cave Locality: large, open sites, such as Klamath Shoal Midden, rockshelters, and house pit villages, such as Border Village. However, it is assumed from the ethnographic data on surrounding tribal groups that other types of sites are present within the locality. Archaeological work in the Salt Cave Locality was dictated by the proposed construction of a dam. Therefore, the archaeological survey was restricted to those areas

adjacent to the river which would be flooded, as well as the area of the dam and its access roads. This kept the survey within about a half mile of the river. Only two sites, 35 KL 25 and 26 were recorded outside the river terrace area, and they were like, the others recorded, village sites.

The sites recorded within the Salt Cave Locality have a few interesting environmental associations. As noted previously all but one were located on river terraces. Most are on the first terrace, though two 35 KL 19 and 23 are on higher ground. Many of the sites are located near shoals in the river, where the channel widens out and is relatively shallow. Most sites are also located adjacent to intermittent streams or rills. Lastly, all the sites are located on or near the edge of the two life zones which interfinger in the area: the Upper Sonoran and Semi-humid Transition zones.

The apparent preference for this combination of environmental features reflects several advantages. Location on the river terraces provides a rather flat, well drained surface on which to live, and places a village or camp near the river with its unique resources. Placement near intermittent streams or rills may have been for a source of fresh water. Location of sites near shoals and in the area of mixed life zones provided good access to

several food sources within a relatively short distance.

Of the three types of sites or settlements recorded within the Salt Cave Locality, rockshelters are least common. The rockshelters found are all considered in this paper under 35 KL 24, the site number for Salt Cave. Most show almost no evidence of human use. There was a wooden shovel partly buried near the salt spring at the back of Salt Cave #1, showing use in historic times, probably as a source of salt. The only possibly prehistoric artifacts were out on the talus slopes of the shelters or in the river, where some waterworn specimens were found. One pick-like artifact was recovered from under the guano at one of the shelters, but its identification is questionable. It is possible that these shelters were used as temporary camps but there is no evidence to indicate when this might have been.

The open midden sites, 35 KL 19 and Klamath Shoal Midden, were apparently used as camps. There are no obvious remains of house pits in these sites. The excavation of Klamath Shoal Midden revealed fire lenses within the strata, as well as areas of apparent occupation or of a special activity. Some of the features within the site indicated activities dealing with the processing of animal food. From the artifacts and faunal remains present at the site, it is clear that the inhabitants of the open

campsites were engaged in hunting, fishing and the processing of some plant materials. Because of the lack of house pits, it is assumed that these were campsites used for a limited amount of time. However, the volume of artifacts and faunal remains suggests that the Klamath Shoal Midden was an important encampment which was perhaps returned to every year over its history of use. The remains of Chinook or King Salmon, which make a spring and a summer run up the Klamath River, point to occupation from April through September. The presence of deer antler in the site indicates occupation in the fall, while the presence of turtle and squirrel also indicates use during the spring, summer and fall. Whether the site was occupied in the winter is questionable. The presence of a few bird bones apparently from ducks, which winter in the area, hint at an occasional winter occupation, but the evidence is tenuous.

Most of the sites recorded in the Salt Cave Locality are pit house villages. They range in size from 2 house pits with an associated midden at 35 KL 17, to 19 house pits and associated midden at Border Village. Most of the pit house villages had 9 to 11 oval house pit depressions surrounded by a midden.

The diameter of individual house pits ranged from as little as 3.5 meters at 35 KL 20 to as much as 8 meters

at Border Village. There is within site variation; at 35 KL 20 house pit size ranged from 3.5 to about 6 meters. At Big Boulder Village they were all approximately 5 to 5.5 meters across and at Border Village they were all approximately 8 meters across.

The difference in house size between sites may reflect cultural differences and will be discussed more fully later. The intrasite differences may give some clue to aspects of the village social organization. Ethnographic information for the Shasta (Holt 1947), Klamath and Modoc (Spier 1930) and the Achomawi (Garth 1953) indicate that the wealthier families, usually those of leaders or shamans, had houses larger than the average, and that very poor families had smaller than average as well as less well constructed houses. Among the Shasta the larger houses belonged to leaders, and among the Klamath and Modoc the shaman, who often had considerable political influence, most often had the largest and finest house. Therefore, House Pit 3 at Big Boulder Village may have belonged to a family wealthier than the average. The same would be true of House Pit 1 at Border Village. Confirmation of this comes from the burial in Floor 2 of House Pit 1, where a steatite pipe and a carved elk antler spoon found in the grave suggests the relative wealth and influence of its occupant.

It is recognized that it is risky to attempt population estimates for house pit villages from the archaeological data. However, using ethnographic and archaeological data from various tribes, Cook and Heizer (1965) proposed a means to analyze the relationship between population and settlement size which may be applied to the data of the Salt Cave Locality. Among others, they determined estimates for the three tribes whose territories are adjacent to or near the Salt Cave Locality: the Shasta, the Modoc and the Achomawi. Their estimate of 5 to 6 occupied houses per village is based primarily on ethnographic data (Leonhardy 1961) or on the average size of other village sites recorded by the University of California Archaeological Research Facility (Cook and Heizer 1965). Of course, there is no really solid evidence as to the number of house pits occupied at any one time.

The estimated number of people per house is based on ethnographic comparisons and the assumption that houses with less than 200 square feet of floor space would have no more than 6 occupants. Nuclear families of 5 represent the usual situation among Modoc, Shasta and Achomawi. According to Dixon (1907) the Shasta often lived in extended families, giving 8 the upward limit for a Shasta house. There are many weaknesses in the data

base used by Cook and Heizer yet their concluding estimates are interesting. For the Shasta they proposed 48 persons per village, for the Modoc 32 and for the Achomawi 32. Ray (1963) enumerates from ethnohistoric data the population of one village occupied in the late 1800's. His total village size, number of houses and number of people in each house is very close to the estimates given by Cook and Heizer.

Leonhardy (1961) estimated that about 30 people occupied the site at Iron Gate a few kilometers downstream from the Salt Cave Locality, and he thinks it is very likely that the site represents Shasta occupation, though he mentions the Pit River tribes (Achomawi) as another possibility. The same range of population estimates could be made for any of the house pit villages in the Salt Cave Locality, except for 35 KL 17 and 23, which are very small. All the villages had 9 or more house pits, and one can merely assume that about 5 or 6 of these were occupied at any one time, by a nuclear or extended family ranging from 5 to 8 individuals. This gives a population estimate of between 25 and 48 people per village.

Though there is little difference in village size and organization among the archaeological sites of the Salt Cave Locality, there are some differences in house

type. The houses of Border Village were multifloored, indicating repeated occupation; each had been burned at least once; each had a clay cap or overlay over part of the rim which may be part of the collapsed superstructure; and the floors ranged from 5.5 to 6.5 meters in diameter. The houses of Big Boulder Village, in contrast, were single-floored; each had cache pits adjacent to the outer rim, and possible entrances on the east side with partial benches or shelves along one side; and the floors ranged from 4.1 to 5.2 meters in diameter.

From the method of construction and the quantity of artifactual and non-artifactual material found in the excavated houses, it is assumed that these were permanent villages and not temporary residences. However, that does not necessarily mean that an entire family would live the year around within the village. As with the house floors at Iron Gate (Leonhardy 1961) the debitage from stone tool-making as well as the ground stone tools on every floor indicates winter habitation. The faunal remains, as with the Klamath Shoal Midden, indicate use during the spring, summer and fall. The lack of any significant number of salmon bones hints at activity sites and possibly also temporary habitations elsewhere. Ethnographically, it was a common pattern for many people to leave their permanent villages in the fall to hunt

and gather in the surrounding uplands. The movement of people would not empty a village, but the majority of the people would leave. The Shasta lived in temporary camps in the uplands primarily to gather acorns and to hunt deer. Most of the Modoc left their winter villages in summer to hunt and gather and usually did not return until late Fall. Almost every tribal group in Northern California and Southwest Oregon had a similar seasonal round. Therefore, it is very likely that the inhabitants of the Salt Cave Locality practiced a similar routine.

In general it seems likely that the Salt Cave Locality had year-round rather than seasonal use. This would be particularly true once people came to live in pit house villages. The temporary camps associated with specific resource gathering activities are probably in the surrounding uplands. When found, these may be expected to be small, temporary camps with no obvious evidence of shelters. It is also expected that such sites would be located in areas which gave, as nearly as possible, direct access to a particular resource, and they will probably not contain the complete inventory of artifactual and nonartifactual remains found at the river terrace sites. Fishing camps and fish processing areas are probably located near the house pit villages closer to the river's edge. It is possible such fish processing areas are in

the unexcavated portions of the middens associated with Border and Big Boulder Villages. It is also possible that Klamath Shoal Midden, within Late Prehistoric Time, was the fishing camp for the inhabitants of Big Boulder Village and other nearby pit house villages.

There is one known upland site, 35 KL 25, which does not fit into the settlement pattern proposed. This site is located on an oak covered knoll overlooking a meadow and intermittent stream. It is about 1 kilometer from the Klamath River and about 130 meters higher in elevation. On the surface, it does not seem unlike the other pit house villages in the area. There are 10 house pits with an associated midden, and the few projectile points and other stone tools noted or collected are the same as found at the other sites. The house depressions are circular and described as being approximately 10 meters in diameter. The location, however, is anomalous. It seems possible that the inhabitants may have picked this location for their village for defensive purposes, rather than for proximity to the river, but it is also possible that the river's resources were not important to these people. Only excavation of the site would begin to answer these questions.

Cultural Differences

Though the Salt Cave Locality does project a cultural uniformity as just discussed, there is also cultural diversity represented. Some of this diversity reflects change with time, and some seems to be tied to location, giving a dichotomy between the upriver and downriver site clusters. This later kind of diversity can be seen in cultural influence from different adjacent cultural areas, primarily the Northern Great Basin, the Rogue River Valley and North-central California.

Cultural influence from the Great Basin on the Salt Cave Locality can be seen in three basic categories: flaked stone artifacts, ground stone artifacts and basketry. The influence is most clearly represented by various types of projectile points: Desert Side-notched, the Rose Spring-Eastgate Series, the Cottonwood Series, the Elko Series, Northern Side-notched and Humboldt Concave Base. Other flaked tool types which seem to have originated in the Northern Great Basin include the corner scraper and key or T-shaped drills. Except for the drill type and the Humboldt Concave Base and Elko Series points, which occurred only in the upriver sites, these tools were found in both the upriver and downriver sites. However, a far greater number of them were recovered from the upriver sites geographically closer to the Great Basin.

As noted in Chapter IV, certain muller classes recovered from the upriver sites are definitely linked to the Klamath Basin. These mullers are the forerunners of the two-horned muller used by the historic Klamath and Modoc. By ethnographic times, the two-horned mullers and single-horned mullers were used also by the Shasta, but their development occurred in the Klamath Basin, as Cressman's work on Kawumkan Springs illustrates (Cressman 1956). These specialized mullers are not found at Border Village, indicating that their spread westward occurred after the A.D. 1400 occupation of that site.

Three of the four basketry impressions found in Border Village were of a twined ware with the stitch down-to-the-right. This type of basketry has a long developmental history in the Northern Great Basin. It is generally felt that the twined basketry of the Klamath was developed from Catlow twine, which is found prehistorically in the Northern Great Basin. The presence of this type of twined basketry well within Shasta territory, and its protohistoric association with Shasta burials at the Foster Site indicate that this type of basketry was not restricted to the Northern Great Basin but also extended westward into the Siskiyou Mountains. All the examples in the Salt Cave Locality come from the downriver site, Border Village.

Influence from the Northern Great Basin on the Salt Cave Locality is most intense during the earliest periods represented by early point types (i.e., Humboldt Concave Base, Northern Side-notched and the Elko Series). Influence continues up through protohistoric time, but it is diluted by a growing influence from Northwest California.

Influence from the Rogue River Region is less clear-cut, but this vagueness may in part be due to the small data base from the Rogue River Region. Two stone tool types indicate possible influence on the Salt Cave Locality from the Rogue River Region. The Gold Hill Leaf projectile point type seems to have a center of distribution in the Upper Rogue River drainage, and the rather high frequency of this type in the Klamath Shoal Midden's lower Midden Stratum and upper Cemented Gravel Stratum indicates influence or movement of people from the Upper Rogue to the north side of the Klamath River at a rather early date, A.D. 700 or before. The high frequency of vein chalcedony knives, Type 1, in Rogue River sites and in the house pit sites in the Salt Cave Locality indicate influence from the Rogue River in Late Prehistoric times, ca. A.D. 1400.

The most striking association between the Salt Cave Locality and the Upper Rogue River drainage is reflected by the distribution of Siskiyou Utility Ware pottery. There are at least 3 sites along the Upper Rogue River

which contain pottery and figurines, and from the present evidence, it seems that the center of occurrence of Siskiyou Utility Ware is the Upper Rogue River Valley. Pottery of the same type occurred at Border Village, and clay figurines were found at Klamath Shoal Midden. The pottery seems to date to Late Prehistoric time around A.D. 1400.

One of the four basketry impressions from Border Village was of a twined basket made of juncus. It had a pitch of stitch down-to-the-left. This type of basketry is known to have been made by the Umpqua. Though not associated with the Upper Rogue, this type of basketry or knowledge of its construction must have passed through the Upper Rogue area before reaching the Klamath. Unfortunately, almost nothing is known of the basketry of the Takelma, the historic inhabitants of the Upper Rogue River area.

Generally, there seem to have been two major periods of influence from the Upper Rogue Region: an early one, represented by Gold Hill Leaf points at Klamath Shoal Midden and Border Village; and a more recent one, indicated by knife Type 1, juncus basketry and a ceramic tradition which included Siskiyou Utility Ware and figurines.

There is also evidence of influence from North-central and Northwest California. Shallow steatite bowls

are found in both coastal and inland California as well as in Southwest Oregon, and the presence of shallow steatite bowls at Border Village indicates influence from the west into the Salt Cave Locality. Projectile point types are the only flaked stone tools which appear to have come from Northwest and North-central California into the Salt Cave Locality. Gunther Barbed, the most common projectile point type in all the Salt Cave sites, is assumed to have developed in Northwest California, where it is the most common point type in Late Prehistoric sites. The Gunther Stemmed type has been proposed as developing first on the Northwest California Coast (Baumhoff and Olmstead 1964). Because of its high frequency in coastal sites, Class 24, a harpoon-like point, is assumed to have developed on the coast. The Northern Coast Range may be the hearth for Class 28, which appears to be similar to points in the Northern Milling Stone Complex of California. The various types of scrapers, drills, gravers and knives associated with the sites of North-central and Northwestern California are found in all the areas adjacent to the Salt Cave Locality. The one type of knife often associated with Northwest California, the large bipointed bifacially worked obsidian knife with a constriction near the center, is not, however, present at the sites excavated.

The presence of shell ornaments in Klamath Shoal Midden indicate a probable trade connection with the Northwest California Coast. All the examples are from the Midden Stratum. One type, a "saddle" bead of Olivella biplicata, is associated in California with the later part of the Middle Horizon (Bennyhoff and Heizer 1958). Type 1a Olivella beads (Ibid 1958), of which there are 3 specimens, are known from Early to Late Horizon in the Sacramento Valley and were favored by the Western Shasta (Voegelin 1942). Abalone ornaments and fragments of abalone shell were found in all 3 excavated sites, and it is likely that the shell beads or the raw material to make them moved up the Klamath River from the coast in a trade network.

There are two types of bone artifacts which show influence from Northwest California. Two specimens of Type IIIa toggle spear parts (Bennyhoff 1950), are examples of fishing equipment influenced from the Lower Klamath River and the Northwest California Coast. One was uncovered in House Pit 1 in Border Village and one came from the Midden Stratum of Klamath Shoal Midden. The only other known archaeological specimens are from Hum-118 and 169 (Elsasser 1965). The other artifact was also found at Border Village House Pit 1. It is a carved elk antler spoon, of a type used ethnographically

by groups in Northwestern California and Southwest Oregon (Kelly 1930).

House type apparently was influenced by North-central California cultures in the Salt Cave Locality. Table 15 illustrates that the Salt Cave Locality houses, especially those at Border Village, are almost identical to ones excavated at Iron Gate, and, therefore, very similar to the Maidu Hobò, to which Leonhardy compared the Iron Gate houses (Leonhardy 1961). They are also very similar to the houses of the Achomawi and Atsugewi (Garth 1953, Voegelin 1942). Those at Big Boulder Village are similar in depth and diameter to Modoc houses. The bench and storage pits in the houses of Big Boulder Village are characteristics present which are not found in Modoc houses.

The Northwest and North-central California influences have probably been present since at least 2000 B.C., as represented by the Northern Milling Stone Complex. This is inferred from the presence of Type 28 projectile points at Border Village. The presence of shell beads at Klamath Shoal Midden indicates some influence and indirect contact with Northwest California by about the A.D. 900 date of that site, if not earlier. Along with the bone ornaments and fishing gear, the high incidence of Gunther Barbed projectile points indicate a strong

TABLE 15. --Pit house characteristics

Trait	35KL16	35KL18	35KL20	Iron Gate	Ethnographic Klamath	Archaeologic Klamath	Modoc Large	Modoc Small	Achomawi	Maidu	Atsugewi
Diameter	8 m.	5-5 1/2m.	5-7m.	4. 5-9m.	4-10m.	3-19m.	5-12m.	4-8m.	3-4. 5m.	2. 5-5m.	3-6m.
Depth	80-150cm.	45-50cm.	90cm.	c. 50cm.	200-300cm.	40-260cm.	40-60cm.	18-25cm.	100-500cm.	25-50cm.	100-300
Framework											
Poles	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Centerpost	yes	yes	unknown	uncertain	4	0-6	4	none	none	optional	no
Conical	inferred	inferred	inferred	inferred	yes	inferred	yes	no	yes	yes	no
Covering											
Bark	yes	yes	uncertain	yes	yes	yes	yes	yes	yes	yes	yes
Wood	yes	yes	yes	not determined	yes	yes	yes	no	yes	yes	yes
Leaves	uncertain	uncertain	uncertain	uncertain	not stated	uncertain	no	no	not stated	yes	not stated
Grass	uncertain	uncertain	uncertain	uncertain	yes	uncertain	yes	yes	yes	yes	yes
Mats	not determined	not determined	not determined	yes	yes	yes	yes	yes	yes	no	yes
Door	not determined	inferred	not determined	not determined	no	inferred	rare	yes	yes	yes	yes
Smokehole	inferred	inferred	inferred	inferred	yes	inferred	yes	yes	yes	yes	yes
Used as Entrance	unknown	unknown	unknown	unknown	yes	inferred	yes	no	yes	no	yes
Pits reused	yes	no	uncertain	yes	yes	rare	yes	not stated	not stated	not stated	not stated
Fireplace	Central	Central	unknown	Central	Central	Central	Central	Central	Central	not stated	Central
Storage Pits	no	yes	unknown	one case	no	not stated	no	no	no	not stated	not stated
Bench	no	yes	no	no	no	yes	no	no	not stated	not stated	not stated

influence within the last 700 years. The high incidence of Gunther Stemmed points at Big Boulder Village and Klamath Shoal Midden indicates an earlier coastal influence perhaps brought into the Salt Cave Locality by ancestral Achomawi.

The nature of the previously asserted upstream-downstream cultural diversity within the Salt Cave Locality is best illustrated by contrasting the two extensively excavated house pit sites, Border Village and Big Boulder Village. Each is C-14 dated to approximately 1400 A.D. by charcoal associated with house floors. Examination of the differences between the assemblages of these 2 sites indicates a possible tribal difference.

Using 5 categories of material culture, the assemblage from the upriver site, Big Boulder Village, can be separated from that of the downriver site, Border Village. The evidence indicates most strongly that the inhabitants of Big Boulder Village were probably Modoc, but both Klamath and Achomawi affiliations are also possible. The ground stone tools recovered from Big Boulder Village indicate affinities with either Klamath or Modoc. The various shaped mullers fit into the developmental sequence of Klamath specialized mullers presented by Cressman (1956), and though the Shasta also used the horned muller (Voegelin 1942), its development occurred in the Klamath

Basin. Therefore, the presence of various specialized mullers at Big Boulder Village point to either Klamath or Modoc occupancy.

The flaked stone tool assemblage at Big Boulder Village suggest influence from Northeastern California. The projectile points associated with the most recent occupation and the house floors were Gunther Barbed, Gunther Stemmed, Desert Side-notched, and points of the Rose Spring Series. Gunther Barbed and Gunther Stemmed points apparently were first used in Northwest California and then spread east. Gunther Stemmed are found also in Achomawi territory and in the southern Klamath Basin, an area usually associated with Modoc. However, there are very few Gunther Barbed points associated with Klamath sites (Cressman 1956), while Gunther Stemmed are present but not in large numbers. Desert Side-notched and the Rose Spring Series points are associated with sites in Klamath, Modoc and Achomawi territory. The point assemblage at Cuppy Cave, well within Achomawi territory (Hughes 1973), is very similar to the recent assemblage at Big Boulder Village. Small stemmed and barbed points have been suggested by Hughes (1977) as the point forms associated with ancestral Achomawi assemblages and these correspond to Gunther Barbed and Gunther Stemmed. The high percentage of Gunther Barbed points in Big Boulder

Village best fits with Achomawi assemblages and secondly with Modoc. Therefore, the projectile point data from that site most strongly point to Achomawi occupation.

Scrapers from Big Boulder Village are similar to those found in sites in both the Great Basin, except Kuwamkan Springs, and in the region west of the Cascades. The high incidence of thumb-nail scrapers in the Kuwamkan Springs collection is in striking contrast to their absence in the whole Salt Cave Locality. Since Kuwamkan Springs is assumed to be a Klamath occupation, the lack of thumb-nail scrapers at Big Boulder Village possibly points away from use by the Klamath.

The key or T-shaped drill type was found in the house fills of two of the house pits at Big Boulder Village. This type is associated with the Great Basin. One drill of this type was found at the Sprague River site as illustrated by Cressman (1956); therefore, it can be associated archaeologically with the Klamath. Such a drill type has not been directly associated with Modoc or Achomawi, though the possibility cannot be discounted. Unlike projectile points, the number of drills in an assemblage is usually small and, therefore, the existing collections may not always represent a good sample of what was actually used by a particular group.

Most of the bone artifacts recovered from Big

Boulder Village were tools of such generalized form they could not be linked to any particular tribal group or archaeological region. The presence of a bone whistle in House Pit 11 is an exception. Such whistles were denied for the Klamath, but affirmed for the Modoc and Achomawi (Voegelin 1942). Its presence in House Pit 11 therefore indicates the possible use of that house pit by Modoc or Achomawi.

The house pits at Big Boulder Village have two features which separate them from those downriver: benches and storage pits. Table 15 illustrates the fact that the only other group of house pits with benches are found at archaeological sites attributable to the Klamath. Ethnographic studies deny benches for Klamath houses, and they are not mentioned for Modoc or Achomawi houses. Storage pits in house floors were not used by Klamath or Modoc and are not mentioned for Achomawi. The dimensions of the houses are on the small end for Klamath and Modoc, but house diameter is not stated for Achomawi in the ethnographic accounts. Except for the bench, the house pits at Big Boulder Village would be similar to the house pits of North-central California. The presence of grinding stones on the floors of houses, implying that food preparation was done there, is another feature of North-central California houses. The ethnographic Klamath and Modoc

had separate cooking huts in which food was stored and prepared, and their living quarters did not contain storage pits or grinding slabs.

Generally the evidence suggests that Big Boulder Village must represent occupation by ancestral groups of either the Modoc or Achomawi. The difficulty in determining which tribe is represented is due to the fact that there has been little or no excavation of known Modoc and Achomawi villages. Therefore, the known recent archaeological assemblages for Modoc and Achomawi are neither complete nor demonstrably unique to either tribal group. The ground stone tools most closely resemble Modoc assemblages. The projectile points closely resemble Achomawi assemblages. The house pit construction more closely resembles North-central California and archaeological examples of Klamath houses. The bone whistle and the T-shaped drill could be from either a Modoc or Achomawi assemblage. At this time there is not enough data on Modoc or Achomawi assemblages. Hughes' work on the ancestral Achomawi is only at the beginning stages, and little information is available from proto-historic Modoc archaeological assemblages.

The archaeological assemblage from Border Village points to occupation by either ancestral Shasta or Takelma. It is difficult to separate Shasta from Takelma

material culture, due to the lack of ethnographic information on the Takelma. Their material culture is simply described as being similar to that of the Shasta (Sapir 1907). Therefore, we would not expect the archaeological manifestation of these two tribes to be much different. However, the assemblage at the Border Village has at least one unique artifact category which could be associated with ancestral Takelma. The pottery found at Border Village, earlier described and named Siskiyou Utility Ware, may be unique to ancestral Takelma. This pottery seems to have a limited distribution on the Upper course of the Rogue and Klamath Rivers, with possible occurrences on the South Fork of the Umpqua. The Upper Rogue had traditionally been Takelma territory, and therefore, it seems reasonable to associate the Siskiyou Utility Ware with ancestral Takelma. The figurines associated with the pot sherds at Border Village are also similar to figurines found in Sam's Valley on the Upper Rogue.

The steatite bowl fragments found at the site are similar to steatite bowls widespread throughout Northwest California and Southwest Oregon. Steatite bowls, used particularly for grease and fish oils, were used by the Shasta and Takelma, as well as the other tribes downriver from them on the Klamath and Rogue Rivers. The same is true for the steatite pipe found in House Pit 1.

Steatite for pipes and bowls was used to a lesser extent among the Klamath and Modoc.

The projectile point assemblage from Border Village is overwhelmingly made up of Gunther Barbed points, approximately 75% of the assemblage. There were a few Rose Spring Series and Desert Side-notched points in the upper strata of the house pits. Older point types are scarce; they include a few Northern Side-notched, Gold Hill Leaf, and points which resemble ones associated with the Northern Milling Stone Complex and the Martis Complex. The high percentage of Gunther Barbed points is consistent with sites within Takelma and Shasta territory. The Gunther Barbed combined with the presence of Gold Hill Leaf points and those associated with the Northern Milling Stone Complex show a strong tie between the inhabitants of Border Village and people living west of the Cascades in Southern Oregon and Northern California.

An interesting lack of a particular class of ground stone artifact also associates the inhabitants of Border Village with the Shasta and possibly also the Takelma. There are no portable mortars at Border Village. This lack of portable mortars is also true of Shasta Villages. The ethnographic Shasta believed that mortars contained evil supernatural power and avoided them. Grinding slabs and hopper mortar bases were used with the pestle and

mullers among the Shasta. Fragments of both hopper mortar bases and grinding slabs were found at Border Village.

The presence of a carved elk antler spoon associated with a burial in House Pit 1 of Border Village also ties it to Southwest Oregon and the lower course of the Klamath River. The capital on the spoon handle is of the least common type as described by Kelly (1930), and the pedestal element is unlike those associated with Hupa, Yurok or Karok. This would indicate a relationship possible closer to Southwest Oregon than the lower course of the Klamath River.

The house pits at Border Village are almost identical in form to those at Iron Gate, though somewhat larger. Those at Border Village are deeper and all have a similar diameter to the largest house at Iron Gate. The houses of the Shasta and Takelma, ethnographically, were rectangular house pits with timbered walls. Leonhardy's work at Iron Gate indicates that ancestral Shasta probably had houses very similar to those of the Maidu, which are oval house pits. It seems likely that the rectangular house spread from the coastal area up the various rivers to the interior tribes west of the Cascades, including both the Takelma and Shasta.

The artifacts and features at Border Village are very similar to those of the Iron Gate site. If it were

not for the pottery, Border Village would be assumed to be ancestral Shasta also, but dating about a hundred years before Iron Gate. However, all the other known Siskiyou Utility Ware is from sites on the Upper Rogue and the South Fork of the Umpqua River within Takelma territory. Because Takelma material culture is described as being similar to Shasta, the presence of pottery strongly indicates that Border Village was ancestral Takelma. There has always been a question as to the original territorial extent of the Shasta and Takelma. If Border Village is Takelma, it would support the view that the Shasta had rather recently pushed their way north and east into Takelma territory. Table 16 summarizes the differences between Big Boulder and Border Village. It also summarizes the data on various artifact categories, which have been used here to tentatively associate these two villages with different tribal groups.

Cultural Change Through Time

Not all the cultural diversity observed within the Salt Cave Locality assemblages is attributable to different cultural groups inhabiting the area concurrently. Some of the diversity is due to the use of the locality by different groups throughout a 7,000 year time period. These changes through time can be seen in the projectile

TABLE 16. --Comparisons between border and big boulder villages

Trait	35KL18	35KL16	Iron Gate	Ethnographic Klamath	Archeaologic Klamath	Modoc	Ethnographic Achomawi	Archaeologic Achomawi	Shasta	Takelma	Ethnographic Upland Takelma
Dev. Sequence of Shaped Muller	X	0	0	0	+	0	0	o	0	o	?
2-horned or 1-horned muller	0	0	X	+	+	+	0	o	X	o	?
Gunther Barbed pts.	+	+	+	X	X	+	+	+	+	+	?
Gunther Stemmed pts.	+	X	X	X	X	X	+	+	X	X	?
Desert Side-Notched pts.	+	X	X	+	X	+	X	X	X	X	?
Thumb-nail Scraper	0	0	X	X	+	?	?	o	0	X	?
T-shaped Drill	X	0	0	?	X	?	?	o	?	o	?
Bone Whistle	X	0	0	0	0	X	X	o	X	o	?
Benches in Houses	+	0	0	0	+	0	0	o	0	o	?
Storage Pits in Floors	+	0	X	0	0	0	0	o	X	o	?
Grinding Slabs on Floor	+	+	+	0	0	0	+	o	+	o	?

TABLE 16. --Continued

Trait	35KL18	35KL16	Iron Gate	Ethnographic Klamath	Archeaologic Klamath	Modoc	Ethnographic Achomawi	Archaeologic Achomawi	Shasta	Takelma	Ethnographic Upland Takelma
Siskiyou Utility Ware	0	+	0	0	0	0	0	o	0	+	?
Steatite Bowl	0	X	0	X	0	X	X	o	+	X	?
Steatite Pipes	0	X	X	X	X	X	X	o	+	+	0
Carved Elk Antler Spn.	0	X	0	0	0	0	0	o	X	X	?
Twined Basketry to the Left	o	X	o	+	+	+	X	X	X	o	?
Twined Basketry to the Right	o	X	o	0	0	0	+	+	+	o	?
Use of Tule in Baskets	o	X	o	+	+	+	X	X	0	o	+

Key: 0 = Absent ethnographically
o = Absent archaeologically, but sample inadequate
X = Present in low frequency
+ = Present in high frequency

point, knife and used flake tool distributions, as well as in the presence and frequency of ground stone tools and bone tools. The type of site changed also from open campsites to pit house villages (Table 17).

The projectile point sequence within the Salt Cave Locality reflects changes in direction of cultural influence and a change of weaponry over the 7,000 years of occupation. Influences from the Great Basin into the Salt Cave Locality have already been discussed. However, this influence does not appear to have been consistent throughout the 7,000 years of occupation. The earliest points in both upriver sites indicate early Great Basin influence by the presence of Humboldt Concave Base A, Elko Series and Northern Side-notched points. A few Northern Side-notched points were found at Border Village, indicating an early period of Great Basin influence at the downriver sites as well. Other point types of early periods, Gold Hill Leaf and those similar to points of the Northern Milling Stone Complex of California, indicate influence from the Rogue River region and the Northwest California mountains. The upriver sites also show influence from the Rogue River by the presence of Gold Hill Leaf points in the Klamath Shoal Midden.

During the next major time period the Great Basin continues to be a strong influence on the upriver sites

TABLE 17.--Assemblages

The following tables present the assemblages from Border Village, Big Boulder Village and Klamath Shoal Midden. Most of the artifacts from the Salt Cave Locality sites cannot be grouped into assemblages; this is particularly true for Klamath Shoal Midden, and is due to the excavation techniques used as explained in Chapter III. Each of the house pit floors had some tools found on them or in their "floor fill." It is assumed that all artifacts found on a floor or in a "floor fill" are an assemblage. These assemblages, though certainly incomplete, allow comparisons to be made which may reflect chronological or cultural differences and similarities. Within Klamath Shoal Midden only the artifacts from the "Black Stratum" of Stratum III and Stratum I, the River Gravel Stratum, can be grouped as separate assemblages. The artifacts from the other two strata, the Midden Stratum and the Cemented Gravel Stratum, were not divided by the layers present, therefore, the artifacts from these two stratum represent several assemblages.

Border Village

House Pit 1

Floor 1: Steatite Bowl
Pot sherds (3)
Figurine fragment
Bone Tools: Ald, AleI, B, Cll, Clt, D, D6, D8(3), N2(2), S, Tlf, T2c(2), Ula, U4, EEla, EElb(2), EE2a, HH(2).
Projectile Points: Gunther Barbed (5), Class 24, Class 26

TABLE 17.--Continued

Unifacially Flaked Tools: Incurvate (6), Straight, Excurvate (10), Pointed II, Pointed III, Single Notched, Double Notched
Cores: 2C2, 2D, 2E
Scrapers: C
Knives: Type 1, Type 5, Type 7(2), Type 8
Various Mullers, Milling Stones or Hopper Mortar base fragments

Floor 2: Milling Stones: Slab, Block, various fragments
Pot Sherds (31)
Figurine Fragments (3)
Bone Tools: C1(2), C4, C9, C11, C14, EE1a(3), EE2a(16), EE2b, HH, MM1b
Basketry: Z-twined, Tule, 2-strand plain and 3-strand plain
Projectile Points: Gunther Barbed (9), Gunther Stemmed, Alkali Stemmed, Class 29
Unifacially Flaked Tools: Incurvate (11), Straight (6), Excurvate (17), Pointed I(2), Pointed II(4), Double Notched (2)
Cores: 1A1, 2D (10)
Scrapers: B3 (2)
Drills: A1
Knives: Type 1

Floor 3: Mullers Type 1a (3), Milling Stones: Slab
Shaft Smoother
Pot Sherds (35)
Figurine Fragments (2)
Bone Tools: A1e, C, C1 (3), C10, C11, D5, EE1a, EE1b, EE2a(5), EE2b
Projectile Points: Gunther Barbed (4)
Unifacially Flaked Tools: Incurvate (11), Straight (4), Excurvate (24), Pointed I (3), Pointed II (2), Doubled Notched
Cores: 2B, 2D(6)
Scrapers: A2, B3
Gravers: B1
Knives: Type 1 (2), Type 5
Quartz Crystal

Floor 4: Milling Stone: Slab (2), HAR Stones: Angular
Pot Sherds (33)
Bone Tools: A1eI, D6, D8, HH
Basketry: Z-twined, Tule, 2-strand plain.

TABLE 17.--Continued

Projectile Points: Gunther Barbed (5), Rose Spring Corner Notched, Class 28
Unifacially Flaked Tools: Incurvate (7), Straight (5), Excurvate (9), Pointed I, Single Notched (2)
Cores: 2C1, 2D (2)
Knives: Type 1, Type 7

Occupation Level 5: Mullers: Type 1b, Milling Stones: Slab, fragments
Bone Tools: C, EE2a, HH
Basketry: S-twined, Juncus, twilled twining
Projectile Points: Gunther Barbed
Unifacially Flaked Tools: Incurvate

House Pit 2

Floor 1: Pot Sherds (18)
Figurine Fragment
Bone Tools: D
Projectile Points: Gunther Barbed (2), Class 24
Unifacially Flaked Tools: Incurvate, Straight
Cores: 1C

Floor 2: Pestles: Class 4
Pot Sherds (2)
Bone Tools: C4
Projectile Points: Gunther Barbed (5), Rose Spring Corner-Notched
Unifacially Flaked Tools: Incurvate (5), Straight, Excurvate (4), Pointed I, Single Notched
Cores: 2D (2)
Scrapers: B3
Gravers: A2
Knives: Type 1, Type 4

House Pit 3

Floor: Mullers: Class 2, Class 6a; Milling Stones: Slab
Bone Tools: C10, D8
Projectile Points: Gunther Barbed (11), Eastgate Split Stem, Cottonwood Bipointed, Gunther Stemmed, Alkali Stemmed, Rose Spring Side-notched
Unifacially Flaked Tools: Incurvate (6), Straight (7), Excurvate (14), Pointed I (4), Single Notched (3)

TABLE 17.--Continued

Cores: 2D
Scrapers: A1, C
Gravers: Da

House Pit 11

Floor: Mullers: Class 6a; Milling Stones: Slab, block
Pestles: Class 2, Class 4
Bone Tools: C9, D8
Projectile Points: Gunther Barbed (4), Class 24
Unifacially Flaked Tools: Incurvate, Straight, Excurvate, Single Notched
Cores: 1A1
Scrapers: B4
Knives: Type 5

House Pit 13

Floor: Mullers: Class 2, Class 4, Class 5; Milling Stones: Block (2), Hopper Mortar Base (2)
Pestles: Class 1
HAR Stones: Rounded (2), Angular (2)
Shaft Smoother
Bone Tools: A, C10, C14, D5, D6, N2, U1a, U4, MM2a
Projectile Points: Gunther Stemmed
Unifacially Flaked Tools: Incurvate (14), Straight (12), Excurvate (21), Pointed I (4), Pointed II, Single Notched
Cores: 1A1, 2D(4)
Scrapers: F3
Drills: C
Gravers: A2, Da
Knives: Type 1, Type 2, Type 5, Type 6

Test Pit

Stratum III: Mullers: Class 2
Projectile Points: Gunther Barbed
Unifacially Flaked Tools: Incurvate (7), Straight (9), Excurvate (15), Pointed I, Single Notched
Cores: 2D(3)
Scrapers: A2
Gravers: A1, A2
Knives: Type 1, Type 5

TABLE 17.--Continued

Stratum II:	Mullers: Class 1b, Milling Stones: slab HAR Stones: Rounded Mortars (2) Projectile Points: Northern Side-notched Unifacially Flaked Tools: Incurvate (10), Straight (11), Excurvate (11), Pointed I, Pointed II, Pointed III, Single Notched (2) Cores: 2D(4), 2E Scrapers: A2, B1, C Gravers: A1 (2), A2
Stratum I:	Mullers: Class 3a Bowl Projectile Points: Elko Side-notched, Black Rock Concave Base, Class 26, Humboldt Concave Base A (2) Unifacially Flaked Tools: Incurvate (6), Straight (7), Excurvate (6), Pointed I, Single Notched Cores: 1A1, 2D Scrapers: A1, A2, B3, C Gravers: A1, A2, B2 Knives: Type 5, Type 6
Klamath Shoal Midden	
Black Stratum:	Bone Tools: 0 Projectile Points: Rose Spring Corner-notched, Elko Corner-notched (2) Unifacially Flaked Tools: Incurvate (5), Straight (15), Excurvate (12), Pointed I, Pointed II (2) Cores: 1A1, 2D(5) Gravers: A1, B1 Knives: Type 8
Stratum I:	Bone Tools: C1, C14, C15 Unifacially Flaked Tools: Incurvate (4), Straight (6), Excurvate (6), Doubled Notched

as indicated by points from the Rose Spring-Eastgate Series. A few of these points are found at Border Village, but they are too low in frequency to indicate any strong influence. Influence at this time from the Northwest California Coast on the upriver sites can be seen in the large number of Gunther Stemmed points and more recently Gunther Barbed points. The higher number of Desert Side-notched points in the upriver sites as opposed to a very small number at Border Village show a continued strong influence from the Great Basin on the upriver sites in most recent occupations.

A change through time in the size of projectile points probably reflects a change from the atlatl and thrusting spear to the bow and arrow. It is generally agreed that the larger width at the notch of Elko Series points and others of that size indicates hafting on a spear or atlatl dart. The smaller notch width of the Rose Spring-Eastgate Series and the Gunther Series indicates their use on arrows. This change is most clearly shown in the strata of Klamath Shoal Midden. The Elko Series points, Northern Side-notched and Gold Hill Leaf are in Stratum II and in the lower layers of Stratum III. The upper layers of Stratum III, dating from around A.D. 900 contain the smaller point types.

The frequency of 2 types of knives seemed to be

affected by time. Type 1, the vein chalcedony knife is found commonly at the two late village sites, but there are only two from the earlier Klamath Shoal Midden, and they are in the upper layers. The inescapable conclusion is that Knife Type 1 was a part of the Late Prehistoric assemblage. Type 3, leaf-shaped biface knives, have the opposite distribution. They are rare at the village sites, but are very common at Klamath Shoal Midden, where they appear only in the earlier Midden Stratum. This distribution indicates a use of this type after A.D. 100 and before A.D. 1300. A similar distribution is found with Category B1 gravers.

The distribution of some categories of unifacially worked flake tools changes through time. Excurvate edge tools are overwhelmingly present in the village sites and the Midden Stratum of the Klamath Shoal Midden. They are common in the older strata as well, but straight edge tools are just as common in the older strata. Therefore, straight edge tools seem to have been used much less in more recent time. A study of the function of straight edge and excurvate edge tools might show this change in frequency due to a change in the frequency of one or several activities. However, there are at present no data to make such associations. It is assumed that they were both involved in processing mammals and fish.

Comparing the frequency of ground stone tools and flaked stone tools, reveals another change through time. Ground stone tools are very common in the house pits of the village sites and in the Midden Stratum of Klamath Shoal Midden but are almost nonexistent in the older strata of Big Boulder Village and Klamath Shoal Midden. This increase in ground stone tools after A.D. 100 may be linked to an increased use of vegetable resources. The use of flaked stone does not decrease, however, indicating a continued reliance on animal resources.

The movement from open living sites to pit house villages apparently occurred rather recently in the Salt Cave Locality. Both villages had house pits dated to A.D. 1400. The midden site dates from between 5000 B.C. and A.D. 650, with projectile point types indicating continued use up to and overlapping the house pit village era. There are two explanations for this apparent change. It is possible that the earlier inhabitants of the area built less substantial surface structures which left no evidence within the sites, or that the earlier inhabitants used the locality on a temporary basis, living elsewhere in more permanent structures during the winter. Either explanation is plausible; however, since peoples in surrounding areas were living in pit houses long before A.D. 1400, it is more likely that the second explanation

is correct. It should also be noted that six other house pit villages located within the Salt Cave Locality have not yet been excavated. It is possible that they may represent an earlier period of house pit village life.

Summary

There are 4 basic conclusions that can be drawn from the information here presented on the Salt Cave Locality. Continued work in this area is needed to confirm them, but the material as now understood allows for their presentation. One, the Salt Cave Locality was probably occupied to some extent for the past 7,000 years. Two, Klamath Canyon in the Salt Cave Locality was divided between Great Basin cultures and those oriented west of the Cascades. Three, this locality was probably always on the fringe of tribal territories. Four, the Klamath River was a passageway for cultural influence, which changed direction and intensity through time.

As of the present, the evidence indicates that the Salt Cave Locality was probably inhabited more or less continuously for at least 7,000 years. Two of the sites, Klamath Shoal Midden and the midden at Big Boulder Village, show proof of an occupation dating back to at least 5000 B.C. This is confirmed by a radiocarbon date of 5696±400 B.C. at Klamath Shoal Midden. Later

radiocarbon dates of A.D. 650 and 900 for the upper levels of Klamath Shoal Midden confirm occupation during more recent time periods. The evidence for yet more recent occupation of the area comes from two house floors, C-14 dated to A.D. 1400, and several Desert Side-notched points, found in the two upriver sites. One button in the upper level of Klamath Shoal Midden is the only historic period artifact found. It indicates a possible transient use of the midden up to the 1860's, being very similar to the buttons found farther down river at the Foster Site, where a trader was massacred by the Modoc. From historic documents and tribal boundaries, it seems that no group was using the Salt Cave Locality on any semi-permanent nor permanent bases at contact.

The differences between the upriver and downriver sites indicate that Klamath Canyon was divided between Great Basin cultures and those oriented west of the Cascades. This division has apparently existed throughout the occupation of the Salt Cave Locality but it is clearest during the period of pit house occupation, as indicated by the assemblages at Border Village and Big Boulder Village. The projectile point assemblages from earlier periods indicate a similar division with two possible exceptions. The presence of Gold Hill Leaf points at Klamath Shoal Midden indicate use or influence

by groups oriented west of the Cascades, and the presence of Northern Side-notched points at Border Village indicates use or influence from east of the Cascades. The significance of the few Northern Side-notched points and the points resembling those of the Northern Milling Stone Complex at Border Village needs to be tested by further excavation of the midden at this site. It is obvious that some influences from the Great Basin moved further downstream than Salt Cave and influences from Northwest California moved upstream beyond Salt Cave.

This leads to the third conclusion that the Klamath River has been a passage for cultural influence. The influences passed down the Klamath River from the Klamath Basin and the Great Basin, and they moved up the river from the Northwest California Coast. Some of this influence undoubtedly came in the form of trade. The shell beads in the Klamath Shoal Midden indicate this trade was begun very early. The red obsidian in the sites seems to have its source in the Warner Mountains and/or Glass Buttes indicating trade from the Northern Great Basin. This is suggested by the evidence of five projectile points, two from Big Boulder Village, one from Klamath Shoal Midden and two from Border Village which were sourced in June 1977 by Richard E. Hughes, using a X-Ray florescence machine at the University of California,

Berkeley. The results are given in Appendix G.

Some of the cultural influences may have been in the form of diffusion which seems to be the best explanation for the presence of Gunther Stemmed and Gunther Barbed points in the sites. The movement of ideas and goods up and down the river was undoubtedly not the only direction of influence in the Salt Cave Locality. A picture of the area as a narrow corridor with people, goods and ideas only moving up or down along the river is too restrictive. The strong possibility of Achomawi and Takelma use of the area reveals sources of influence which would have come directly north or south to the river, particularly during recent prehistory.

Lastly, the Salt Cave Locality was probably always on the fringe of a particular group's territory. This was certainly true during historic time. No groups' ethnographic boundaries actually include the area. Groups passing through, both the Modoc and Shasta, are the only reported users of the area. It is less obvious how intensely the area was used before A.D. 1200, but the more or less equal availability of the three major resource groups: fish, meat and vegetables probably worked against this being the heart of a tribal territory. This argument assumes that as in ethnographic times, most prehistoric tribal groups used one or two food resources as

their primary subsistence base, and that their populations tended to cluster near the sources of the primary food resources.

Much more work needs to be done on the unexcavated sites, particularly the other pit house villages, to determine if they are part of a period of intensive use of this stretch of the river or if each is an example of a rather isolated village linked to others clustered some distance away. For example, if Border Village is a Takelma settlement, it is probably the southernmost permanent Takelma settlement. A similar statement may be made for Big Boulder Village. If it was an Achomawi settlement, it would be the farthest north, and if it was a Modoc village, it would be the farthest west.

Further work needs to be done in the Salt Cave Locality. It should include excavation at the five other villages, particularly to determine the time depth for house pit villages in the area. Dating the charred wood from House Pits 2 and 16 at Border Village and House Pits 13 and 11 at the Big Boulder Village would also give a more complete picture of the time span of occupation for these two villages. Excavation should also be carried out in the midden of the Border Village to determine information on the pre-pithouse occupation at this site. Some of the projectile points found there hint at an

older occupation. More extensive excavations at the Big Boulder Village midden should also be carried out to gain more information concerning the occupation associated with Humboldt Concave Base A points.

APPENDIX A

PLANTS OF THE SALT CAVE LOCALITY

Plants of the Salt Cave Locality
(adapted from Bailey 1936)

Upper Sonoran Zone

Agropyron lanceolatum	Wheatgrass
Artemisia tridentata	Big Sagebrush
Asclepias speciosa	Broadleaf milkweed
Cercocarpus butuloides	Birchleaf mahogany
Chaenactis Douglasii	Brides bouquet
Chrysothamnus nauseosus	Rubber rabbitbrush
C. viscidiflorus	Sticky rabbitbrush
Coldenia Nuttallii	Coldenia
Cryptantha flaccida	Borge
C. Torreyana	Borge
Distichlis sp.	Saltgrass
Elymus condensatus	Giant wild rye
E. triticoides	Beardless wild rye
Erigeron linearis	Fleabane
Eriogonum vimineum	Buckwheat
Eurotia lanata	Winterfat
Gilia inconspicua	Gilia
Glycyrrhiza lepidota	Smooth licorice
Helianthus annuus	Common sunflower
Hutchinsia procumbens	Little crucifer
Iva axillaris	Sumpweed
Juniperus occidentalis	Western juniper
Leptotaenia purpurea	Celery
Lupinus argenteus	Bluebonnet
L. subvexus transmontanus	Bluebonnet
Phacelia linearis	Threadleaf
Piptocalyx circumcissus	Bristle borage
Plantago Purshii	Indianwheat
Prunus virginiana demissa	Chokecherry
Purshia tridentata	Bitterbush
Ribes velutinum	Desert gooseberry
Rorippa columbiae	Watercress
Rhus trilobata	Skunkbush
Tetradymia canescens	Gray horsebrush

Transition Zone

Agoseris retrorsa	Sheeplettuce
Allium douglasii	Wild onion
Alnus tenuifolia	Mountain alder
Amelanchier florida	Serviceberry
Anemone deltoides	Windflower
Antennaria dimorpha	Pussytoes

A. Geyeri	Pussytoes
A. stenophylla	Pussytoes
Arabis cusickii	Rockcress
A. sparsiflora arcuata	Rockcress
Arctostaphylos patula	Green manzanita
A. uva-ursi	Bearberry
Arenaria congesta	Sandwort
Arnica fulgens	Arnica
Astragalus arrectus	Milkvetch
A. reventus	Milkvetch
Balsamorhiza sagittata	Balsamroot
Berberis repens	Creeping hollygrape
Betula occidentalis	Western birch
Calamagrostis rubescens	Reedgrass
Calochortus macrocarpus	Purple mariposa
Perideridia oregana	Eppaw
Castanopsis chrysophylla	Golden chinquapin
Ceanothus prostratus	Mahala-mat
C. velutinus	Snowbrush
Cercocarpus ledifolius	Mountain mahogany
Chamaebatia foliolosa	Bearmat
Cirsium foliosum	Leafy thistle
Clarkia rhomboidea	Clarkia
Clematis hirsutissima	Clematis
Cornus stolonifera	Red-osier dogwood
Crataegus columbiana	Columbia hawthorn
Disporum oregonum	Fairybells
Dodecatheon conjugens	Shootingstar
Erigeron corymbosus	Flat-top fleabane
Eriogonum umbellatum stellatum	Buckwheat
Festuca occidentalis	Western fescue
Frasera nitida	Green gentian
Fritillaria pudica	Yellow missionbells
Galium asperrimun	Bedstraw
Geranium viscosissimum	Sticky geranium
Geum oregonense	Avens
G. macrophyllum	Avens
Gilia aggregata	Scarlet gilia
Linanthus Harknessii	Harkness gilia
Helianthella douglasii	Little sunflower
H. ovalifolia	Alumroot
Hieracium longiberbe	Alumroot
Brodiaea douglasii	Douglas brody
Horkelia fusca	Brown horkelia
Juncus orthophyllus	Rush
Juniperus occidentalis	Western juniper
Kelloggia galioides	Kelloggia
Larix occidentalis	Western larch
Lathyrus oregonensis	Oregon pea
Libocedrus decurrens	Insense cedar

Linum digynum	Yellow flax
L. perenne Lewisii	Blue flax
Lomatium cous	Biscuit-root
L. macrocarpum	Biscuit-root
Melica spectabilis	Purple oniongrass
Mertensia nutans	Bluebells
Physocarpus capitatus	Ninebark
P. pauciflorus	Ninebark
Orthocarpus hispidus	Pale orthocarpus
O. luteus	Yellow orthocarpus
Osmorhiza divaricata	Aniseroot
Phoenicaulis cheiranthoides	Purplecress
Pentstemon fruticosus	Beardtongue
Pinus ponderosa	Ponderosa pine
Poa Sandbergii	Bluegrass
Polygonum Parryi	Polygonum
P. polygaloides	Polygonum
Populus trichocarpa hastata	Arrowhead cottonwood
Potentilla gracilis Nuttallii	Nuttail cinquefoil
Prunus emarginata	Bitter cherry
Pseudosuga Mensiesi	Douglas fir
Pyrola picta	Winterlettuce
Camassia Quamash breviflora	Camas
Ranunculus delphinifolius	Buttercup
R. platyphyllus	Buttercup
Rhus diversiloba	Poison oak
Ribes cognatum	Umatilla gooseberry
R. cereum	Wax currant
R. irriguum	Rock gooseberry
Rosa pisocarpa	Wild rose
Rubus parviflorus	Thimbleberry
R. strigosus	Red rasberry
Salix Mackenziana	Heartleaf willow
S. lasiandra caudata	Whiplash willow
Sambucus caerulea	Blueberry elder
Saxifraga columbiana	Saxifrage
Scirpus microcarpus	Bulrush
S. validus	Bulrush
Scribneria Bolanderi	Scribner grass
Sedum stenopetalum	Stonecrop
Senecio serra	Groundsel
Sidalcea oregana	Mallow
Silene spaldingii	Catchfly
Spiraea corymbosa	White meadowsweet
Stipa columbiana	Columbia needlegrass
S. occidentalis	Western needlegrass
Symphoricarpos rirularis	Snowberry
Synthris rubra	Synthyris
Lithophragma parviflora	Fringecup
L. tenella	Little fringecup
Trifolium douglasii	Douglas clover

T. cyathiferum	Cup clover
Smilacina racemosa amplexicoulis	False Solomonseal
Viola orbiaulata	Yellow violet
Wyethia amplexicaulis	Mule-ears

Canadian Zone

Abies amabila	Cascade fir
A. grandis	Great Silver Fir
A. magnifica	Red fir
A. proaera	Noble fir
A. magnifica shastensis	Shasta fir
Acer douglasii	Douglas maple
Aconitum columbianum	Monkshood
A. howellii	Monkshood
Angelica genuflexa	Angelica
Antennaria suffrutescens	Pussytoes
Antennaria racemosa	Pussytoes
Microseris borealis	Scorzonella
Arctostaphylos nevadensis	Sierra bearberry
Arnica aurantiaca	Golden arnica
A. latifolia	Broadleaf arnica
Aster modestus	Great aster
Berberis pumila	Little Barberry
Capnoides scouteri	Corydalis
Castilleja miniata	Paintbrush
C. miniata elata	Paintbrush
Chamaecyparis nootkatensis	Nootka cypress
Penstemon nemorosa	Turtlehead
Chimaphilia umbellata occidental	Pipsissewa
Cimicifuga elata	Bugbane
Cinna latifolia	Drooping wood reed
Cirsium callilepis	Thistle
Clintonia uniflora	Queencup
Collomia mazama	Mazama
Coptis laciniata	Goldthread
Cornus canadensis	Bunchberry
Dodecatheon alpinum	Shootingstar
Echinopanax horridum	Devilsclub
Galium biflorum	Bedstraw
G. oregonum	Bedstraw
Juncus Regelii	Rush
Juniperus communis montana	Mountain juniper
Kelloggia galioides	Kelloggia
Shepherdia canadensis	Rabbitberry
Lilium washingtonianum	Washington lily
Linnaea borealis	Twinflower
Lonicera involucrata	Bearberry honeysuckle

L. conjugalis	Twinberry
Lupinus andersoni	Bluebonnet
L. Lobbii	lupine
Mertensia subcordata	Bluebells
Mimulus Lewisii	Lewis monkeyflower
M. primuloides	Yellow monkeyflower
Pachistima myrsinites	Myrtle boxleaf
Paeonia brownii	Brown peony
Pedicularis attolens	Fernleaf
P. bracteosa	Fernleaf
Penstemon deustus	Blue penstemon
P. fruticosus	Shrubby penstemon
Phalaris arundinacea	Reed canary grass
Phleum alpinum	Alpine timothy
Picea engelmanni	Engelmann spruce
Pinus monticola	Western white pine
P. Murrayana	Lodgepole pine
Pleuropogon refractus	Semaphore-grass
Poa Kelloggii	Bluegrass
Polemonium carneum	Polemonium
P. caeruleum	Polemonium
Polygonum Kelloggii	Polygonum
Populus tremuloides aurea	Golden aspen
Potentilla Drummondii	Cinquefoil
Pyrola secunda	Winterlettuce
Sorbus sitchensis	Mountain ash
Ribes binominatum	Siskiyou gooseberry
R. triste	Drooping currant
R. lacustre	Prickly currant
Rubus nivalis	Snow dewberry
Sambucus melanocarpa	Blackbead elderberry
Sanguisorba latifolia	White burnet
Saxifraga rufidula	Saxifrage
Senecio triangularis	Groundsel
Silene oregana	Catchfly
Stenanthium occidentale	Slenderlily
Streptopus amplexifolius	Twistedstalk
Trautvetteria grandis	Bigleaf
Trientalis arctica	Starflower
Trifolium Howellii	Bigleaf clover
Tsuga heterophylla	Western hemlock
Vaccinium occidentale	Western log blueberry
Vaccinium membranaceum	Big whortleberry
V. scoparium	Grouse whortleberry
Valeriana sitchensis Scouleri	Valerian
Veratrum californicum	Snowy false-hellebore
V. viride	Green false-hellebore
Viburnum pauciflorum	Rayless cranberrybush
Viola purpurea	Purple viola
Zerophyllum tenax	Beargrass

APPENDIX B

FAUNAL ANALYSIS

TABLE 18.--Fauna of the Salt Cave Locality

Scientific Name	Common Name	Upper Sonoran	Transition	Canadian	Riparian	Used by Shasta	Used by Klamath-Modoc	Used by Takelma	Remains 35KL16	Remains 35KL18	Remains 35KL21
Pices:											
Lampetra folletti	Klamath Lamprey				x	x					
L. lethophaga	Pitt-Klamath Brook Lamprey				x	x	x				
L. tridentata	Pacific Lamprey				x	x					
Oncorhynchus tschawytscha	Chinook Salmon				x	x	x	x	x		x
Salmo clarki	Cutthroat Trout				x	x	x	x			
S. gairdneri	Rainbow Trout				x	x	x	x			x
S. malma	Dolly Varden				x	x					
Gila bicolor	Tui chub				x		x		x		x
G. coerulea	Blue chub				x		x		x	x	x
Rhinichthys osculus	Specked Dace				x						
Catostomus luxatus	Lost R. Sucker				x		x				x
C. rimiculus	Klamath Smale-Scale				x	x	x				
C. snyderi	Klamath Large Scale				x	x	x		x	x	x
Chasmistes brevirostris	Shortnose Sucker				x	x	x				
Cottus aleuticus	Coast Range Sculpin				x						

TABLE 18.--Continued

Scientific Name	Common Name	Upper Sonoran	Transition	Canadian	Riparian	Used by Shasta	Used by Klamath-Modoc	Used by Takelma	Remains 35KL16	Remains 35KL18	Remains 35KL21
C. asper	Prickly Sculpin				x						
C. Klamathesis	Marbled Sculpin				x						
Mylocheilus	Sucker				x						x
Reptila:											
Clemmys marmorata	W. Pond Turtle				x	x	x		x	x	x
Sceloporus graclosus	Mountain Swift	x	x								
S. occidentalis	W. Blue-Belly	x	x								
Phrynosoma platyrhinos	Horned Toad	x									
Plastiodon skiltonianus	W. Skink		x								
Charina bottae	Rubber Snake		x								
Coluber constrictor	W. Yellow-Belly racer		x								
Pituophis catenifer	Gopher Snake	x									
Contia tenuis	Sharp-tailed Snake		x								
Thamnophis sirtalis	Garter Snake	x	x								
Crotalus Oregonus	Pacific Rattlesnake	x				x					
Aves: Breeding Birds											
Podilymbus podiceps	Pied-bill Grebe	x	x		x						

TABLE 18.--Continued

Scientific Name	Common Name	Upper Sonoran	Transition	Canadian	Riparian	Used by Shasta	Used by Klamath-Modoc	Used by Takelma	Remains 35KL16	Remains 35KL18	Remains 35KL21
Phalacrotorax auritus	Double-Crested Cormorant	x	x		x						
Butorides virescens	Green Heron	x			x		x				
Anas platyrhynchos	Mallard	x	x	x	x	x	x				
A. strepera	Gadwall	x	x		x	x	x				
A. carolinensis	Green-Wing Teal	x	x		x	x	x				
Cathartes aura	Turkey Vulture	x	x								
Accipiter cooperii	Cooper's Hawk		x			x					
Buteo jamaicensis	Red-tail Hawk	x	x			x					
Aquila chrysaetos	Golden Eagle	x	x	x		x	x	x			
Haliaectus leucocephalas	Bald Eagle	x	x			x	x	x			
Pandian haliaetus	Osprey	x	x		x						
Falco mexicanus	Prairie Falcon	x									
F. sparverius	Sparrow Hawk	x	x	x		x					
Dehdragapus obscurus	Blue Grouse		x	x		x					
Bonasa umbellus	Ruffed Grouse		x	x		x	x				
Peduiecetes phasianellus	Sharp-tail Grouse		x			x	x				
Lopbortyx californicus	Calif. Quail		x			x	x				

TABLE 18.--Continued

Scientific Name	Common Name	Upper Sonoran	Transition	Canadian	Riparian	Used by Shasta	Used by Klamath-Modoc	Used by Takelma	Remains 35KL16	Remains 35KL18	Remains 35KL21
Oreortyx pictus	Mountain Quail		x			x					
Charadrius viciferus	Killdeer	x	x	x	x						
Actitis macularia	Spotted Sandpiper	x	x	x	x						
Columba fasciata	Band-tailed Pigeon		x								
Zenaidura macroura	Mourning Dove	x									
Tyto alba	Barn Owl	x									
Otus asio	Screech-Owl	x	x								
Bubo virginianus	Great Horn Owl	x	x								
G-laucidium gnoma	Pygmy Owl		x								
Asio Otus	Long-eared Owl	x	x								
Aegolius acadicus	Saw-whet Owl		x								
Chordeiles minor	Common Nighthawk		x	x							
Megaceryle alcyon	Belted Kingfisher	x	x								
Colaptes cafer	Red-shafted Flicker		x								
Dryocopus pileatus	Pileated Woodpecker		x	x							
Asyndesmus lewis	Lewis Woodpecker	x	x				x				
Sphyrapicus varius	Red-breasted Sapsucker		x	x							
Denarocopus villosus	Hairy Woodpecker		x	x							
D. pubescens	Downy Woodpecker		x	x							

TABLE 18. --Continued

Scientific Name	Common Name	Upper Sonoran	Transition	Canadian	Riparian	Used by Shasta	Used by Klamath-Modoc	Used by Takelma	Remains 35KL16	Remains 35KL18	Remains 35KL21
D. albolarvatus	Whiteheaded Woodpecker		x	x							
Aphelocoma coerulescens	Scrub Jay	x				x		x			
Corvus orachyrhynchos	Crow	x	x			x		x			
Turdus migrator	Robin		x	x							
Hylocichla ustulata	Swainson's Thrush		x	x							
Sialia currucoides	Bluebird		x	x							
Icteria virens	Yellow-breasted chat	x									
Mammalia:											
Antilocapra americana	Antelope	x				x	x		x	x	x
Ovis canadensis	Bighorn Sheep			x		x	x		x	x	x
Cervus Canadensis	Elk		x	x		x	x	x	x	x	x
Odocoileua hemionus	Mule Deer		x	x		x	x	x	x	x	x
O. virgianus	White-tail Deer		x			x	x	x	x	x	x
Aplodontia rufa	Mountain Beaver		x								x
Castor canadensis	Beaver	x	x		x	x	x	x	x		x
Citellus beecheyi	Ground Squirrel	x				x			x	x	x
C. Beldingi	Belding Ground Squirrel	x	x								

TABLE 18.--Continued

Scientific Name	Common Name	Upper Sonoran	Transition	Canadian	Riparian	Used by Shasta	Used by Klamath-Modoc	Used by Takelma	Remains 35KL16	Remains 35KL18	Remains 35KL21
Sciurus griseus	Gray Squirrel		x			x		x	x		x
S. douglasi	Chickaree		x	x			x		x		x
Thomomys bottae	White-tooth Pocket Gopher	x							x	x	x
T. mazama	Mazama Pocket Gopher			x					x	x	x
Zapus princeps	Jumping Mouse		x								
Lepus americanus	Snow-shoe Hare		x	x		x	x	x			x
L. californicus	Calif. Jack Rabbit	x				x	x	x	x		x
Sylvilagus bachmani	Brush Rabbit		x			x	x	x			
S. audoboni	Cottontail	x				x	x	x	x	x	x
Canis latrans	Coyote	x	x			x	x			x	x
C. familiaris	Dog	x	x			x	x	x	x	x	x
Urocyon cinereoargenteus	Gray fox	x				x	x	x	x	x	x
Vulpes fulves	Red Fox		x	x		x	x	x	x	x	x
Felis concolor	Couger		x	x			x		x	x	x
Lynx rufus	Bobcat		x	x		x	x	x			
Lutra canadensis	River Otter	x	x		x	x	x	x	x	x	x
Martes americana	Martin			x			x		x	x	x
M. pennanti	Fisher		x		x	x	x		x		
Mephitis mephitis	Stripped Skunk	x	x			x	x				
Mustela erminea	Short-tailed Weasel		x	x	x		x				
M. frenata	Long-tail Weasel	x	x	x	x						

TABLE 18. --Continued

Scientific Name	Common Name	Upper Sonoran	Transition	Canadian	Riparian	Used by Shasta	Used by Klamath-Modoc	Used by Takelma	Remains 35KL16	Remains 35KL18	Remains 35KL21
M. vison	Mink		x			x	x				x
Spilogale outorius	Spotted Skunk	x				x	x				x
Taxidea taxus	Badger	x	x			x	x			x	x
Ursus americanus	Black Bear		x	x		x	x	x			x
U. horribilis	Grizzly		x			x	x	x	x	x	
Bassariscus astutus	Ringtail	x									x
Procyon lotor	Raccoon		x			x	x		x	x	x
Sorex bendirei	Pacific Water shrew		x		x						
S. obscurus	Dusky shrew		x								
S. palustrus	N. water shrew			x	x						
S. trowbridgii	Trowbridge's Shrew		x								
S. vagrans	Vagrant Shrew		x	x							

TABLE 19.--Faunal remains from Klamath Shoal Midden

Name	Midden # of Bones	Stratum # of Individual	Cemented # of Bones	Gravel St. # of Individuals	Black # of Bones	Stratum # of Individual	River # of Bones	Gravel St. # of Individual	Total # of b.	Total # of i.
Fish										
Catostomus sp.	16	6							16	6
C. snyderi	16	6							16	6
C. luxatus	1	1							1	1
Gila coerulea	3	2							3	2
G. bicolor	1	1	1	1					2	2
Oncorhynchus sp.	10	4							10	4
O. tschawytsicha	4	3							4	3
Salmo sp.	1	1							1	1
Mylocheilus sp.	1	1							1	1
Total	53	25	1	1					54	26
Reptiles										
Clemmys marmorata	156	11	33	3	2	1	1	1	192	16
Mammals	38	0	3	0	1	1	1	1	41	2
Arteodactl	11	0	1	0					12	0
Antelocapra americana	8	3	2	1					10	4
Cervus canadensis	11	4							11	4
Odocoileus sp.	379	27	12	2	2	2			393	30
Ovis canadensis	17	5	1	1	1	1			19	7
Rodentia	2	1							2	1
Aplodontia rufa	2	2							2	2
Castor canadensis	14	5					1	1	15	6
Citellus beecheyi	264	21	24	5					288	26

TABLE 19.--Continued

Name	Midden # of Bones	Stratum # of Individual	Cemented # of Bones	Gravel St. # of Individuals	Black # of Bones	Stratum # of Individual	River # of Bones	Gravel St. # of Individual	Total # of b.	Total # of i.
Citellus sp.	2	1							2	1
Citellus lateralis	4	2							4	2
Geomys sp.	1	1							1	1
Microtus Californicus	2	1							2	1
Neotoma cinerea	26	5	2	1					28	6
Neotoma fuscipes	3	1							3	1
Neotoma sp.	3	1							3	1
Marmata flaviventris	4	2							4	2
Sciurus griseus	59	13							59	13
Sciurus douglasi	2	2							2	2
Erethizon dorsatum	2	1	1	1					3	2
Thomomys bottae	53	6							53	6
Thomomys mazama	11	2							11	2
Lepus americanus	1	1	1	1					2	2
Lepus californicus	1	1							1	1
Sylvilagus audoboni	38	4	2	1					40	5
Mustelid	1	1							1	1
Lutra canadensis	34	4							34	4
Mustela vision	8	3	2	1					10	4
Martes americana	8	2							8	2
M. pennanti	8	3							8	3
Spilogale sp.	1	1							1	1
Taxidea taxus	3	2							3	2
Bassariscus astutus	1	1							1	1
Procyon lotor	6	3							6	3
Ursus americanus	5	2	2	1					8	3
Canis latrans	21	5	1	1					22	6
C. familiaris	6	1							6	1
Urocyon cinereoargenteteus	10	3	1	1					11	4
Vulpes fulves	4	4							4	4
Felis concolor	4	2	1	1					5	3
Lynx rufus	16	3							16	3
Bird	50	5	6	1					56	6
Total	1,151	177	62	21	3	2	2	2	1,217	196

TABLE 20.--Faunal remains from Border Village

Name	House Pit 1 # of Bones	House Pit 1 # of Individual	House Pit 2 # of Bones	House Pit 2 # of Individual	House Pit 16 # of Bones	House Pit 16 # of Individual	Midden # of Bones	Midden # of Individual	Total # of b.	Total # of i.
Fish										
Castostomus sp.	45	25							45	25
C. snyderi	7	4							7	4
Gila sp.	1	1							1	1
C. coerulea	5	2							5	2
G. bicolor	14	8							14	8
Oncorhynchus sp.	1	1							1	1
Total	73	41							73	41
Reptiles										
Clemmys marmorata	124	9	3	1	5	3			132	13
Mammals	1	0							1	0
Arteodactl	4	0							4	0
Antelocapra americana	5	3	1	1	1	1			8	5
Cervus canadensis	4	2			3	1			7	3
Odocoileus Sp.	183	17	7	4	35	6	1	1	226	28
Oyis canadensis	6	3							6	3
Rodentia	1	1	1	0	1	0			3	1
Citellus beecheyi	68	6	10	3	11	3			89	12
C. lateralis	5	2			1	1			6	3
Castor canadensis	6	4							6	4
Erethizon dorsatum	2	1							2	1
Microtus californicus	7	4			1	1			8	5
Neotoma cinerea	10	2	1	1	1	1			12	4
N. fuscipes	12	6							12	6
Sciurus griseus	9	3	3	1	1	1			13	5
S. douglasi	1	1							1	1
Sorex sp.	1	1							1	1
Thomomys bottae	9	3							9	3
T. mazama	2	1							2	1

TABLE 20.--Continued

Name	House Pit 1 # of Bones	House Pit 1 # of Individual	House Pit 1 # of Bones	House Pit 1 # of Individual	House Pit 16 # of Bones	House Pit 16 # of Individual	Midden # of Bones	Midden # of Individual	Total # of b.	Total # of i.
Lepus californicus	2	2							2	2
Sylvilagus audoboni	3	2							3	2
Lutra canadensis	5	2	1	1					6	3
Martes americana	1	1							1	1
M. pennanti	2	2							2	2
Procyon lotor	2	2							2	2
Ursus horribilis	1	1							1	1
Vulpes fulves	1	1	1	1					2	2
Canis familiaris			3	2					3	2
Urocyon cinereoargenteus	1	1							1	1
Felis concolor	3	1							3	1
Birds	6	1	3	1	4	1			13	3
Total	290	35	31	15	59	16			381	67

TABLE 21. --Faunal remains from Big Boulder Village

Name	House Pit 3		House Pit 11		House Pit 13		Test Pit		Total	
	# of Bones	# of Individual	# of Bones	# of Individual	# of Bones	# of Individual	# of Bones	# of Individual	# of Bones	# of Individual
Fish										
Catostomus sp.	4	2							4	2
Gila coerulea	1	1							1	1
Total	5	3							5	3
Reptiles										
Clemmys marmorata	10	1	27	2	2	21	1		58	4
Mammals										
Arteodactl	8	0	4	0	12	0			24	0
Antelocapra americana	1	1	1	1	6	2			8	4
Cervus canadensis					13	1			13	1
Odocoileus sp.	49	2	49	2	90	3	1	1	182	8
Ovis canadensis	1	1			1	1			2	2
Rodentia	2	0	3	0	1	0	2	1	8	1
Neotoma fuscipes	1	1							1	1
Thomomys bottae					2	1			2	1
T. mazama					3	1			3	1
Citellus beecheyi					1	1			1	1
Erethizon dorsatum			4	1	2	1			6	2
Sylvilagus audoboni	1	1							1	1
Lutra canadensis	19	2			1	1	1	1	21	4
Martes americana	1	1							1	1
Procyon lotor			2	1	2	1			4	2

TABLE 21.--Continued

Name	House Pit 3 # of Bones	House Pit 3 # of Individual	House Pit 11 # of Bones	House Pit 11 # of Individual	House Pit 13 # of Bones	House Pit 13 # of Individual	Test Pit # of Bones	Test Pit # of Individual	Total # of Bones	Total # of Individual
Taxidea taxus			1	1	1	1			2	2
Ursus horribilis			1	1					1	1
Canis familieris			1	1					1	1
C. latrans					7	1			7	1
Urocyon cinereoargenteus	1	1	1	1					2	2
Felis concolor			1	1					1	1
Lynx rufus	1	1	1	1					2	2
Bird	4	1	3	1	4	1	1	1	12	4
Total	105	18	89	13	163	16	4	3	361	50

APPENDIX C

GROUND STONE TOOL DATA

TABLE 22.--Milling stones

Types	Border Village	Big Boulder Village	Klamath Shoal Midden
Slab-Uniface	8	9	9
Slab-Biface	3	3	0
Block-Uniface	1	2	2
Block-Biface	1	2	1

Muller Classes

Class 1a (12 specimens: site 35 KL 16, 6; 35 KL 18 5; 35 KL 21 1)

>8 cm long

>7 cm wide

>3 cm >4.5 cm thick

.70-.95 width-length ratio

.25-.55 thickness-length ratio

Biface or uniface

Unshouldered or slightly shouldered

Flat or convex in longitudinal cross-section

Flat or convex in traverse cross-section

Slightly shaped to unshaped

Lenticular in transverse profile

Circular to slightly oval in plainview

Material: basalt, andesite, welded tuff and vesicular basalt

Class 1b (7 specimens: Site 35 KL 16, 5; 35 KL 18 2

>9.5 cm long

>6.5 cm wide

>4.0 <5.0 cm thick

.65-.75 width-length ratio

.40-.50 thickness-length ratio

Uniface

Unshouldered

Flat in transverse cross-section

Flat in longitudinal cross-section

Slightly shaped to unshaped

Lenticular in transverse profile

Oval in plainview

Material: Basalt and andesite

Class 2 (8 specimens: 35 KL 16 3; 35 KL 18 5)

>10 cm long

> 5 cm long

> 3 <4.5 cm thick

.55-.75 width-length ratio

.30-.45 thickness-length ratio

Biface or uniface

Unshouldered to slightly shouldered

Flat to slightly convex in transverse cross-section

Flat in longitudinal cross-section

Slightly shaped to shaped

Sub-rectangular in plainview

Sub-rectangular in transverse profile

Material: basalt, andesite and welded tuff

Class 3a (4 specimens: 35 KL 16 1, 35 KL 18 2; 35 KL 21 1)

>9.5 cm long

>7.5 cm wide

>4.0 cm <5.5 cm thick

.75-.85 width-length ratio

.40-.50 thickness-length ratio

Biface or uniface

Shouldered to slightly shouldered

Flat or convex in transverse cross-section

Flat or convex in longitudinal cross-section

Shaped

Sub-rectangular in transverse profile

Sub-rectangular to oval in plainview

Material: Basalt or andesite

Class 3b (2 specimens: 35 KL 16 2)

>7.0 cm long

>5.0 cm wide

>2.5 cm <3.5 cm thick

.65-.75 width-length ratio

.40-.50 thickness-length ratio

Biface or uniface

Unshouldered

Flat or convex in transverse cross-section

Flat or convex in longitudinal cross-section

Partly shaped to unshaped

Sub-rectangular to wedge-shaped in transverse profile

Sub-oval in plainview

Material: Basalt or andesite

Class 4 (8 specimens: 35 KL 16 2; 35 KL 18 2; 35 KL 21 3; 35 KL 22 1)

>8.0 cm long

>8.5 cm wide

>2.0 cm <3.5 cm thick

.65-.99 width-length ratio

.20-.40 thickness-length ratio

Biface or uniface

Shouldered or unshouldered

Flat, convex or concave in transverse cross-section

Flat or convex in longitudinal cross-section

Unshaped

Wedge-shaped to lenticular in transverse profile

Diamond or triangular in plainview

Material: Basalt or andesite

Class 5a (5 specimens: 35 KL 16 2; 35 KL 18 3)

>9.0 cm long

>7.0 cm wide

>3.0 cm thick

.70-.99 width-length ratio

.25-.40 thickness-length ratio

Uniface

Shouldered

Flat in transverse cross-section

Flat or convex in longitudinal cross-section

Shaped

Sub-rectangular in transverse profile

Oval in plainview

Material: Volcanic sandstone or basalt

Class 5b (2 specimens: 35 KL 18 2)

>9.0 cm long

>7.0 cm wide

>2.0 cm thick

.70-.99 width-length ratio

.10-.15 thickness-length ratio

Uniface

Shouldered

Flat in transverse cross-section

Flat in longitudinal cross-section

Shaped

Sub-rectangular in transverse profile

Oval in plainview

Material: Volcanic sandstone or scoria

Class 6a (9 specimens: 35 KL 18 7; 35 KL 22 2)

>8.0 cm long

>7.5 cm wide

>2.5 cm <6.0 cm. thick

.70-.99 width-length ratio

.30-.50 thickness-length ratio

Uniface

Shouldered

Flat in transverse cross-section

Flat to slightly convex in longitudinal cross-section

Shaped

Hemispherical, developmental or wedge-shaped in transverse profile

Circular, oval to sub-rectangular in plainview

Material: Basalt, andesite, dacite, sandstone or vesicular basalt

Class 6b (1 specimen: 35 KL 21)

>8.0 cm. long

>7.5 cm. wide

10.0 cm. thick

.70-.99 width-length ratio

1.0 thickness-length ratio

Uniface

Shouldered

Flat in transverse cross-section

Flat in longitudinal cross-section

Shaped

Conical in transverse profile

Circular in plainview

Material: Vesicular basalt

TABLE 23.--Pestle measurements

Number	Length	Width	Thickness	Number of Used Surface	Rounded or Angular	Material	Triangular or Rectangular	Class
35 KL 16								
F2 1/3 - 1	15.5	8.8	6.1	2	A	Basalt	T	3
E1	10.34	5.55*	5.1	2	R	Basalt	T	1
C2 3/4-15	3.7*	5.5*	5.3*	1	R	Basalt	?	1 or 2
C9 1/1-2a-4	20.4*	8.1	5.1	1	A	Basalt	R	4
D3 4/-10	21.0	9.0*	7.0	3	A	Basalt	R	4
Mean	15.6	8.45	5.8					
SD	5.3	.49	.91					
35 KL 18								
62-23	12.16	5.14	4.63	2	R	Metagreywacky	T	1
S-2	8.94*	5.14*	4.28*	1	A	Basalt	R	4
39-5	16.2	6.39	6.34	3	R	Basalt	R	2
P2-4	8.45*	6.96*	4.78*	1+	R	Basalt	?	1 or 2
22-2	3.94*	4.85*	4.82*	1	R	Basalt	?	1 or 2
20-3	21.2	7.35	7.0	2	R	Vesicular Basalt	T	1
22-1	20.2	7.5	7.5	2	A	Basalt	T	3
39-4	28.2	6.5	4.2	5	A	Basalt	R	4
C2-61	17.4*	7.2*	5.38*	1	A	Basalt	T	3
Mean	19.6	6.6	5.9					
SD	5.9	.90	1.5					
35 KL 21								
H2-20	10.39	3.36	3.47	2	R	Ryolite	T	1
Q2-19	10.9	15.17	4.5	2	A	Basalt	T	3
U1-5	18.5	6.1	5.73	4	A	Andesite	R	4
H2-19	22.2	7.28	4.55	3	A	Basalt	T	3
U1-5	18.5	5.27	4.47	2	R	Metagreywacky	T	1
T2-30	19.3	7.12	6.68	2	R	Ryolite	R	2
V-3	6.2*	6.47*	5.4	2	R	Basalt	?	1 or 2
H2-23	8.64*	6.6*	6.4*	1	R	Basalt	?	1 or 2
Mean	16.6	7.4	4.9					
SD	4.8	4.1	1.1					
Total Mean	17.5	7.2	5.5					
Total SD	5.2	2.8	1.2					

NOTE: All measurements in centimeters.

TABLE 24.--HAR stones measurements

Number	Length	Width	Thickness	Length/Width Ratio	Length/Thickness Ratio	Rounded or Angular	Number of Worked Surfaces	Material	Battered or Rubbed	Pitted
35 KL 16										
B3 3/-1	8.96*	8.5	4.3	-	-	A	2	Basalt	R	✓
F3/3-2	8.99*	8.1*	3.78*	-	-	A	1	Andesite	R	✓
F3 2/2-1	11.9	8.0	3.6	.67	.32	A	2	Ryolite	R	✓
D4 2a/1-3	8.2	4.32	3.07	.52	.37	A	1	Basalt	R	
B2 4/4-33	3.38	2.8	2.7	.82	.79	R	2	Basalt	B	
A3 2/2-3-5	7.5	4.2	3.04	.56	.40	A	3	Basalt	B & R	
C3 3/4-6	5.25	4.1	1.96	.78	.37	A	1	Basalt	R	
E3 5/-4	4.5	3.75	2.86	.83	.63	R	2	Ryolite	R	
C1 3/4-16	5.34	3.8	2.7	.71	.50	A	2	Andesite	B	
E1 4/4-1	7.1	5.3	2.3	.74	.32	A	1	Ryolite	B	
B2 4/4-36	5.0	2.6	1.83	.52	.36	A	2	Basalt	B	
B1 /3-2	8.0	6.63	3.39	.82	.42	A	6	Quartzite	B	✓
A9 2/2-1	8.23	5.98	3.9	.70	.46	A	2	Basalt	B & R	
E4 5/4-1	16.5	10.9	6.8	.66	.41	A	1	Basalt	B	
Mean	7.6	5.5	3.3	.69	.45					
SD	3.6	2.5	1.3	.11	.14					
35 KL 18										
N2-22	6.65	6.6	2.3	.99	.36	A	1	Basalt	R	
T3-17	4.29*	2.8	1.73	-	-	A	2	Basalt	R	
24-3	7.3*	6.82*	4.39*	-	-	A	2	Basalt	B & R	
Q2-84	7.1*	8.18*	5.46*	-	-	A	2	Basalt	R	
Z1-2	14.9	11.6	5.17	.77	.34	A	5	Ryolite	B	✓
M1-61	3.24	2.5	1.34	.77	.41	A	1	Basalt	R	
R1-62	2.46	1.97	1.27	.80	.51	A	1	Basalt	R	
20A-2	6.0	5.8	4.2	.90	.70	R	2	Ryolite	B & R	
E2-70	12.1	4.9	2.76	.40	.22	A	3	Basalt	B & R	
F1-24	8.74	3.13	2.4	.35	.27	A	2	Basalt	B	
Y2-48	3.73	3.44	3.2	.92	.86	R	2	Basalt	B	
X3-3	10.14	7.0	6.19	.69	.61	R	3	Basalt	B	
20-2	4.72	4.54	4.11	.94	.85	R	2	Basalt	B	
M1-60	2.38	1.98	1.52	.83	.63	R	2	Basalt	B	
Y2-159	9.83	9.2	8.15	.92	.82	R	1	Vesicular Basalt	B	✓
Mean	7.1	5.0	3.4	.77	.55					
SD	4.1	2.9	2.1	.21	.23					

TABLE 24. --Continued

Number	Length	Width	Thickness	Length/Width Ratio	Length/Thickness Ratio	Rounded or Angular	Number of Worked Surfaces	Material	Battered or Rubbed	Pitted
35 KL 21										
J1-40	6.2	5.7	5.0	.92	.80	R	3	Basalt	B	
V-37	5.8	4.4	3.4	.77	.60	R	5	Welded Tuff	B	
H2-21	13.8	4.6	2.8	.33	.20	A	3	Ryolite	R	
S-13	9.78	4.38	3.57	.47	.35	A	2	Scoria	R	
S-14	10.2*	9.0	8.07*	-	-	R	2	Andesite	B	
Mean	8.9	5.67	3.7	.62	.49					
SD	3.7	2.1	.94	.27	.27					
Total Mean	7.6	5.3	3.4	.72	.49					
Total SD	3.7	2.5	1.6	.18	.19					

NOTE: All measurements in centimeters.

TABLE 25. --Muller measurements

Artifact Number	Length	Width	Thickness	Length/Width Ratio	Length/Thickness Ratio	Biface or Uniface	Shouldered Slightly Sh. Unshouldered	Shape	Material	Class
35KL16										
S-11	6.74	5.0	2.96	.74	.43	b	Sl. sh. &unsh.	W	Basalt	3b
B1 /3-3	9.86	6.79	2.25	.68	.22	u	Sl. sh. &unsh.	S-L	Ryolite	4
B2 3/4-7	8.2	7.59	4.3	.92	.52	b	Unshouldered	S-L	Ryolite	1a
F3 3/-3	10.6	7.49	3.14	.70	.29	b	Sl. shoulder	S-L	Basalt	1a
F3 3/-4	9.6	7.27	2.82	.75	.29	u	Sli. shoulder	W	Ryolite	4
F3 3/-4	8.3*	5.64	2.36	-	-	u	Shouldered	W	Scoria	?
F3 /3-1 & D3-41/1-1	12.17	8.08	4.0	.67	.32	b	Shouldered	S-R	Ryolite	?
E4 /2-1	9.0*	7.68*	2.36*	-	-	u	Sl. shoulder	?	Basalt	5
E1 3/4-1	10.58*	6.28*	3.32*	-	-	b	Unsh. &sli-sh.	S-R	Andesite	2
S-12	9.8*	5.08*	3.87*	-	-	u	Unshouldered	S-R	Welded Tuft	2
A3:B3 4/4-4	6.6*	6.8*	3.97*	-	-	u	Unshouldered	S-1	Basalt	1b
E4 /4-182	4.55*	8.87*	7.0*	-	-	u	Shouldered	?	Basalt	?
B3 2/4-108 F3 6/-7 & E4 3b/1-4	11.94*	9.0	6.15	-	-	b	Sl. sh. &shoud.	C	Basalt	?
C4 /2-13	4.2*	7.3*	3.78*	-	-	u	Unshouldered	S-L	Ryolite	1b
F3 3/-20	5.69*	7.27*	3.5*	-	-	b	?	S-L	Ryolite	1a
E4 /4-364 & E4 2/3-869	4.79*	6.5*	3.75*	-	-	b	Shouldered	?	Basalt	?
A3 1-4/1-5-1	8.17*	4.1*	3.88*	-	-	u	Unshouldered	S-R	Basalt	2
F3 4/-13	3.16*	6.4*	4.2*	-	-	u	Unshouldered	L	Ryolite	1b
E3 /2-20	3.0*	5.68*	5.46*	-	-	b	Unshouldered	?	Andesite	?
D4 3/4-3	5.85*	2.69*	4.27*	-	-	u	Sl. Shoulder	L	Andesite	1a
E3 /4-4	2.47*	3.4*	2.88*	-	-	b	Unshouldered	?	Ryolite	?
B2 /2-4	7.8*	5.0*	4.1*	-	-	u	Sl. shouldered	?	Ryolite	?
D2 4/4-4	5.8*	2.15*	1.9*	-	-	b	Shouldered	?	Basalt	?
F3 2/3-2	4.7*	4.0*	2.57*	-	-	u	Unshouldered	?	Basalt	?
E3 5/4-9	6.2*	3.5*	4.1*	-	-	u	Unshouldered	L	Andesite	1a
F2 /1-2	5.0*	3.05*	3.3*	-	-	b	Unshouldered	?	Basalt	?
E3 5/4-10	8.1*	3.28*	4.5*	-	-	u	Sl. shouldered	L	Basalt	1a

TABLE 25. --Continued

Artifact Number	Length	Width	Thickness	Length/Width Ratio	Length/Thickness Ratio	Biface or Uniface	Shouldered Slightly Sh. Unshouldered	Shape	Material	Class
E3 4/ -13	4. 13*	3. 0*	6. 68*	-	-	b	Shou. &Unshould.	?	Basalt	?
D3 3/1-2	3. 27*	6. 47*	4. 84*	-	-	u	Unshouldered	L	Andesite	1b
C1 3/4-17	6. 6*	1. 86*	5. 03*	-	-	u	Unshouldered	?	Basalt	?
C2 4/4-30	2. 27*	4. 73*	2. 31*	-	-	u	?	?	Basalt	?
F4 /1-2-4	4. 35*	4. 93*	2. 35*	-	-	u	?	?	Basalt	?
A7 2a/-2	10. 75	9. 5	4. 1	. 88	. 38	u	Shouldered	S-R	Volcanic Sandstone	?
A7 2a/-1	7. 66*	5. 13*	2. 05*	-	-	u	Unshouldered	S-R	Basalt	5
C7 7b/-1	6. 14*	10. 46*	5. 05*	-	-	b	Sh. &unshould.	?	Basalt	?
D6 4-6/-1	4. 64*	4. 16*	4. 1*	-	-	u	Unshouldered	L	Ryolite	1b
B3 3/-1	8. 96*	8. 5	4. 3	-	-	b	Shouldered	S-R	Basalt	3a
E4 /4-5	6. 64*	9. 97*	5. 29*	-	-	u	Shouldered	P	Basalt	?
D4 /1-1	8. 4*	6. 27*	3. 24*	-	-	u	Unshouldered	S-R	Scoria	?
E2 5/4-5-5	19. 2	16. 4	8. 1	. 85	. 42	u	?	?	Basalt	?
D3 5/5-15	6. 9	4. 65	3. 3	. 67	. 47	u	Unshouldered	W	Basalt	3b
35KL16-Means	10. 5	8. 0	4. 0	. 76	. 37					
S. D.	3. 7	3. 1	1. 7	. 10	. 10					
35KL18										
Q1-42	11. 2	9. 7	3. 44	. 86	. 35	b	Unshouldered	S-L	Basalt	1a
M1-1	10. 7	8. 4	4. 0	. 78	. 37	u	Sl. shoulder	S-L	Vesicular Basalt	1a
Q1-9	8. 06*	7. 26*	3. 84*	-	-	u	Shouldered	S-R	Volcanic Sandstone	5
Z1-3	8. 95*	12. 32*	3. 63*	-	-	u	Unshouldered	L	Basalt	2
Z1-1	10. 75	10. 3	3. 1	. 95	. 28	u	Shouldered	S-R	Volcanic Sandstone	5
P2-6	10. 8	8. 0	4. 9	. 74	. 46	u	Shouldered	D	Andesite	6a
U2-12	9. 53	9. 05	2. 74	. 94	. 28	u	Shouldered	W	Sandstone	6a
P2-5	8. 37	7. 64	5. 02	. 91	. 53	u	Shouldered	D	Basalt	6a
M2-5	9. 4	8. 8	6. 0	. 93	. 63	u	Sl. should.	W	Basalt	?
T3-19	9. 57	6. 74*	1. 34	-	. 14	u	Shouldered	W	Volcanic Sandstone	5
35-1	10. 5	8. 25	3. 02	. 78	. 28	b	Shoulder&Unsh.	W	Basalt	4

TABLE 25. --Continued

Artifact Number	Length	Width	Thickness	Length/Width Ratio	Length/Thickness Ratio	Biface or Uniface	Shouldered Slightly Sh. Unshouldered	Shape	Material	Class
P1-9	8.25*	10.2*	3.4*	-	-	u	Sl. shoulder	L	Basalt	1a
R1-25	11.27*	5.38*	4.2*	-	-	u	Unshouldered	L	Vesicular Basalt	1a
Q2-84	7.1*	8.18*	5.46*	-	-	u	Shouldered	S-R	Basalt	3a
23-2	11.96	10.44*	4.54	-	.37	u	Unshouldered	L	Basalt	1a
24-3	7.3*	6.82*	4.31*	-	-	u	Unshouldered	L	Ryolite	1b
R1-18	8.0*	7.95	3.08	-	-	u	Shouldered	L	Basalt	6a
M2-6	6.31*	4.27*	3.6*	-	-	u	Shouldered	H	Vesicular Basalt	6a
S-9	9.23	8.1	2.2	.87	.23	b	Should. &Unsh.	W	Basalt	4
39-7	10.19	9.3	4.97	.91	.48	u	Shouldered	D	Andesite	6a
B2-113	10.0	7.97	3.52	.79	.35	u	Shouldered	D	Dacite	6a
F1-22	9.3*	7.9*	3.88*	-	-	b	Unshouldered	S-R	Basalt	2
E2-71	7.95*	8.5*	2.55*	-	-	b	Unshouldered	S-R	Ryolite	2
B2-116	9.0*	8.48*	3.19*	-	-	b	Unshouldered	S-R	Ryolite	2
C2-62	6.87*	4.64*	3.23*	-	-	u	Unshouldered	?	Basalt	?
X1-8	9.64*	5.14*	3.35*	-	-	b	Unshouldered	S-R	Ryolite	2
X5-6	11.12	9.05	5.26	.81	.47	b	Sl. shoulder	S-R	Ryolite	3a
X3-28	9.7*	7.5*	4.4*	-	-	u	Unshouldered	L	Basalt	1a
Y1-75	5.99*	8.81*	3.71*	-	-	u	Shouldered	S-R	Volcanic Sandstone	5
Y1-15	7.0*	3.09*	1.35*	-	-	u	Shouldered	S-R	Scoria	5
35KL18-Mean	10.2	8.7	3.8	.86	.37					
S.D.	.95	.80	1.3	.07	.01					
35KL21										
J1-39	8.3	8.28	2.93	.99	.35	b	Sh. &Unshould	W	Andesite	4
J1-37	8.69	7.94	2.14	.91	.24	b	Sh. &Unshould	W	Ryolite	4
J1-38	8.66	6.33	2.45	.74	.28	b	Sh. &Unshould	W	Ryolite	4
L3-20	9.6	7.65	4.18	.79	.42	b	Shouldered	S-R	Andesite	3a
L2-34	11.14	9.29	3.2	.83	.28	u	Shouldered	L	Welded Tuff	1a
				.90	1.20	u	Shouldered	C		
M2-22	8.84	7.96	10.66	.90	1.20	u	Shouldered	C	Vesicular Basalt	6b

TABLE 25.--Continued

Artifact Number	Length	Width	Thickness	Length/Width Ratio	Length/Thickness Ratio	Biface or Uniface	Shouldered Slightly Sh. Unshouldered	Shape	Material	Class
G1-13	6.92*	8.76	5.08*	-	-	u	SL Should	?	Basalt	?
R2-62	9.72*	7.54*	2.44*	-	-	u	Unshouldered	?	Basalt	?
35KL21-Mean	9.2	8.03	4.26	.86	.46					
S.D.	1.04	.93	3.2	.09	.37					
35KL22										
S-17	8.58	8.07	3.33	.93	.38	u	Shouldered	H	Vesicular Basalt	6a
S-18	12.41	10.1	4.97	.81	.40	u	Shouldered	D	Basalt	6a
S-19	8.34	7.3	3.46	.87	.41	b	Sl. Sh. &Unsh.	W	Basalt	4
35KL22-Mean	9.78	8.49	3.9	.87	.39					
S.D.	2.3	1.5	.91	.06	.02					
Total Mean	10.1	8.3	3.96	.83	.09					
Total S.D.	2.2	1.9	1.6	.39	.18					

Key: C = Conical
D = Developmental
H = Hemispherical
L = Lenticular
S-L = Sub-Lenticular
S-R = Sub-Rectangular
W = Wedge
P = Pentagonal

NOTE: All measurements in centimeters.

TABLE 26.--Milling stone measurements

Number	Length	Width	Thickness	Length/Width Ratio	Block or Slab	Uniface or Biface	Depth at Center	Rim Present	Material
35KL16									
F3 /3-2	8.99*	8.1*	3.78*	-	S	U	-	No	Andesite
E3 /1-4-1	6.48*	6.11*	4.45*	-	S	U	0.22	No	Basalt
C2 3/4-14	5.45*	3.77*	1.9*	-	S	U	-	No	Andesite
F2 1/3-2	10.38*	7.7*	2.65*	-	S	U	0.46	No	Andesite
B2 2/4-27	10.2*	7.88*	4.46*	-	S	U	0.48	No	Andesite
E1 2/1-5	9.5*	5.3*	4.39*	-	S	B	0.74	No	Basalt
E3 /4-3	6.4*	4.08*	5.0	-	S	B	0.71*	No	Basalt
B3 1/4-1	6.8*	5.77*	3.92*	-	S	B	0.61*	No	Basalt
E2 5/4-20	9.6*	7.2*	4.69*	-	S	U	-	No	Andesite
B8 1-3/2-2	17.4*	7.0*	3.34*	-	S	U	-	No	Andesite
D6 4-6/2	9.7*	6.2*	2.36*	-	S	U	-	No	Andesite
F4 /4-5	10.0	6.1	5.8	.61	B	U	-	No	Basalt
D2 4/4-32	16.1*	12.4*	5.9*	-	B	B	.08	No	Basalt
35KL18									
F1-23	7.19*	5.8*	3.1*	-	S	U	-	No	Basalt
Y1-11	5.25*	4.39*	4.68*	-	S	B	-	No	Basalt
Y-1	8.87*	6.0*	2.9*	-	S	U	-	No	Basalt
Y2-93	6.34*	12.33*	3.25*	-	S	B	-	No	Basalt
39-6	13.6*	8.3*	6.4*	-	B	B	-	No	Basalt
U2-11	5.5*	8.5*	3.36*	-	S	U	-	No	Basalt
W1-23	5.7*	4.06*	3.1*	-	S	U	-	No	Basalt
W1-22	8.3*	7.7*	1.63*	-	S	U	-	No	Basalt
24-1	5.77*	4.3*	6.97*	-	B	B	-	No	Basalt
V2-1	10.32*	11.93*	3.0*	-	S	U	-	No	Basalt
T3-18	7.03*	7.0*	4.2*	-	S	U	-	No	Basalt
W1-24	8.77*	5.26*	3.74*	-	S	U	-	No	Basalt
X3-2	5.9*	4.86*	4.82*	-	S	B	-	No	Vesicular Basalt
B2-115	15.0*	13.9*	7.7	-	B	U	-	No	Andesite
H. P. 11	35.3*	34.0*	4.1	-	S	U	-	No	Welded Tuff
26-5	9.76*	5.6*	7.5*	-	B	U	-	No	Basalt

TABLE 26. --Continued

Number	Length	Width	Thickness	Length/Width Ratio	Block or Slab	Uniface or Biface	Depth at Center	Rim Present	Material
35KL21									
S	45.0	22.0	8.0	4.8	B	U	1.9	No	Basalt?
S-10	11.87*	11.0*	3.9	-	S	U	-	No	Basalt
Q1-32	9.89*	9.73*	2.75*	-	S	U	-	No	Basalt
U1-3	12.9*	10.5*	3.84	-	S	U	-	No	Andesite
U1-7	13.0*	11.46*	5.89	-	B	U	1.85	No	Andesite
J3-40	10.53*	7.59*	3.5*	-	S	U	-	No	Basalt
T2-13	11.10*	6.47*	4.08	-	S	U	0.5	Yes	Vesicular Basalt
H2-22	9.12*	6.07*	5.16*	-	B	B	-	No	Andesite
G1-11	8.48*	7.14*	2.39*	-	S	U	-	No	Andesite
G1-12	8.44*	5.73*	3.93	-	S	U	-	No	Andesite
G2-9	11.8*	10.55*	3.5	-	S	U	-	No	Andesite
H1-21 & G1-10	12.2*	9.63*	4.0*	-	S	U	-	No	Andesite

NOTE: All measurements in centimeters.

APPENDIX D

PROJECTILE POINT TYPOLOGY

The critical attributes used to define the projectile point types were taken from Thomas (1970). The various attributes which he used have been taken with very little modification. Other attributes, more commonly used in point typologies are also used. The defining attributes of the Great Basin types, Types 2, 3, 5-9 and 11-18 were taken directly from Thomas (Ibid). The other types and classes are defined by the author, using Thomas's scheme, which has been modified. Several of Thomas's attributes are angles and ratios. They are abbreviated in the following list of types. DSA is the angle formed between a line defined by the shoulder and a line drawn perpendicular to the longitudinal axis of the point. PSA is the angle formed between a line defined by the stem and a line drawn perpendicular to the longitudinal axis of the point. The BIR is the ratio of the length of the longitudinal axis to the total length of the point. The BC is the length of the line from the tip of the blade to its base divided by the length of a line perpendicular to the first line from the point of inflection of the blade.

Type 1 Gunther Barbed 262 specimens

1. DSA $\leq$ 160°
2. PSA $\leq$ 100°
3. BIR < .90°
4. Stem Length-Barb Length Ratio 2.0

5. Weight < 3.0 grams; exception spear points > 3.0 grams
6. Triangular shape
7. Base convex or pointed
8. Barbs rounded or pointed

Type 2 Rose Spring Contracting Stem 11 specimens

1. DSA > 140°
2. PSA $\leq$ 100°
3. BIR > .90
4. Weight $\geq$ 3.0 grams
5. Triangular shape
6. Base straight, convex or pointed

Type 3 Rose Spring Corner-Notched 53 specimens

1. DSA $\leq$ 195°
2. PSA > 100° and < 130°
3. Weight $\leq$ 2.0 grams
4. Triangular shape
5. Base straight or convex
6. Basal Width-Maximum Width Ratio < .90

Type 4a Desert Side-Notched, General Subtype 25 specimens

1. PSA > 130°
2. Weight $\leq$ 2.0 grams
3. Basal Width-Maximum Width Ratio > .90
4. Length $\leq$ 26 mm
5. Material: Obsidian, almost exclusively
6. Base concave

Type 4b Desert Side-Notched, Sierra Subtype 11 specimens

1. PSA > 130°
2. Weight $\leq$ 2.0 grams
3. Basal Width-Maximum Width Ratio >.90
4. Length $\leq$ 26 mm
5. Material: obsidian, almost exclusively
6. Base notched

Type 5 Eastgate Expanding Stem 5 specimens

1. DSA $\leq$ 140°
2. PSA $\leq$ 100°
3. BIR $\geq$ .96
4. Weight $\leq$ 3.0 grams
5. Base straight
6. Barb tips straight or squared

Type 6 Eastgate Split Stem 3 specimens

1. PSA >80°, < 100°
2. BIR > .90 < .96
3. Weight < 3.0 grams

Type 7 Surprise Valley Split Stem 2 specimens

1. DSA $\leq$ 195°
2. PSA > 100° < 130°
3. Weight $\leq$ 3.0 grams
4. Triangular shaped
5. Base concave

Type 8 Cottonwood Triangular 14 specimens

1. Unshouldered
2. Weight < 3.0 grams
3. Base straight or concave
4. Basal Width-Maximum Width Ratio > .90
5. Maximum Width Position < .25

Type 9 Cottonwood Bipointed 2 specimens

1. Unshouldered
2. BIR > .98
3. Weight < 3.0 grams
4. Basal Width-Maximum Width Ratio > .90
5. Base convex or pointed
6. Maximum Width Position
7. BC $\geq$ 1.0

Type 10 Gunther Stemmed 72 specimens

1. DSA > 145° < 175°
2. PSA $\leq$ 100°
3. BIR < .80
4. Stem Length-Barb Length Ratio 2.0
5. Weight 3.0 grams

Type 11 Alkali Stemmed 17 specimens

1. DSA > 170°
2. PSA < 125°
3. BIR > .70
4. Stem Length-Barb Length Ratio > 2.0
5. Weight < 3.0 grams

Type 12 Rose Spring Side-Notched 16 specimens

1. DSA > 195°
2. PSA > 100°
3. Weight < 5.0 grams
4. Basal Width-Maximum Width Ratio < .90
5. BC $\geq$ 0

Type 13 Elko Corner-Notched 11 specimens

1. DSA $\leq$ 195°
2. PSA >100° < 130°
3. BIR > .93
4. Weight $\geq$ 2.0 grams
5. Basal Width-Maximum Width Ratio < .90

Type 14 Elko Eared 2 specimens

1. DSA $\leq$ 195°
2. PSA > 100°
3. BIR $\leq$ .93
4. Weight $\geq$ 3.0 grams

Type 15 Elko Side-Notched 8 specimens

1. PSA $\geq$ 130°
2. BIR > .99
3. Weight > 3.0 grams
4. Basal Width-Maximum Width Ratio > .90
5. Base convex

Type 16 Northern Side-Notched 11 specimens

1. PSA $\geq$ 130°
2. BIR < .99

3. Weight > 3.0 grams

4. Basal Width-Maximum Width Ratio > .90

5. Base concave or straight

Type 17 Black Rock Concave Base 1 specimen

1. BIR < .97

2. Weight > 2.0 grams

3. Notch opening > 60

Type 18 Humboldt Concave Base A 2 specimens

1. Unshouldered

2. BIR < .98

3. Weight > 2.5 grams

4. Basal Width-Maximum Width Ratio $\leq$ .90

5. Base concave

Class 19 3 specimens

1. Unshouldered

2. Weight > 2.5 grams

3. Maximum Width Position > .25

4. Base pointed

5. Thickness $\geq$ 6mm

Class 20 4 specimens

1. Unshouldered

2. BIR 1.0

3. Weight $\geq$ 2.0 grams

4. Maximum Width Position > .25

5. Base pointed

6. Thickness $\leq$ 6mm

Class 21 1 specimen

1. Shouldered
2. Weight $\geq$ 2.0 grams
3. Base convex
4. BC > .02
5. Length > 3.0 cm
6. Width > 1.0 cm

Type 22 Gold Hill Leaf 10 specimens

1. BIR 1.0
2. Maximum Width Position > .25
3. BC > .05
4. Thickness > 4.0mm
5. Width $\geq$ 12mm
6. Length > 22mm
7. Weight < 3.0 grams

Class 23 2 specimens

1. Weight $\leq$ 3.0 grams
2. Basal Width-Maximum Width Ratio > .45
3. Maximum Width Position < .35
4. Base convex
5. Length $\bar{>}$ 35mm
6. Thickness $\bar{>}$ 6.0mm

Class 24 13 specimens

1. Unshouldered
2. BIR < .95
3. Weight > 2.0 grams

4. Basal Width-Maximum Width Ratio >.85
5. Length > 20mm
6. Thickness > 2mm

Type 25 Siskiyou Side-Notched 8 specimens

1. DSA $\leq$ 180°
2. PSA $\leq$ 180°
3. BIR > .95
4. Weight < 2.0 grams
5. Base straight or slightly concave
6. Length > 15mm < 30mm
7. Notch Width > 7mm

Class 26 10 specimens

1. DSA > 180°
2. PSA < 160°
3. BIR $\geq$ .99
4. Weight < 3.5 grams
5. Basal Width-Maximum Width Ratio > .80
6. Length $\geq$ 25 mm
7. Base straight or slightly convex

Class 27 1 specimen

1. DSA > 180°
2. PSA > 95°
3. Weight > 2.0 grams
4. Basal Width-Maximum Width Ratio < .75
5. Base Convex
6. Notch Width 10mm

Class 28 4 specimens

1. DSA > 160°
2. PSA $\geq$ 100°
3. Weight > 4.0 grams
4. Maximum Width Position < .30
5. Base straight or slightly convex
6. Notch width $\geq$ 8mm

Class 29 7 specimens

1. DSA > 195°
2. PSA > 90°
3. Weight $\leq$ 3.0 grams
4. Basal Width-Maximum Width Ratio > .75
5. Base convex
6. Notch Width > 9mm

Type 30 Eden 1 specimen

1. DSA 180°
2. PSA 90°
3. BIR 1.0
4. Weight 5.0 grams

APPENDIX E

CORE TYPES

The typology for cores was borrowed from Fagan (1974). All types which begin with "1" are single platform cores, and those which begin with "2" are multiple platform cores.

Type 1A1 (Plate LXIa, LXIIa-c,e,f,j) 12 specimens
Single platform
Plano-convex
Shallow, hemispherical shape

Type 1A2 (Plate LXe, LXIe,f, LXIIg) 5 specimens
Single platform
Plano-convex
Conical shape

Type 1B1 (Plate LXh) 1 specimen
Single platform
Large, blade core > 3.0 cm
Conical or cylindrical shape

Type 1B2 1 specimen
Single platform
Small, blade core < 3.0 cm
Conical or cylindrical shape

Type 1C (Plate LXa) 23 specimens
Single platform
Block
Square or rectangular shape

Type 2A (Plate LXg, LXIc, LXIIl) 3 specimens

Multiple platform

Biconical core

Oval circumference

2 adjacent striking platforms located on opposite faces

Type 2B (Plate LXe, LXIb, LXIIp) 24 specimens

Multiple platforms

Bifacial core

Flaked alternately on both sides of an edge

Type 2C1 3 specimens

Multiple platforms

Bipolar core

Large > 3.0 cm

Cylindrical or angular shape

Type 2C2 3 specimens

Multiple platforms

Bipolar core

Small < 3.0 cm

Cylindrical or angular in shape

Type 2D (Plate LXb,f, LSId, LXIIh,m-o) 239 specimens

Multiple platforms

2 or more separate platforms

Block core

Square or angular shape

Type 2E (Plate LXd, LXIId,i,k) 43 specimens

Multiple platforms

2 or more adjacent platforms

Amorphous core

Angular shape

APPENDIX F

SCRAPER TYPES

The scraper typology is a modified version of the one used by Fagan (1974). There are 11 types which have been further subdivided on Table 22 on the basis of edge angle, into 2 varieties each; those over 59° and those less than 59°. The basic division of scrapers was done on the basis of the edge configuration. Therefore, "A" refers to side scrapers, "B" refers to end scrapers, "C" refers to oval scrapers, "D" refers to corner scrapers and "F" refers to combination scrapers.

Type A1 (Plate XLIX1) 10 specimens

Side scraper

Straight working edge

Type A2 (Plate XLVIIc,b,g,o,cc; XLVIIIn, XLIXf,o; Lf,j,p) 27 specimens

Side scraper

Convex working edge

Type A3 3 specimens

Side scraper

Concave working edge

Type B1 (Plate XLVIIi) 3 specimens

End scraper

Straight working edge

Type B3 (Plate XLVIIe,m,t,u,x,y,bb; XLVIIIa,c; XLIX,a,c,d,k,m, n,p; La,c,i,l,m,o,s) 42 specimens

End scraper

Convex working edge

Type B4 (Plate XLVIIs,z; XLIXr; Lb,g) 7 specimens

End scrapers

Concave working edge

Type C (Plate XLVIIf,h,j-l,p; XLVIIIb,h,l; XLIXb,e,i,j) 25 specimens

Oval scraper

Work edge almost entirely around circumference

Type D (Plate XLVIIq; XLIXq; Lq) 4 specimens

Corner scraper, at a point where 2 sides of flake converge

Convex edge

Type F1 (Plate XLVIIa,n; XLVIIId; XLIXh; Lh,n) 7 specimens

Combination edge

Convex edge

Type F3 (Plate XLVIIr,w; XLVIIIk; XLIXg; Ld,e,r) 8 specimens

Combination scraper

Convex edge and concave edge

Type F7 (Plate XLVIId,v,aa, XLVIIIi,j,o; XLIXs; Lk,t,u) 14 specimens

Combination scraper

Convex edge and corner edge

APPENDIX G

GRAVER CATEGORIES

The graver typology is modified from a scheme used by Cole (1954). The form of the bit is the primary attribute for subdividing the collection. The attribute of the length of the bit was an important one for some of the categories and the sharpness of the bit was an important attribute in other categories.

A1 (Plate XLIVa,b,k,u,x,y,aa; LIIIa,d,g-i,l,o,p; LIVa-c,f,j,m-p,r,s,u)

Bit tapered

Point sharp

A2 (Plate XLIVf,l; LIIIe,f,m; LIVd,i,q,t)

Bit tapered

Point blunt

B1 (Plate XLIVe,g-i,n,t,z; LIIIb,c,h,j; LIVg)

Bit protruding

Point sharp

B2 (Plate XLIVd,j,p-s,v,bb,cc; LIIIn, LIVe)

Bit protruding

Point blunt

Ca

Bit made of 1 natural edge and 1 flaked edge

.1 to .3mm long

Cb (Plate XLIVw, lvk,l,v)

Bit made of 1 natural edge and 1 flaked edge

.4 to .7mm long

Da (Plate XLIVc,m,o; LIIIk)

Two or more bits

.1 to .3mm long

Db

Two or more bits

.4 to .7mm long

APPENDIX H

OBSIDIAN SOURCES

The obsidian from the Salt Cave Locality sites was partly sourced in June 1977. At that time Richard E. Hughes was involved in a project to determine the source of obsidian recovered from Gunther Island, Northwest California. He generously offered to run a few of the projectile points from the Salt Cave Locality. He used rapid scan semi-quantitative X-ray Fluorescence. His methods are described in Hughes (1978). The samples from the Salt Cave Locality were run June 2, 1977. The sources were run at a later date on an upgraded machine. Therefore, the source assignations may not be exactly comparable to the older runs. With this cautionary note the following data is presented. The Medicine Lake Highlands are located in Siskiyou County in Northeastern California. The Warner Mountains and Glass Buttes are both in the Northern Great Basin.

Site	Artifact Number	Obsidian Color	Source
35 KL 16	SC1 A12:B12 3-4:2-3-2	Gray	Medicine Lake Highlands
35 KL 16	SC1 C3 3/3 -1	Red and Black	Warner Mountains or Glass Buttes
35 KL 18	SC4 B2-3	Gray	Medicine Lake Highlands
35 KL 18	SC4 Q1-17	Gray	Medicine Lake Highlands
35 KL 21	SC7 M2-4	Red and Black	Warner Mountains

BIBLIOGRAPHY

Abbott, Henry L.
1857 Report Upon Explorations for a Railroad Route from the Sacramento Valley to the Columbia River, Made by Lieut. R.S. Williamson, Corps of Topographical Engineers. In "Explorations and Surveys for a Railroad Route, from the Mississippi River to the Pacific Ocean, 1853-4," Vol. VI pt. 1, pp. 19-134. Exec. Docs. (Senate), 33rd Cong., 2nd Sess., Doc. no. 78. (Serial No. 763.) Washington, D.C.

Aginsky, B.W.
1943 Culture Element Distribution: XXIV, Central Sierra. University of California Anthropology Records, Vol. 8, pp. 393-468.

Aikens, C. Melvin & Rick Minor
1976 Obsidian Hydration Dates for Klamath Prehistory. Submitted to Tebiwa.

Aiken, C. Melvin & Rick Minor
1977 The Archaeology of Coffee Pot Flat South-Central Oregon. University of Oregon Anthropological Papers, No. 11, Eugene.

American Fisheries Society
1960 A List of Common and Scientific Names of Fish from the United States and Canada. Special Publication No. 2, 2nd Ed., Waverly Press, Baltimore.

Anderson, Adrian & David L. Cole
1964 Salt Cave Dam Reservoir Archaeological Project 1963, Interim Report: Excavations at Site SC-1. To Pacific Power and Light Company (COPCO Division) from University of Oregon.

Annala, E.E.
1955 Artifacts from Wakemap Mound. Screenings, Oregon Archaeological Society, Vol. 4, No. 8, p. 2, Portland.

Anonymous
1884 History of Southern Oregon. A.G. Walling, Portland.

Applegate, Lindsay
1861 Report of Office of Superintendent of Indian Affairs, Ashland Mills, Jackson County, Oregon, September 13, 1861. In "Papers Accompanying the ARCIA, 1861." Report No. 63. Report of the Commissioner of Indian Affairs, Accompanying the Annual Report of the Secretary of the Interior for the Year 1862, p. 168. GPO, Washington.

Applegate, Lindsay
1921 Notes and Reminiscences of Laying Out and Establishing the Old Emigrant Road into Southern Oregon in the Year 1846. Oregon Historical Quarterly, Vol. 22, No. 1, pp. 12-45, Portland.

Armelagos, George J.; John R. Dewey & David A. Carlquist
1968 Physical Anthropology and the Uto-Aztecan Problems. In "Utaztekan Prehistory," Earl H. Swanson, Jr. (ed.) pp. 131-47. Occasional Papers of the Idaho State University Museum, No. 22, Pocatello.

Arnoud H. Stryd & Rachel A. Smith eds.
1971 Aboriginal Man and Environments on the Plateau of Northwest America. Calgary, AB: Students' Press, University of Calgary.

Atherton, John H.
1966 Prehistoric Manufacturing Sites at North American Stone Quarries. M.A. Thesis, Dept. of Anthropology, Univ. of Oregon, Eugene.

Bagley, Clarence B.
1922 Crossing the Plains. Washington Historical Quarterly, Vol. 8, No. 3, pp. 163-80, Seattle.

Bailey, Vernon
1936 The Mammals and Life Zones of Oregon: North American Fauna, V.55. U.S. Dept. Ag. Bur. Bio. Survey, Washington, D.C.

Baldwin, Ewart M.
1964 Geology of Oregon. Edwards Brothers, Inc. Ann Arbor.

Baldwin, Gordon C.
1950 The Pottery of the Southern Paiute. American Antiquity, Vol. XVI, No. 1, pp. 50-57.

Bancroft, Hubert H.
1886-1888 History of Oregon, Vol. 1, 1834-1848; Vol. II., 1848-1888. The Works of Hubert Howe Bancroft, The History Co., San Francisco.

Bancroft, Hubert H.
1889 History of California, 1524-1800; 1801-1824; 1825-1840; 1840-1945; 1846-1848; 1848-1859; 1860-1890. The Works of Hubert Howe Bancroft, Vols. 18-24. The History Co., San Francisco.

Barrett, S.A.
1904 The Pomo in the Sacramento Valley. American Anthropologist, Vol. 6, pp. 189-190.

Barrett, S.A.
1908 The Ethnography of the Pomo and Neighboring Indians. University of California Publications in American Archaeology and Ethnography, Vol. 6, No. 1.

Barrett, S.A.
1910 The Material Culture of the Klamath Lake and Modoc Indians. Univ. of Calif. Publications in Amer. Arch. and Ethnology, Vol. 5.

Barrett, S.A.
1952 Material Aspects of Pomo Culture. Public Museum of the City of Milwaukee Bulletin, Vol. 20: 1-508.

Barrett, S.A. & E.W. Gifford
1933 Miwok Material Culture. Public Museum of the City of Milwaukee, Vol. 2: 117, 376.

Barnett, H.G.
1937 Oregon Coast University of California, Anthropological Records, Vol. 1, No. 3, pp. 155-204.

Barry, J.N.
1927 The Indians of Oregon: Geographic Distribution of Linguistic Families. Oregon Historical Quarterly, Vol. 28, pp. 49-61.

Baumhoff, Martin A.
1955 Excavation of Teh-1 (Kingsley Cave). University of California Archaeological Survey, Report No. 3, pp. 40-73.

Baumhoff, Martin A.
1957 Catlow Twine from Central California. University of California Archaeological Survey, Report, No. 38, pp. 1-5.

Baumhoff, Martin A.
1957 An Introduction to Yana Archaeology. University of California Archaeological Survey, Report, No. 40, pp. 1-61.

Baumhoff, M.A.
1958 California Athabascan Groups. University of California Anthropological Records, Vol. 16, pp. 157-238.

Baumhoff, Martin A.
1963 Ecological Determinants of Aboriginal California Populations. University of California Publications in American Archaeology and Ethnology, Vol. 49, No. 2, pp. 156-236.

Baumhoff, Martin A. & J.S. Byrne
1959 Desert Side-notched Points as a Time Marker in California. University of California, Archaeological Survey Reports, No. 48, pp. 32-65.

Baumhoff, Martin A. & A.B. Elsasser
1956 Summary of Archaeological Survey and Excavation in California. University of California, Archaeological Survey Reports, No. 33, Paper No. 37, pp. 1-27.

Baumhoff, Martin A. & Robert F. Heizer
1965 Postglacial Climate and Archaeology in the Desert West. In The Quarternary of the United States, (ed. H.E. Wright and D.G. Frey), Princeton University Press, Princeton, pp. 697-707.

Baumhoff, M.A. & D.L. Olmstead
1963 Palaihnihan: Radiocarbon Support for Glottochronology. American Anthropologist, Vol. 65: 278-284.

Baumhoff, M.A. & D.L. Olmsted
1964 Notes on Palaihnihan Culture History: Glottochronology and Archaeology. In Studies in Californian Linguistics (ed. by W. Bright). University of California Publ. in Linguistics, Vol. 34: 1-12.

Beals, R.
1933 Ethnology of the Nisenan. University of California Publicaitons in American Archaeology and Ethnology, Vol. 31, pp. 335-414.

Beardsley, R.K.
1948 Culture Sequences in Central California. American Antiquity, pp. 14-128.

Beardsley, Richard K.
1954a Temporal and Areal Relationships in Central California Archaeology. Pt. 1. University of California Archaeology Survey Reports, p. 24.

Beardsley, Richard K.
1954b Temporal and Areal Relationships in Central California Archaeology, Pt. 2. University of California Archaeology Survey Reports, p. 25.

Bedwell, Stephen F.
1966 A Descriptive Analysis of Side Notch Points from the State of Oregon. M.A. Thesis, Dept. of Anthro. Univ. of Oregon, Eugene.

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

Belknap, George N.
1950 McMurtie's Oregon Imprints: A Supplement. Oregon Historical Quarterly, Vol. 51, No. 4, pp. 239-72.

Belknap, George N.
1954 McMurtie's Oregon Imprints: A Second Supplement. Oregon Historical Quarterly, Vol. 55, No. 2, pp. 99-144.

Bennyhoff, J.A.
1950 "California Fish Spears and Harpoons," University of California Anthropological Records, Vol. 9, No. 4, pp. 295-337.

Bennyhoff, James A.
1957 An Incised Tablet from Oregon. University of California, Archaeological Survey Reports, No. 38, pp. 26-29.

Bennyhoff, James A. & Robert F. Heizer
1958 Cross-dating Great Basin Sites by California Shell Beads. University of California, Archaeological Survey Reports, No. 42, pp. 60-92.

Benson, James R.
n.d. Temporal and Spacial Distribution of Cultural Material from the TSapekW Excavation 1976, Stone Lagoon, California. Given at Symposium on Archaeology of the North Coast Ranges, California, May 14, 1977, University of California, Davis.

Berreman, Joel V.
1935 A Preliminary Survey of the Shell Mounds and Other Occupied Sites of the Coast of Southern Oregon and Northern California. Museum of Natural History Files, University of Oregon.

Berreman, Joel
1937 Tribal Distribution in Oregon. Memoirs, American Anthropological Association, No. 47, Supplement to Vol. 30, No. 3, pt. 2.

Berreman, Joel V.
1944 Chetco Archaeology. George Banta Publication Company, General Series Anthr. 11.

Binford, Lewis
1963 A Proposed Attribute List for the Description and Classification of Projectile Points. In Misscellaneous Studies in Typology and Classification by A. White et al., University of Michigan Museum of Anthropology. Anthropological Paper No. 19, Ann Arbor.

Blyth, Beatrice
1938 Northern Paiute Bands in Oregon. In "Tribal Distribution in Eastern Oregon and Adjacent Regions." Vern F. Ray (et al.) pp. 402-5. American Anthropologist, Vol. 40, No. 3, pp. 384-415.

Bonner, Thomas N. (Trans. & Ed.)
1959 Journey Through the Rocky Mountains and the Humboldt Mountains to the Pacific Ocean, by James Schiel, University of Oklahoma Press, Norman.

Bonnichsen, R.
1964 The Rattlesnake Canyon Cremation Site, Southwest Idaho, Tebiwa, Vol. 7, No. 1, pp. 28-38.

Brady, C.T.
1907 Northwestern Fights and Fighters. New York.

Browman, David L.
1969 Incised Clay Objects from the Columbia Plateau. Tebiwa, Vol. 12, No. 2.

Browman, D.L. & D.A. Munsell
1969 Columbia Plateau Prehistory: Cultural Development and Impinging Influences. American Antiquity, Vol. 34, No. 3, pp. 249-264.

Brown, Lionel A.
1960 A Typology and Distribution of Projectile Points from Sauvies Island, Oregon. Master's Thesis, University of Oregon, Eugene.

Brown, Richard M.
1952 Indian Relics on Mt. Mazama. Crater Lake Nature Notes, No. 18, pp. 16, 17, Crater Lake.

Bryan, Alan L.
1958-1959 Two Clay Figurines from Southwestern Washington. Tebiwa, Vol. 2, No. 1, p. 59.

Bryan, Alan L. & Ruth Gruhn
1964 Problems Relating to the Neothermal Climatic Sequence. American Antiquity, Vol. 29, No. 3, pp. 307-315.

Bryan, Alan L. & Donald R. Tuchy
1960 A Basalt Quarry in Northeastern Oregon. Proceedings of the American Philosophical Society, Vol. 104, No. 5, pp. 485-510.

Bryan, Bruce
1964 A Clay Figurine found in Southern California. The Masterkey, 38: 66-69.

Burbank, E.A. & Royce E.
1946 Burbank Among the Indians, pp. 117-21, Caldwell.

Butler, B. Robert
1959 Lower Columbia Valley Archaeology: A Survey and Appraisal of Some Major Archaeological Resources. Tebiwa, Vol. 2, No. 2, pp. 6-24.

Butler, B. Robert
1955 Dalles Reservoir Prehistory: A Preliminary Analysis. Washington Archaeologist, Vol. 1, No. 8, pp. 44-47, Seattle.

Butler, B. Robert
1957 Art of the Lower Columbia Valley. Archaeology, Vol. 10, No. 3, pp. 158-165.

Butler, B. Robert
1961 The Old Cordilleran Culture in the Pacific Northwest. Occasional Papers of the Idaho State College Museum, No. 5, Pocatello.

Butler, B. Robert
1961 Additional Notes and Comments on Atlatl Weights in the Northwest. Tebiwa, Vol. 4, No. 1, pp. 29-32.

Butler, B.R.
1962 Contributions to the Prehistory of the Columbia Plateau. Occasional Papers of the Idaho State College Museum, No. 9, Pocatello.

Butler, B. Robert
1962 The B. Stewart and Cradleboard Mortuary Sites: A Contribution to the Prehistory of the Lower Columbia Valley. Tebiwa, Vol. 5, No. 1, pp. 30-40.

Butler, B. Robert
1964 A Tentative History of the Self-Handled Mauls at the Dalles of the Lower Columbia. Tebiwa, Vol. 7, No. 2, pp. 37-41.

Butler, B. Robert
1965 Perspectives on the Prehistory of the Lower Columbia Valley. Tebiwa, Vol. 8, No. 1, pp. 1-16.

Butler, B.R.
1967 A Stone Figurine from the Payette Lakes Locality, West-Central Idaho. Tebiwa, Vol. 10, No. 2, p. 73.

Butler, B. Robert & Douglas Osborne
1959 Archaeological Evidences for the Use of Atlatl Weights in the Northwest. American Antiquity, Vol. 25, No. 2, pp. 215-224.

Caldwell, W.C.
1953-1954 An Archaeological Survey of the Okanagan and Similkameen Valleys of British Columbia. Anthropology in British Columbia, No. 4, Victoria.

Caldwell, Warren W.
1957 Pacific Coast Clay Figurines: A Contraview. Davidson Journal of Anthropology, Vol. 3, No. 2, pp. 55-57, Seattle.

Caldwell, Warren W. & Oscar L. Mallory
1967 Hells Canyon Archaeology. Smithsonian River Basin Surveys, Publications in Salvage Archaeology, No. 6.

Carlson, Roy L.
1959 Klamath Henwas and Other Stone Sculpture. American Anthropologist, Vol. 61, No. 1, pp. 88-96.

Chagnon, Napoleon A.
1970 Ecological and Adaptive Aspects of California Shell Money. Annual Report Archaeological Survey, Dept. of Anthropology, University of California, Vol. 12, Los Angeles.

Chartkoff, Joseph L., Kerry K. Chartkoff & Laurie J. Kona
1968 The Archaeological Resources of the Proposed Beartooth, Dyer Creek and Mills Hill Reservoirs in Trinity County, California. Report of the Department of Anthropology, Archaeological Survey, University of Calif., Los Angeles, to the National Park Service.

Chase, H.A.
1873 Indian Mounds and Relics on the Coast of Oregon. American Journal of Science (and Arts), 3rd Series, Vol. 6 (Whole No. 106, No. 31, Art. 6, pp. 26-32, New Haven.

Chesterman, C.W.
1955 Age of the Obsidian Flow at Glass Mountain, Siskiyou County. American Journal of Science, Vol. 253, No. 7, pp. 418-424, New Haven.

Clarke, S.A.
1960 The Samuel A. Clarke Papers. Klamath County Museum Research Papers, No. 2, Guide Printing Co., Klamath Falls, Oregon.

Cleland, C.E.
1966 The Prehistoric Animal Ecology and Ethnozoology of the Upper Great Lakes Region. University of Michigan, Museum of Anthropology, Anthropological Papers, No. 29.

Clewett, Edward
n.d. CA-SHA-475: An Interim Report on Squaw Creek #1, A Complex Stratified Site in the Southern Klamath Mountains. Given at Symposium on the Archaeology of the North Coast Ranges, California, May 14, 1977, University of California, Davis.

Clewlow, C. William, Jr.
1968 Surface Archaeology of the Black Rock Desert, Nevada, University of California Archaeological Survey, Report, 73: 1-93.

Coale, George L.
1956 Archaeological Survey of the Mountain Sheep and Pleasant Valley Reservoirs. Davidson Journal of Anthropology, Vol. 2, No. 1, pp. 1-29.

Coale, George L.
1963 A Study of Shoshonean Pottery. Tebiwa, Vol. 6, No. 2, pp. 1-11.

Coan, C.F.
1922 The Adoption of The Reservation Policy in Pacific Northwest, 1853-1855. The Quarterly of the Oregon Historical Society, Vol. 23, pp. 1-38.

Cole, D.L.
1954 A Contribution to the Archaeology of the Dalles Region. Master's Thesis, University of Oregon, Eugene.

Cole, David L.
1964 Excavations at Wildcat Canyon Site 35GM9, Area 5. Interim Report 1964-64. Part One, John Day Dam Reservoir Project. Report of the Museum of Natural History, Eugene.

Cole, David L.
1965 Report on Archaeological Research in the John Day Reservoir Area - 1964. Report of the Museum of Natural History, Eugene.

Cole, David L.
1965 Report on Investigations of Archaeological Sites, in the Reservoir Area of: Sucker Creek Dam, Applegate Dam, Elk Creek Dam, Lost Creek Dam, Willow Creek Dam and Collier State Park. Report of the Museum of Natural History, Eugene.

Cole, David L.
1966 Report on Archaeological Research in the John Day Dam Reservoir Area - 1965. Report of the Natural History Museum, Eugene.

Cole, David L.
1966 Archaeological Survey of the Applegate River Dam Reservoir and Elk Creek Dam Reservoir. Part 1 and 2 Report of the Museum of Natural History, Eugene.

Cole, David L.
1967 Archaeological Research of Site 35 SH 23, the Mack Canyon Site. Report of the Museum of Natural History, Eugene.

Cole, David L.
1967 The Archaeological Resources of the John Day Basin and Their National Significance. Report of the Museum of Natural History, Eugene.

Cole, David L.
1967 Report on Archaeological Research in the John Day Dam Reservoir Area, 1966. Report of the Museum of Natural History, Eugene.

Cole, David L.
1968 Report on Archaeological Research in the John Day Dam Reservoir Area, 1967. Report of the Museum of Natural History, Eugene.

Cole, David L.
1968 Archaeology of the Fall Creek Dam Reservoir. Revised Report of the Museum of Natural History, Eugene.

Cole, David L.
n.d. Preliminary Report: Archaeological Excavations at the Keno Development, Eugene.

Colville, Frederick V.
1897 Notes on Plants Used by the Klamath Indians of Oregon. Contributions from the United States National Herbarium, Vol. 5, No. 2, pp. 87-108, Washington.

Colville, F.B.
1902 Wokas, A Primitive Food of the Klamath Indians. Reports of the U.S. National Museum, pp. 725-39.

Cook, S.F.
1941 The Mechanism and Extent of Dietary Adaption Among Certain Groups of California and Nevada Indians. Ibero-Americana, XVIII, pp. 1-59.

Cook, S.F.
1956 The Aboriginal Population of the North Coast of California. University of California Anthropological Records, Vol. 16, No. 3.

Cook, S.F. & Robert F. Heizer
1965 The Quantitative Approach to the Relation Between Population and Settlement Size. University of California Archaeological Survey, Report, No. 64, pp. 1-97.

Cordell, Linda S.
1975 The Lingo Site. Archaeological Studies in the Willamette Valley, Oregon, ed. C.M. Aikens. University of Oregon Anthropological Papers, No. 8, Eugene.

Cosner, Aaron J.
1956 "The 'Stone Scraper' and 'Arrow Wrench'." American Antiquity, Vol. 21, pp. 300-301.

Coues, Elliott (ed.)
1897 New Light on the Early History of the Greater Northwest; the M.S. Journals of Alexander Henry and David Thompson, 1799-1814. Francis P. Harper Co., New York.

Cowles, John
1959 Cougar Mountain Cave in South Central Oregon. Rainier.

Crandell, Dwight R.
1965 The Glacial History of Western Washington and Oregon. In The Quarternary of the United States, H.E. Wright, Jr. and David G. Frey (eds.), pp. 34-53, Princeton Univ. Press.

Cressman, L.S.
1933 Contributions to the Archeology of Oregon: Final Report on the Gold Hill Burial Site. University of Oregon Studies Anthropology, V. 1, Bull. 1.

Cressman, L.S.
1933b Aboriginal Burials in Southwestern Oregon. American Anthropologist, Vol. 35, No. 1, pp. 116-130.

Cressman, L.S.
1936 Archaeological Survey of the Guano Valley Region in Southwestern Oregon. University of Oregon, Monograph No. 1.

Cressman, L.S.
1939 Early Man and Culture in the Northern Great Basin Region and South-Central Oregon. Carnegie Institution of Washington, Yearbook No. 38, pp. 314-317.

Cressman, L.S.
1942 Archaeological Researches in the Northern Great Basin. Carnegie Institution of Washington Publication 538, Washington.

Cressman, L.S.
1943 Results of Recent Archaeological Research in the Northern Great Basin Region of South Central Oregon. American Philosophical Society, Proceedings, Vol. 86, No. 2, pp. 236-46, Philadelphia.

Cressman, L.S.
1944 New Information on South Central Oregon Atlatls. Southwestern Museum Masterkey, Vol. 18, No. 6, pp. 169-179.

Cressman, L.S.
1947 Further Information on Projectile Points from Oregon. American Antiquity, Vol. 13, No. 2, pp. 117-9.

Cressman, L.S.
1948 Klamath Indian Archaeology Preliminary Report. Northwest Science, Vol. 22, No. 2, pp. 83-88, Pullman.

Cressman, L.S.
1948 Odell Lake Site: A New Paleo Indian Campsite in Oregon. American Antiquity, Vol. 14, No. 1, pp. 57-58.

Cressman, L.S.
1950 Archaeology of the Klamath Indian Culture of Oregon: Its Position in the Northern Great Basin Culture. Year Book of the American Philosophical Society, 1950, pp. 226-228.

Cressman, L.S.
1950 Archaeological Research in the John Day Region of North Central Oregon. Proceedings, Vol. 94, No. 4, American Philosophical Society, Philadelphia.

Cressman, L.S.
1952 Oregon Coast Prehistory. American Philosophical Society Yearbook: 1952, pp. 256-260.

Cressman, L.S.
1953 Oregon Coast Prehistory: A Statement of the Problems and Progress. Annual Meetings of the Society for American Archaeology.

Cressman, L.S.
1956 Klamath Prehistory. American Philo. Soc. Transactions, Vol. 46, Pt. 4.

Cressman, L.S. et al.
1960 Cultural Sequences at the Dalles, Oregon. American Philo. Soc. Transactions, Vol. 50, Pt. 10.

Cressman, L.S. & Michael Olien
1962 Salt Caves Dam Reservoir: Interim Report on Archaeological Project to Pacific Power and Light (COPCO Division) by University of Oregon.

Cressman, L.D. & Walter J. Perry
1938 Charcoal Cave: An Archaeological Puzzle. Oregon Historical Quarterly, Vol. 39, No. 1, pp. 39-49.

Cressman, L.S. & John Wells
1961 Salt Caves Dam Reservoir: Interim Report on Archaeological Project 1961 Field Season to Pacific Power and Light (COPCO Division) by University of Oregon, Eugene.

Crook, George (General)
1873 Indian Mode of Making Arrow Heads and Obtaining Fire. Smithsonian Institute Annual Report, 1871, p. 420, Washington.

Culin, Stewart
1907 Games of the North American Indians, BAE-AR, 24th, pp. 3, 809, Government Printing Office, Washington, Annual Reports.

Curtis, E.S.
1924 North American Indians, Vol. 13, 14, 15, Seattle.

Daugherty, Richard D.
1962 The Intermontane Western Tradition. American Antiquity, Vol. 28, p. 144-150.

Davies, K.E. (ed.)
1961 Peter Skene Ogden's Snake Country Journal, 1826-27. Publications of Hudson's Bay Record Society, 23.

Davis, E.L.
1963 The Desert Culture of the Western Great Basin: A Lifeway of Seasonal Transhumance, American Antiquity, Vol. 39, No. 2.

Davis, E.L.
1970 Archaeology of the North Basin of Panamint Valley, Inyo County, California-Nevada State Museum Anthropological Papers, 15: 83-141.

Davis, J.T.
1959 Further Notes on Clay Human Figurines in the Western United States. University of California Anthropological Records, Vol. 48, pp. 16-31.

Davis, James T.
1960 The Archaeology of the Fernandiz Site, San Francisco Bay Region Shell Mound. University of California Archaeological Survey Reports, No. 49, pp. 11-53.

Davis, James T.
1961 Trade Routes and Economic Exchange Among the Indians of California. Reports of the University of California Archaeological Survey, No. 54.

Davis, Wilber A.
1964 Archaeological Surveys of Crater Lake National Park and Oregon Caves National Monument, Oregon. Report of the Museum of Natural History, University of Oregon, in the National Park Service, Eugene.

Davis, Wilber A.
1968 Salvage Archaeology of the Elk Creek Dam Reservoir: Final Report. Report of the Oregon State University to the National Park Service, Corvallis.

Davis, Wilber A.
1968 Salvage Archaeology of the Lost Creek Dam Reservoir: Final Report. Report of the Oregon State University to the National Park Service, Corvallis.

Davis, W.A.
1970 Lost Creek Archaeology 1968, Final Report. Unpublished Report, Oregon State University, 12pp., Corvallis.

Davis, Wilbur A.
1974 Lost Creek Archaeology, 1972 Final Report. Department of Anthropology, Oregon State University, Corvallis, Oregon.

Davis, W.A., C.M. Aikens & O.E. Henrickson
1973 Archaeology of Little Muddy Creek, Final Report to the National Park Service. Northwest Archaeological Research Institute, Eugene.

Deich, Lyman
1977 Aboriginal Clay Figurines from the Rogue River Area. Presented at Oregon Academy of Sciences, Annual Meetings, Eugene, Oregon.

Deich, Lyman
n.d. Cove Creek Rockshelter. Manuscript in preparation. Medford, Oregon.

Dicken, S.N.
1955 Oregon Geography. Eugene, Oregon.

Diller, J.S.
1902 Topographic Development of the Klamath Mountains. U.S. Geol. Survey Bull. No. 196.

Dixon, R.B.
1904 Some Shamans of Northern California. Journal of American Folklore, Vol. 17, pp. 23-7.

Dixon, R.B.
1905 The Shasta Achomawi. American Anthropologist, n.s. Vol. 7, pp. 213-17.

Dixon, Roland B.
1905 The Northern Maidu. Bulletin of the American Museum of Natural History, Vol. 17, Pt. 3.

Dixon, Roland B.
1907 The Shasta. Bulletin of the American Museum of Natural History, Vol. 17, Pt. 5.

Dixon, R.B.
1908 Notes on the Arhomawi and Atsugewi Indians of Northern California. American Anthropologist, Vol. 10, pp. 208-20.

Dixon, R.B.
1910 Shasta. Bulletins of the Bureau of American Ethnology, Vol. 30, pp. 527-8, ii.

Dixon, Roland B.
1910 The Chimariko Indians and Language. University of California Publications in American Archaeology and Ethnography, Vol. 5, No. 5, pp. 293-380.

Doresey, J.O.
1889 Indians of Siletz Reservation, Oregon. American Anthropologist, II, pp. 55-61.

Doresey, J. Owen
1890 The Gentle System of Siletz Tribes. Journal of American Folklore, Vol. 3, pp. 227-237.

Dorsey, G.A.
1901 Certain Gambling Games of the Klamath Indians. American Anthropologist, n.s., III, pp. 14-27.

Dotta, James & Ray Hollinger
n.d. The Salvage Archaeology of a Wintu Fishing Station, Sha 207, Shasta County, California. Archaeological Report No. 10 on file, California Division of Beaches and Parks, Sacramento.

Douglas, F.H.
1932 The Klamath Indians. Denver Art Museum Indian Leaflet Series, XLVII, pp. 1-3.

Douglas, Mary E.
1947 Oregon Indian Basketry Types and Distribution. Unpublished Master of Arts Thesis, University of Oregon, Eugene, 96pp.

Downs, James T.
1959 Further Notes on Clay Human Figurines in the Western United States. University of California Archaeological Survey Reports, No. 48, pp. 16-31.

Drews, Robin
1940 Pecuilar Wooden Tubes from Southeastern Oregon. American Antiquity, Vol. 6, No. 1, pp. 75-6.

Driver, H.E.
1936 Wappo Ethnography, University of California Publications in American Archaeology and Ethnology, Vol. 36, pp. 179-220.

Driver, H.E.
1939 Culture Element Distributions: X Northwest California. University of California Anthropological Records, Vol. 1.

Driver, Harold E.
1941 Culture Element Distributions: XVI, Girls Puberty Rites in Western North America. University of California Anthropological Records, Vol. 6, No. 2, pp. 21-90.

Drucker, P.
1937 The Tolowa and Their Southwest Oregon Kin. University of California Publications in American Archaeology and Ethnology, Vol. 36, pp. 221-300.

Drucker, P.
1950 Culture Element Distribution: XXVI. Northwest Coast. University of California Anthropological Records, Vol. 9, pp. 157-294.

Du Bois, C.
1932 Tolowa Notes. American Anthropologist, n.s., XXIV, pp. 248-262.

DuBois, C.
1935 Wintu Ethnography. University of California Publications in American Archaeology and Ethnography, Vol. 36.

Dumond, Don E.
1962 Blades and Cores in Oregon. American Antiquity, Vol. 27, No. 3, pp. 419-24.

Eberstadt, Edward
1931 The Journal of Riley Root. California Historical Society Quarterly, Vol. 10, No. 4, pp. 396-405.

Edwards, Robert L.
1969 "A Milling Stone Pattern in the Northern Sacramento Valley." Paper presented at the Annual Meetings of the Southwestern Anthropological Association and the Society for California Archaeology, April 3-4, Las Vegas.

Edwards, Robert L. (ed.)
1968 "Notes on the Wintun." Outline and working notes prepared for the California Archaeological Workshop sponsored by the Center for Archaeological Research, University of California, Davis, February 10-11, 1968.

Elsasser, Albert B.
1960 The Archaeology of the Sierra Nevada in California and Nevada. University of California Archaeological Survey Report, 51.

Elsasser, Albert B.
1961 Archaeological Evidence of Shamanism in California and Nevada. The Kroeber Anthropological Society Papers, No. 24, pp. 38-48.

Elsasser, A.B.
1963 Two Fired Clay Figurines from Central California. American Antiquity, Vol. 29, No. 1, pp. 118-120.

Elsasser, Albert B.
1965 The Archaeology of the North Coast of California. Ph.D. Dissertation Department of Anthropology, University of California.

Elsasser, Albert & Robert F. Heizer
1966 Excavation of Two Northwestern California Coastal Sites. University of California Archaeological Survey Reports, No. 67, pp. 1-150.

Elston, Robert G.
1971 A Contribution to Washo Archaeology. Nevada Archaeological Survey. Research Paper, No. 2, Reno, Nevada.

Emmons, Lieut. G.H.
1845 In The United States Exploring Expeditions. Vol. V., pp. 238-241, London.

Emmons, G.T.
1860 Indian Tribes of Oregon and California. In H.R. Schoolcraft, Archives of Aboriginal Knowledge, 3: 200-225.

Essene, F.
1942 Culture Element Distributions: XXI Round Valley, University of California Anthropological Records, Vol. 8, pp. 1-97.

Fagan, John
1974 Altithermal Occupation of Spring Sites in the Northern Great Basin. University of Oregon Anthropological Papers, No. 6.

Farrand, L. & Frachtenber, L.J.
1915 Shasta and Athapascan Myths from Oregon. Journal of American Folklore, Vol. 28, pp. 207-23.

Fenenga, Franklin
1953 "The Weights of Chipped Stone Points; A Clue to Their Functions." Southwestern Journal of Anthropology, Vol. 9, No. 3.

Fenenga, Franklin & Francis A. Rindell
1949 Excavation of Tommy Tucker Cave, Lassen County, California. American Antiquity, Vol. 14, No. 3, pp. 203-14.

Follansbee, Julia
1975 Report of Survey of the Pacific Power and Light Company 500 KV Transmission Line from Malin, Oregon to Medford, Oregon, for Non-renewable Resources.

Forbes, Jack D.
1961 Pueblo Pottery in the San Fernando Valley. Masterkey, Vol. 35, No. 1, pp. 36-8.

Foster, G.M.
1944 A Summary of Yuki Culture. University of California Anthropological Records, Vol. 5, pp. 155-244.

Frachtenberg, Leo J.
1914 Lower Umpqua Texts. Columbia University Contributions to Anthropology. Cole University Press, New York.

Frachtenberg, L.J.
1918 Comparative Studies in Takelman, Kalapuyan, and Chinookan Lexicography. Vol.I, 175-82. International Journal of American Linguistics.

Fredrickson, David A.
1973 Early Cultures of the North Coast Ranges, California. Ph.D. Dissertation, University of California, Davis.

Fremont, J.C.
1845 Report of the Exploring Expeditions to the Rocky Mountains in the Year 1842, and to Oregon and Northern California in the Years 1843-44. Blair and Rivers, Washington, D.C.

Fremont, John C.
1848 Geographical Memoir Upon Upper California, in Illustration of His Map of Oregon and California, Misc. Docs., (Senate) 30th Cong. 1st Sess. Doc. No. 148, Washington.

Frison, George C.
1968 "A Functional Analysis of Certain Chipped Stone Tools." American Antiquity, Vol. 33, No. 2.

Frison, George C.
1970 The Glenrock Buffalo Jump, 48C0304. Plains Anthropologist, Memoir 7, Vol. 15, No. 50, Pt. 2.

Gould, R.A.
1972 A Radiocarbon Date from the Point St. George Site, Northwestern California. Contributions of the University of California Archaeological Research Facility, No. 14.

Galloway, John C.
1956 Prehistoric Stone Sculpture of the Western United States. Unpublished Doctoral Dissertation, Columbia University, New York.

Garth, Thomas R.
1953 Atsugewi Ethnography. University of California Anthropological Records, Vol. 14, No. 2, pp. 129-212.

Gatschet, Albert S.
1890 The Klamath Indians of Southwest Oregon. U.S. Geographical and Geological Survey of the Rocky Mountain Region, Contributions to North American Ethnology, Vol. 2, Pts. 1 and 2.

Gatschet, A.S.
1899 The Kalapuya People. Journal of American Folklore, Vol. 12: 212-214.

Gayton, A.H.
1929 "Yokuts and Western Mono Pottery Making." University of California Publications in American Archaeology and Ethnology, No. 24, pp. 239-251.

Gifford, E.W.
1928 The Cultural Position of the Coast Yuki. American Anthropologist, Vol. 30, pp. 112-15.

Gifford, E.W.
1939 The Coast Yuki. Anthropos, Vol. 34, pp. 292-375.

Gifford, E.W.
1940 California Bone Artifacts. University of California Anthropological Records, Vol. 3, No. 1.

Gifford, E.W.
1947 California Shell Artifacts. University of California Anthropological Records, Vol. 9, No. 1.

Gifford, E.W. & S. Klimek
1936 Culture Element Distributions: II Yana. University of California Publications in American Archaeology and Ethnology, Vol. 37, p. 71-100.

Gifford, E.W. & A.L. Kroeber
1937 Culture Element Distributions IV Pomo. University of California Publications in American Archaeology and Ethnology, Vol. 37, pp. 117-254.

Goddard, P.E.
1903 Life and Culture of the Hupa, University of California Publications in American Archaeology and Ethnology, Vol. 1, pp. 1-88.

Goddard, P.E.
1924 Indians of the Northwest Coast. Amer. Mus. of Natural Hist. Handbook Series, No. 10.

Goldschmidt, W.
1951 Nomlaki Ethnography. University of California Publications in American Archaeology and Ethnography, Vol. 42, No. 4, pp. 303-443.

Gould, Richard A.
1963 Aboriginal California Burial and Cremation Practices. University of California Archaeological Survey, Report, No. 63, pp. 149-168.

Gould, R.A.
1964 Exploitative Economics and Culture Change in Central California. Reports of the University of California Archaeological Survey, No. 62.

Gould, R.A.
1966 Archaeology of the Point St. George Site and Tolowa Prehistory. Univ. of California Press.

Gruhn, Ruth
1961 A Collection of Artifacts from Pence Duerig Cave in South Central Idaho. Tebiwa, Vol. 4, No. 1, pp. 1-24.

Gruhn, Ruth
1961 The Archaeology of Wilson Butte Cave, South Central Idaho. Occasional Papers of the Idaho State University Museum, No. 6.

Hardesty, Donald L. & Steven Fox
1974 Archaeological Investigations of Northern California. Nevada Archaeological Survey, Research Paper, No. 4, University of Nevada.

Harrington, J.P.
1932 Tobacco Among the Karuk Indians of California. Smithsonian Institution, Bureau of American Ethnology, Bulletin 94.

Harris, Joy
1956 Rare Specimen. Screenings, Oregon Archaeological Society, Vol. 5, No. 6, p. 1.

Heflin, E.
1960 Kalapuyan Archaeology. Screenings, Vol. 9: 2-3.

Heflin, E.
1961 Kuitsh or Lower Umpquan Artifacts. Screenings, Vol. 10: 1.

Heflin, Eugene
1966 The Pistol River Site of Southwest Oregon. University of California Archaeological Survey Reports, No. 67, pp. 151-206.

Heizer, Robert F.
1937 Baked Clay Objects of the Lower Sacramento Valley, California. American Antiquity, Vol. 2, pp. 34-50.

Heizer, Robert F.
1942 Massacre Lake Cave, Tule Lake Cave and Shore Sites. In Archaeological Researches in the Northern Great Basin, b. L.S. Cressman. Carnegie Institution of Washington, Publication 538, pp. 121-134.

Heizer, Robert F.
1950 An Unusual Decorated Steatite Slab from Northwestern California. American Antiquity, Vol. 15, No. 3, pp. 252-254.

Heizer, Robert F.
1951 A Prehistoric Yurok Ceremonial Site. (Hum-174). University of California Archaeological Survey Reports, No. 11, pp. 1-4.

Heizer, Robert F.
1953 Sacred Rain Rocks of Northern California. University of California Archaeological Survey Reports, No. 20, pp. 33-38.

Heizer, Robert F.
1958 Radiocarbon Dates from California of Archaeological Interest. University of California Archaeological Survey Reports, 44:1: 1-16.

Heizer, Robert F.
1962 Village Shifts and Tribal Spreads in California Prehistory. Masterkey, Vol. 36, No. 2, pp. 60-66.

Heizer, Robert F. & M.A. Baumhoff
1956 California Settlement Patterns. In "Prehistoric Settlement Patterns in the New World." G. Willey (ed.), pp. 32-44. Viking Fund Publications in Anthropology, No. 23.

Heizer, R.F. & M.A. Baumhoff
1961 The Archaeology of Two Sites at Eastgate, Churchill County, Nev. I. Wagon Jack Shelter, University of California Anthropological Records, 20: 4.

Heizer, R.R.; M.A. Baumhoff & C.W. Clewlow, Jr.
1968 The Archaeology of South Fork Shelter (NV-El-11), Elko County, Nevada. University of California Archaeological Survey Report, 71: 1-58.

Heizer, Robert F. & Richard R. Beardsley
1943 Fired Clay Human Figurines in Central and Northern California. American Antiquity, Vol. 9, No. 2. pp. 199-207.

Heizer, R.F. & C.W. Clewlow, Jr.
1968 Projectile Points from Site NV-Ch-15, Churchill County, Nevada. University of California Archaeological Survey Report, 71: 59-88.

Heizer, R.F. & C.W. Clewlow, Jr.
1973 Prehistoric Rock Art of California. Ballena Press, Ramona, California, pp. 29-31.

Heizer, R.F. & A.B. Elsasser
1953 Some Archaeological Sites and Cultures of the Central Sierra Nevada. University of California Archaeological Survey Report, No. 21.

Heizer, R.F. & A.B. Elsasser
1964 Archaeology of Hum 67, the Gunther Island Site in Humboldt Bay, California. University of California Archaeological Survey, Report, No. 62, pp. 5-122.

Heizer, R.F. & F. Fenenga
1939 Archaeological Horizons in Central California. American Anthropologists, Vol. 41, pp. 378-399.

Heizer, R.F. & Thomas Roy Hester
1970 Shasta Villages and Territory in Papers on California Ethnography. Contribution of the University of California Archaeological Research Facility, No. 9.

Heizer, Robert F. & David M. Pendergast
1955 Additional Data on Fired Clay Human Figurines from California. American Antiquity, Vol. 21, No. 2, pp. 181-5.

Heizer, R.F. & A.E. Treganza
1944 Mines and Quarries of the Indians of California. California Journal of Mines and Geology, Vol. 40, pp. 291-359.

Henderson, O.E.
n.d. Preliminary Archaeological Survey of the Pipeline Distribution System, Applegate Division of Rogue River Basin Project, Bureau of Reclamation. Survey Report, Northwest Archaeological Research Institute, 6pp., Eugene.

Hester, Thomas Roy
1973 Chronological Ordering of Great Basin Prehistory. Contributions of the University of California Archaeological Research Facility, No. 17.

Hodge, Frederick W. (ed.)
1907 Handbook of American Indians North of Mexico. Bureau
1910 of American Ethnography, Bulletin 20, Vol. 1 and 2.

Holt, Catharine
1947 Shasta Ethnography. University of California Anthropological Records, Vol. 3, No. 4.

Hopkins, N.A.
1965 Great Basin Prehistory and Uto Aztecan. American Antiquity, Vol. 31, No. 1, pp. 48-60.

Howard, O.O.
1907 My Life and Experiences Among Our Hostile Indians. Hartford.

Howe, Carrol B.
1968 Ancient Tribes of the Klamath Country. Binfords & Mort, Portland.

Hughes, Richard E.
1973 Archaeological Reconnaissance Renner Land Exchange and Cuppy Cave. Part II Cuppy Cave (USFS 05-09-55-74), Modoc National Forest, Northeast California. U.S. Department of Agriculture, U.S. Forest Service, California Region, San Francisco, California.

Hughes, Richard E.
1977 The Archaeology of the Burrell Site (CA-MOD-293). A Lowland Occupation Site in the Goose Lake Basin, Northeast California. Final Report for the National Endowment for the Humanities on Youthgrant in the Humanities AY-7287-72-379, the Goose Lake Basin Archaeological Project.

Hughes, Richard E.
1978 Aspects of Prehistoric Wiyot Exchange and Social Ranking. The Journal of California Anthropology, Vol. 5, No. 1: 53-66.

Johns, Darrell R.
1968 Archaeological Reconnaissance of the Proposed Dinsmores Reservoir in Trinity and Humboldt Counties, California. Report of the Department of Anthropology/Archaeological Survey, University of California, Los Angeles, to the National Park Service, Los Angeles.

Johnson, Jerald J.
n.d. Archaeological Investigations at 4-SIS-258. Report on file. Department of Anthropology, University of California, Davis.

Johnson, Leroy, Jr.
1969 The Klamath Basin Archaeological Project. Research Proposal submitted to the National Science Foundation; ms on file, University of Oregon.

Kehoe, Alice B.
1959 Ceramic Affiliations in the Northwestern Plains. American Antiquity, Vol. 25, No. 2, pp. 237-45.

Kelly, I.T.
1930 The Carver's Art of the Indians of Northwestern California. University of California Publications in American Archaeology and Ethnology, Vol. 24, No. 7, Berkeley, pp. 343-360.

Kelly, I.T.
1932 Ethnography of the Surprise Valley Paiute. University of California Publications in American Archaeology and Ethnology, Vol. 31, pp. 67-210.

Kendall, Reese P.
1901 Pacific Trail Camp-Fires: Containing the Missouri Column; the Applegate Battalion: the 'Pathfinder' Detachment. Scroll Publishing Co., Chicago.

Kennedy, K.A.R.
1959 The Aboriginal Population of the Great Basin. University of California Archaeological Survey Reports, No. 45, pp. 1-84.

King, A.R.
1950 Cattle Point: A Stratified Site in the Southern Northwest Coast Region. Memoirs of the Society for American Archaeology, No. 7.

King, Thomas F.
1967 Three Clay Figurines from Marin County, California. The Masterkey, 41: 138-142.

King, Thomas F. & Ward F. Upson
1970 Protohistory on Limantour Sandspit: Archaeological Investigations at 4-Mrn-216, and 4-Mrn-298. In Contributions to the Archaeology of Point Reyes National Seashore: A Compendium in Honor of Adan E. Treganza, ed. Robert E. Schenk. San Francisco State College, pp. 115-194.

Kittleman, Lawrence R.
1964 Appendix A-Comparison of Potsherds and Soil from Site SC-1 HP-1, in Anderson and Cole, Excavations at Site SC-1.

Kniffen, F.B.
1928 Achomawi Geography. University of California Publications in American Archaeology and Ethnology, Vol. 23, pp. 297-332.

Kniffen, F.B.
1939 Pomo Geography. University of California Publications in American Archaeology and Ethnology, Vol. 36, pp. 353-400.

Krantz, Grover S.
1959 Distinctions Between the Skulls of Coyotes and Dogs. The Kroeber Anthropology Society Papers, No. 21, Berkeley, p. 40.

Kroeber, A.L.
1907 Chimariko. Bulletins of the Bureau of American Ethnology, Vol. 30, i, p. 270.

Kroeber, A.L.
1907 The Religion of the Indians of California. University of California Publications in American Archaeology and Ethnology, Vol. 4, No. 6, pp. 319-56.

Kroeber, A.L.
1920 California Culture Provinces. University of California Publications in American Archaeology and Ethnology, Vol. 17, No. 2, pp. 151-69.

Kroeber, A.L.
1922 Elements of Culture in Native California. University of California Publications in American Archaeology and Ethnology, Vol. 13, No. 8, pp. 259-328.

Kroeber, A.L.
1925 Handbook of the Indians of California. Bureau of American Ethnography, Bulletin 78.

Kroeber, A.L.
1929 The Valley Nisenan. University of California Publications in American Archaeology and Ethnology, Vol. 24, pp. 253-90.

Kroeber, A.L.
1932 The Patwin and Their Neighbors. University of California Publications in American Archaeology and Ethnograph, Vol. 29, No. 4.

Kroeber, A.L.
1939 Cultural and Natural Areas of Native North America. University of California Publications in American Archaeology and Ethnology, Vol. 38.

Kroeber, Alfred L.
1957 Coefficients of Cultural Similarity in Northern Paiute Bands. University of California Publications in American Archaeology and Ethnology, 47: 209-214.

Kroeber, A.L.
1959 Recent Ethnic Spreads. University of California Publications in American Archaeology and Ethnology, Vol. 47, No. 3, pp. 259-81.

Kroeber, A.L.
1962 The Nature of Land Holding Groups in Aboriginal California. Reports of the University of California Archaeologic Survey, No. 56.

Kroeber, A.L. & S.A. Barrett
1960 Fishing Among the Indians of Northwestern California. University of California Anthropology Records, Vol. 21, No. 1.

Kroeber, T.K.
1957 Some New Group Boundaries in Central California. University of California Publications in American Archaeology and Ethnology, XLVII, pp. 215-17.

Lanning, Edward P.
1963 Archaeology of the Rose Spring Site, Iny-372. University of California Publications in American Archaeology and Ethnology, Vol. 49, No. 3.

Laughlin, William S.
1941 Excavations in the Calapuya Mounds of the Willamette Valley, Oregon. American Antiquity, Vol. 7, No. 2.

Laughlin, W.S.
1942 Notes on the Archaeology of the Yamhill River, Willamette Valley, Oregon. American Antiquity, Vol. 9: 220-229.

Lawrence, Barbara
1968 Post Cranial Skeletal Characteristics of Deer, Pronghorn Sheep and Goat, with notes on Bos and Bison. Papers of Peabody Museum, Vol. 35, No. 2.

Layton, Thomas M.
1973 Evidence for Pottery Manufacture on the Northwestern Periphera of the Great Basin. The Masterkey, 47: 1: 23-27.

Leatherman, K.E. & A.D. Krieger
1940 Contributions to Oregon Coast Prehistory. American Antiquity, Vol. 6, pp. 19-28.

Leechman, Douglas
1944 Further Light on "Wooden Tubes" from Oregon. American Antiquity, Vol. 9, No. 4, p. 451.

Leonard, N. Nelson, III
1968 Archaeological Reconnaissance of the Anderson Ford and Enlarged Ruth Reservoirs in Trinity and Humboldt Counties, California. Report of the Department of Anthropology/Archaeological Survey, University of California, Los Angeles, to the National Park Service, Los Angeles.

Leonard, N. Nelson, III & James T. Toney
1968 Archaeological Reconnaissance of the Proposed Scheiders Bar, Helena and Eltapom Reservoirs on the Trinity River Drainage in Trinity County, California. Report to the Department of Anthropology/Archaeological Survey, University of California, Los Angeles, to the National Park Service, Los Angeles.

Leonhardy, F.C.
1961 The Cultural Position of the Iron Gate Site. Master's Thesis, University of Oregon, Eugene.

Lewis, A.B.
1906 Tribes of the Columbia Valley and the Coast of Washington and Oregon. American Anthropological Association Memoir, No. 1, pt. 2.

Lillard, Jeremiah, B.; R.F. Heizer & F. Fenenga
1939 An Introduction to the Archaeology of Central California. Sacramento Junior College, Department of Anthropology, Bulletin 2.

Loud, Llewellyn L.
1918 Ethnogeography and Archaeology of the Wiyot Territory. University of California Publications in American Archaeology and Ethnology, Vol. 14, No. 3.

Lowie, Robert H.
1923 The Cultural Connections of Californian and Plateau Shosonean Tribes. University of California Publications in American Archaeology and Ethnology, Vol. 20, No. 9, pp. 145-56.

Lowie, R.H.
1924 Notes on Shoshonean Ethnography. American Museum of Natural History, Anthropology Papers, Vol. 20, pp. 187-314.

Loy, William G.
1976 Atlas of Oregon. University of Oregon Books, Eugene.

Lynch, Thomas F. & Lawrence Olsen
1964 The Columbet Creek Rockshelters. (Owyhee County, Idaho.) Tebiwa, Vol. 7, No. 1, pp. 7-16.

Lyon, Juana F.
1966 Archie McIntosh, the Scottish Indian Scout. Journal of Arizona History, Vol. 7, No. 3, pp. 103-22.

Maloney, Alice B.
1943 Fur Brigade to the Bonaventura: John Work's California Expedition for the Hudsion's Bay Company. California Historical Society Quarterly, Vol. 22: 193-222.

Maloney, Alice B. (Ed.)
1945 Fur Brigade of the Boneventura: John Work's California Expedition 1832 and 1833 for the Hudson's Bay Company. California Historical Society, San Francisco.

Maloney, A.B.
1945 Shasta Was Shatasla in 1814. California Historical Society, Quarterly, Vol. 24, pp. 229-34.

Mannion, Linda & M. Curtis Mannion
1970 Abstracts from the Kelley Manuscript: Coast Miwok Material Culture. In Contributions to the Archaeology of Point Reyes National Seashore: A Compendium in Honor of Adan E. Trenanza. San Francisco State College. Ed. Robert E. Schenik, pp. 65-96.

Marchiando, Patricia J.
1965 A Technological and Statistical Analysis of Upper Umpqua River Artifacts. M.A. thesis, Department of Anthropology, University of Oregon, Eugene.

Mason, O.T.
1889 The Ray Collection from Hupa Reservation. Smithsonian Institute Annual Report--1886, pp. 205-239.

Matsen, Kenneth H.
1966 Clay Artifacts. Screenings, Vol. 15, No. 7, p. 4.

McGregor, John C.
1945 An Unfired Sherd from Black Dog Cave. Plateau, Vol. 17, No. 4, pp. 68-9.

McKern, W.C.
1923 Patwin Houses. University of California Publications in American Archaeology and Ethnology, XX, pp. 159-71.

McLeod, Ken
1959 The Beginnings of the Modoc War. Pacific Historian, Vol. 3, pp. 73-80.

McMurtrie, Douglas C.
1950 Oregon Imprints 1847-1870. University of Oregon Press, Eugene.

Meacham, A.B.
1876 Wi-Ne-Ma (the Woman Chief) and Her People. Hartford.

Meighan, C.W.
1953 Ancient Pottery Figurines and Their Significance in the Study of Prehistory. Unpublished Ph.D. dissertation, University of California.

Meighan, C.W.
1953 Preliminary Excavations at the Thomas Site, Marin County. Reports of the University of California Archaeological Survey, No. 19, pp. 1-18.

Meighan, C.W.
1955 Archaeology of the North Coast Ranges, California. Reports of the University of California Archaeological Survey, No. 30, pp. 1-39.

Meighan, Clemet W.
1959 Californian Cultures and the Concept of an Archaic Stage. American Antiquity, Vol. 24, No. 3, pp. 289-305.

Melander, R. & C. Slaymaker III
1969 The Salvage Archaeology of 4-Mrn-168. San Francisco State College, Adon E. Treganza Anthropology Museum, Special Publication, San Francisco.

Merriam, C. Hart
1926 The Buffalo in Northeastern California. Journal of Mammalogy, Vol. 7, No. 3, pp. 211-14.

Merriam, C.H.
1927 The Classification and Distribution of the Pit River Indian Tribes. Smithsonian Miscellaneous Collections, Vol. 78, pp. 1-52, ii, Washington.

Merriam, C.H.
1930 The New River Indians Tlo-hom-tah-hoi. American Anthropologist, n.s., Vol. 32, pp. 280-93.

Merriam, C.H.
1967 Ethnographic Notes on California Indian Tribes III. Ethnological Notes on Central California Indian Tribes. Reports of the University of California Archaeological Survey, No. 68, Part III.

Miller, Floyd E.
1975 The Benjamin Site (35 LA 41, 42). Archaeological Studies in the Willamette Valley, Oregon, ed. C.M. Aikens. University of Oregon Anthropological Papers, No. 8.

Miller, J.
1873 Life Amongst the Modocs. R. Bentley & Sons, London.

Miller, Joaquin
1874 Unwritten History: Life Amongst the Modocs. American Publishing Co., Hartford.

Mills, John E.
1950 Recent Developments in the Study of Northwest California Archaeology. University of California Archaeological Survey Reports, No. 7. (Papers on California Archaeology, No. 5), pp. 21-25.

Moratto, Mike
1967 A Selected Bibliography of California Archaeology and Ethnology. Manuscript on file, Museum of Natural History, University of Oregon, Eugene.

Morss, N.
1954 Clay Figurines of the American Southwest. Papers of the Peabody Museum of American Archaeology and Ethnology, Harvard University, Vol. 49, No. 1.

Mulloy, W.T.
1953 A Preliminary Historical Outline for the Northwestern Plains. Univ. of Wyoming Publications, Vol. 22.

Murdy, Carson N. & Walter J. Wentz
1975 Artifacts from Fanning Mound, Willamette Valley, Oregon. Archaeological Studies in the Willamette Valley, ed. C.M. Aikens. University of Oregon Anthropological Papers, No. 8.

Murray, Keith A.
1959 The Modocs and Their War. University of Oklahoma Press, Norman.

Nance, J.D.
1970 Lithic Analysis: Implications for the Prehistory of Central California. Archaeological Survey Report, University of California, Los Angeles, pp. 63-103.

Nevins, Allen (Ed.)
1956 Narratives of Exploration and Adventure by John Charles Fremont. Longmans, Green & Co., New York.

Newcombe, R.C.
1958 Yonna Formation of the Klamath River Basin, Oregon. Northwest Scientist, Vol. 32, No. 2, pp. 41-48.

Newman, Thomas M.
1959 Tillamook Prehistory and Its Relation to the Northwest Coast Culture Area. Ph.D. dissertation University of Oregon, Eugene.

Newman, Thomas M.
1966 Cascadia Cave. Occasional Papers of the Idaho State University Museum, No. 18.

Newman, Thomas M.
1959 Final Report on Archaeological Salvage: Emigrant Dam Reservoir--Rogue River Project, Oregon. Report of the Department of Anthropology, University of Oregon, to the National Park Service, Eugene.

Newman, Thomas M. & L.S. Cressman
1959 Final Report on Archaeological Salvage Program in the Big Bend Project of COPCO on the Klamath River, Oregon. Report of the Museum of Natural History, University of Oregon, to the California-Oregon Power Company, Eugene.

Newman, Thomas M. & Daniel J. Scheans
1966 A Report on the Arcaheological Potential of Three Proposed Reservoirs in the South Umpqua River Drainage, Oregon. Report of the Department of Anthropology, Portland State College, to the National Park Service, Portland.

Nomland, G.A.
1935 Sinkyone Notes. University of California Publications in American Archaeology and Ethnology, Vol. 36, pp. 149-78.

O'Connell, James F.
1966 The Archaeology and Cultural Ecology of Surprise Valley, Northeast California. Dissertation, Department of Anthropology, University of California, Berkeley.

O'Connell, James F.
1967 Elko Eared/Elko Corner-Notched Projectile Points as Time Markers in the Great Basin. University of California, Archaeological Survey Reports, No. 70, pp. 129-140.

O'Connell, J.F. & R.D. Ambro
1968 A Preliminary Report on the Archaeology of the Rodriguez Site (CA-LAS-194), Lassen County, California. University of California Archaeological Survey Reports, Vol. 73, pp. 95-194.

Olmsted, D.L.
1956- Palaihnihan and Shasta. Language, Vol. 32, pp. 73-
1957 7; Vol. 33, pp. 136-8.

Olsen, Stanley J.
1968 Fish, Amphibian and Reptile Remains from Archaeological Sites, Pt. 1, Southeastern and Southwestern U.S. Papers of the Peabody Museum of Archaeology and Ethnology, Vol. LVI, No. 2, Harvard University.

Olsen, Thomas L.
1975 Baby Rock Shelter. Archaeological Studies in the Willamette Valley, Oregon, ed. C.M. Aikens. University of Oregon Anthropological Papers, No. 8.

Olson, R.L.
1927 Adze, Canoe and House Types of the Northwest Coast. University of Washington, Publications in Anthropology, Vol. 2: 1-38.

Olson, W.H. & F.A. Riddell
1963 The Archaeology of the Western Pacific Railroad Relocation, Oroville Project, Butte County, California. State of California Division of Beaches and Parks, Interpretive Services Section, Archaeological Report, No. 7. Sacramento, pp.74.

Osborne, Douglas
1950 An Archaeological Survey of the Benham Falls Reservoir, Oregon. American Antiquity, Vol. 16, No. 2, pp. 112-20.

Osborne, Douglas
1957 Pottery in the Northwest. American Antiquity, Vol. 23, No. 1, pp. 28-34.

Parker, Samuel
1838 Journal of an Exploring Tour Beyond the Rocky Mountains in the Years 1835-37. Ithica.

Pearsall, M.
1949 Contributions of Early Explorers and Traders to the Ethnography of the Northwest. Oregon Historical Quarterly, Vol. 40: 316-326.

Peck, Morton Eaton
1961 A Manual of the Higher Plants of Oregon. Binford and Mort, Publishers.

Peck, Stuart L.
1953 Some Pottery From the Sand Hills, Imperial County, California. Archaeological Survey Association of Southern California, Publication No. 1.

Pendergast, David M.
1957 Further Data on Pacific Coast Fired Clay Figurines. American Antiquity, Vol. 23, No. 2, pp. 178-180.

Pettigrew, Richard M.
1975 A Comparison of Two Prehistoric Sites in Lane County, Oregon. Archaeological Studies in the Willamette Valley, ed. C.M. Aikens. University of Oregon Anthropological Papers, No. 8.

Pilling, A.R.
1957 An Incised Pebble from Lassen County, California. University of California, Archaeological Survey Reports, No. 38, p. 6.

Powers, G.M.
1886 Mound Relics of Oregon. American Antiquarian, Vol. 8: 166-167.

Powers, Howard A.
1926 The History and Petrography of the Siskiyou Batholith, Oregon. M.A. thesis, Department of Geology, University of Oregon, Eugene.

Powers, S.
1874 The California Indians. Overland Monthly, Vol. 7, pp. 412-426.

Powers, S.
1877 Tribes of California. U.S. Department of the Interior Geography and Geology Survey of the Rocky Mountain Region. Contributions to North American Ethnology, Vol. 3, U.S. Government Printing Office, Washington, D.C.

Prince, E.R.
1959 Great Basin Pottery. Unpublished M.S., University of California Archaeological Survey, Berkeley.

Ragir, Sonia
1972 The Early Horizon in Central California Prehistory. Contributions of the University of California Archaeological Research Facility, 15: 1-329.

Rau, C.
1960 Shell Heaps Near Cape Medocino, Humboldt County, California. University of California Archaeological Survey Reports, No. 50, pp. 25-27.

Ray, P.H.
1886 Manufacture of Bows and Arrows Among the Natano (Hupa) and Kenuck (Klamath) Indians. American Naturalist, Vol. 20, pp. 832-833.

Ray, Verne F.
1930 Cultural Relations in the Plateau of Northwestern America. Fred W. Hodge Publications, Vol. 3, Southwest Museum, Los Angeles.

Ray, Verne F.
1932 Pottery on the Middle Columbia. American Anthropologist, Vol. 34, No. 1, pp. 127-133.

Ray, Verne F.
1942 Culture Element Distributions: XXII Plateau. Anthropological Records, Vol. 8, No. 2.

Ray, Verne F.
1963 Primitive Pragmatists: The Modoc Indians of Northern California. University of Washington Press, Seattle.

Ray, Verne F., et al.
1938 Tribal Distribution in Eastern Oregon and Adjacent Regions. American Anthropologist, Vol. 4, No. 3, pp. 384-415.

Reetz, Charles Alvin
1949 The Cultural Position of the Klamath Semi-Subterranean Earth Lodge in Western North America. M.A. Thesis, University of Oregon, Eugene.

Riddell, Francis A.
1952 The Recent Occurrence of Bison in Northeastern California. American Antiquity, Vol. 18, No. 2, pp. 168-169.

Riddell, Francis A.
1956 Final Report on the Archaeology of Tommy Tucker Cave. University of California Archaeological Survey Report, 35.

Riddell, Francis A.
1956a Archaeological Research in Lassen County, California. University of California Archaeological Survey Report, No. 33, Paper 41, pp. 44-9.

Riddell, Francis A.
1956 Preliminary Report of the Excavation of the Karlo Site. In "Papers of the 3rd Great Basin Archaeological Conference." University of Utah Archaeological Papers, No. 26, pp. 63-73.

Riddell, Francis A.
1958 The Eastern California Border: Cultural and Temporal Affinities. In "Current Views on Great Basin Archaeology." University of California Archaeological Survey Report, No. 42.

Riddell, Francis A.
1960 The Archaeology of the Karlo Site (Las-7), California, University of California Archaeological Survey Report, No. 53, pp. 1-110.

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

Riddell, Francis A.
1962 A Bibliography of the Indians of Northeastern California. Divisions of Beaches and Parks, Ethnographic Report, No. 5.

Riddell, Francis A. & Donald F. McGeein
1969 Atlatl Spurs from California. American Antiquity, Vol. 34, No. 4, pp. 474-478.

Riddell, H.S., Jr.
1951 The Archaeology of a Paiute Village Site in Owens Valley, University of California Archaeological Survey Report, 12, pp. 14-28.

Riddle, George W.
1953 Early Days in Oregon. Riddle P.T.A., Riddle, Oregon.

Rudy, Jay
1966 Southwestern Pottery in Los Angeles County, California: A Correction. American Antiquity, Vol. 31, No. 3, p. 440.

Rudy, J.R.
1953 Archaeological Survey of Western Utah. University of Utah Archaeological Papers, 12.

Sampson, Garth
n.d. Nightfire Island. Manuscript in preparation. SMU, Dallas, Texas.

Sanford, Patricia
1975 The Lynch Site. Archaeological Studies in the Willamette Valley, Oregon, ed., C.M. Aikens. University of Oregon Anthropological Papers, No. 8.

Sapir, E.
1907 Notes on the Takelma Indians. American Anthropologist, n.s., IX, pp. 251-75.

Sapir, E.
1907 Religious Ideas of the Takelma Indians of Southwestern Oregon. Journal of American Folklore, Vol. 20: 33-49.

Sapir, E.
1909 Takelma Texts. University of Pennsylvania Museum Anthropological Publications, II, 1-267.

Sapir, E.
1910 Upper Takelma. Bulletins of the Bureau of American Ethnology, XXX, ii, 872 pp.

Sapir, E.
1910 Takelma. Bulletins of the Bureau of American Ethnology, XXX, ii, pp. 673-4.

Sapir, E.
1922 The Takelma Language. Bulletins of the Bureau of American Ethnology, XL, ii, 1-296.

Schaeffer, C.E.
1952 Molded Pottery Among the Kutenai Indians. Anthropology and Sociology Papers, Montana State University, No. 6.

Schumacher, Paul
1874 Notes on Kjokkenmoddings on the Northwest Coast of North America. Annual Report for 1873, Smithsonian Institution, pp. 354-362, Washington, D.C.

Schumacher, Paul
1877 Research in the Kjokkenmoddings and Graves of a Former Population of the Coast of Oregon. U.S. Geological and Geographical Survey of the Territories, Bulletin 3, No. 1, pp. 27-35, Washington, D.C.

Schumacher, Paul
1877 Aboriginal Settlements of the Pacific Coast. Popular Science Monthly, Vol. 10, pp. 353-356.

Seaman, N.G.
1940 An Amateur Archaeologist's 50 Years in Oregon. Oregon Historical Quarterly, Vol. 41, No. 2, pp. 147-59.

Semenov, S.A.
1973 Prehistoric Technology, translated by M.W. Thompson. W. and S. Mackay & Co., Chatham, Kent.

Shepard, Anna O.
1965 Ceramics for the Archaeologist. Carnegie Institution of Washington, No. 609.

Sinclair, W.J.
1904 The Exploration of Potter Creek Cave. University of California Publications in American Archaeology and Ethnology, Vol. 2, pp. 1-14.

Slocum, Robert G. & Kenneth H. Matsen
1968 Shoto Clay: A Description of Clay Artifacts from the Herzog Site (45-CL-4) in the Lower Columbia Region. Publication No. 4, Oregon Archaeological Society.

Smith, C.E. & W.D. Weymouth
1952 The Archaeology of the Shasta Dam Area, California. University of California Archaeological Survey Reports, 18.

Spier, Leslie
1927 Tribal Distribution in Southwestern Oregon. Oregon Historical Quarterly, Vol. 28, pp. 358-364.

Spier, Leslie
1930 Klamath Ethnography. University of California Publications of American Archaeology and Ethnology, Vol. 30.

Squier, R.J.
1956 Recent Excavation and Survey in Northeastern California. University of California Archaeological Survey Reports, No. 33, Paper 39.

Squier, R.J. & G.L. Grosscup
1952 An Archaeological Survey of Lava Beds National Monument, California, 1952. Report on file: Lava Beds National Monument, Tule Lake.

Stephenson, Robert L.
1968 Preggy Peggy--A Clay Figurine. Nevada Archaeological Survey, Reporter, Vol. 2, No. 2, pp. 16-19.

Stern, Theodore
1956 The Klamath Indians and the Treaty of 1864. Oregon Historical Quarterly, Vol. 57, No. 3, pp. 229-73.

Steward, Julian H.
1933 Ethnography of the Owens Valley Paiute. University of California Publications in American Archaeology and Ethnology, Vol. 33, pp. 233-350.

Steward, Julian H.
1938 Basin-Plateau Aboriginal Sociopolitical Groups. Smithsonian Institution, Bureau of American Ethnology, Bulletin 120.

Steward, Julian H.
1943 Culture Element Distributions: XVIII Northern and Gosiute Shoshoni. Anthropological Records, 8:3, pp. 263-392.

Steward, Omar C.
1939 The Northern Paiute Bands. University of California, Anthropological Records, Vol. 2, No. 3, pp. 132-134.

Steward, D.C.
1941 Culture Element Distributions: XIV Northern Paiute. University of California Anthropological Records, Vol. 4, pp. 361-446.

Strong, William; W.E. Schench & Julian H. Steward
1930 Archaeology of the Dalles-Deschutes Region. University of California Publications in American Archaeology and Ethnology, Vol. 29, No. 1, pp. 1-28.

Swanson, E.H.
1962 The Emergence of Plateau Culture. Idaho State College Museum, Occasional Paper, No. 8.

Swanson, Earl H., Jr.
1965 Archaeological Explorations in Southwestern Idaho. American Antiquity, Vol. 31, No. 1, pp. 24-37.

Swanson, Earl H. Jr.
1966 Ecological Communities in Northwest Prehistory. Quarternaria, Vol. 8, pp. 91-8.

Swartz, B.K. Jr.
1960 A Bibliography of Klamath Basin Anthropology. Klamath County Museum Research Papers, No. 3.

Swartz, Benjamin K.
1961 A Preliminary Archaeological Survey along the Proposed Highway, Lava Beds National Monument, California. Report on file: Lava Beds National Monument, Tulelake.

Swartz, Benjamin K., Jr.
1964 Archaeological Investigations at Lava Beds National Monument, California. Ph.D. dissertation, Department of Anthropology, University of Arizona Tucson. Abstract: Dissertation Abstracts, Vol. 25, No. 9, 1965, Ann Arbor.

Thomas, D.H.
1969 Great Basin Hunting Patterns: A Quantitative Method for Treating Faunal Remains. American Antiquity, Vol. 34, pp- 392-401.

Thomas, David H.
1970 Archaeology's Operational Imperative: Great Basin Projectile Points as a Test Case. Archaeological Survey Report, University of California, Los Angeles, pp. 31-60.

Thomas, David H.
1971 A Cybernetic Modeling of Historic Shoshoni Economic Patterns. Great Basin Anthropological Conference 1970--Selected Papers. University of Oregon Anthropological Papers, No. 1, pp. 119-133.

Torgerson, Kenneth L.
1954 The Modoc Indian War. Unpublished Master of Science Thesis, University of Oregon, Eugene.

Treganza, Adan E.
n.d. Salvage Archaeology Along Clear Creek and Cow Creek, Shasta County, California. Robert E. Schenk Archives of California Archaeology, Adan E. Treganza Anthropology Museum, San Francisco State University, San Francisco, California.

Treganza, Adan E.
1946 Californian Clay Artifacts. Archives of California Archaeology, Society for California Archaeology.

Treganza, Adan E.
1958 Salvage Archaeology in the Trinity Reservoir Areas, Northern California. University of California Archaeological Survey Reports, 43, Pt. 1.

Treganza, Adan E.
1959 Salvage Archaeology in the Trinity Reservoir Area, Field Season 1958. University of California Archaeological Survey Reports, 46.

Treganza, Adan E.
1960 Salvage Archaeology in the Whiskeytown Reservoir Area and the Wintu Pumping Plant, Shasta County, California. Department of Anthropology, San Francisco State College, Occasional Papers in Anthropology, No. 1.

Treganza, Adan E.
1963 An Archaeological Survey of the Aboriginal and Early Historic Sites of Lassen Volcanic Park, California. Report on file: National Park Service, San Francisco.

Treganza, A.E.; C.E. Smith & W.D. Weymouth
1950 An Archaeological Survey of the Yuki Area. University of California Anthropological Records, 12: 113-124.

True, D.L.
1957 Fired Clay Figurines from San Diego County, California. American Antiquity, Vol. 22, No. 3, pp. 291-6.

True, D.L. & Claude Warren
1961 A Clay Figurine from Santa Monica, California. The Masterkey, 35:4: 152-155.

Trygg, Ethel, E.W.
1971 A Study of the McLeon Artifact Collection from South Central Oregon. M.A. Dissertation, University of Oregion, 109pp, Eugene.

Tuohy, Donald B.
1956 Shoshoni Ware from Idaho. Davidson Journal of Anthropology, Vol. 2, No. 1, pp. 55-71.

Tuohy, Donald R.
1973 Nevada's Non-Ceramic Culture Sphere. Tebiwa, Vol. 16, No. 1.

Tuohy, Donald R. & William Jerrems
1972 A Pottery Jar from Lake Tahoe, Placer County, California. Nevada Archaeological Survey Reporter, 6:2: 3-5.

Tuohy, Donald R. & Barbara Palombi
1972 A Basketry Impressed Shoshoni Pottery Vessel from Central Nevada, Tebiwa, 15:1: 46-48.

Tuohy, Donald R. & Earl H. Swanson
1960 Excavation at Rockshelter 10-AA-15, Southwest Idaho. Tebiwa, Vol. 3, No. 1 and 2, pp. 20-24.

Voegelin, E.W.
1942 Cultural Element Distributions XX Northeast California. University of California Anthropological Records, No. 7.

Wallace, William J.
1957 A Clay Figurine from Death Valley National Monument, California. Masterkey, Vol. 31, No. 4, pp. 131-4.

Wallace, William J.
1965 A Cache of Unfired Clay Objects from Death Valley, California. American Antiquity, Vol. 30, No. 4, pp. 434-41.

Wallace, William J. & Edith Taylor
1952 Excavation of Sis-13, A Rock-Shelter in Siskiyou County, California. University of California Archaeological Survey Reports, 15.

Warren, C.N.; Cort Sims & Max G. Pavesic
1968 Cultural Chronology in Hells Canyon. Tebiwa, Vol. II, No. 2, pp. 1-37.

Washington, F.B.
1909 Notes on the Northern Wintun Indians. Journal of American Folk-Lore, Vol. 22, p. 925.

Waterman, T.T.
1920 Yurok Geography. University of California Publications in American Archaeology and Ethnology, Vol. 16, No. 5.

Waterman, T.T.
1925 Village Sites in Tolowa and Neighboring Areas in Northwestern California. American Anthropologist, Vol. 27, pp. 528-43.

Wedel, W.R.
1954 Earthenware and Steatite Vessels from Northwestern Wyoming. American Antiquity, Vol. 19, No. 4, pp. 403-9.

Wells, F.G.
1955 Preliminary Geologic Map of Southwestern Oregon West of Meridian 122° West and South of Parallel 43° North. U.S. Geological Survey Mineral Inv. Field Studies. Map MF 38.

Wheeler-Voegelin, E.
1955 Official Report of the Owghee Reconnaissance Made by Lieut. Colonel C.S. Drew. Ethnohistory, Vol. 2, pp. 146-82.

Wheeler-Voegelin E. (Ed.)
1957 E.A. Stevenson to Thomas W. Healy, Red Bluffs, September 30, 1857. Ethnohistory, Vol. 4, pp. 66-95.

White, John R.
1975 The Hurd Site. Archaeological Studies in the Willamette Valley, Oregon. University of Oregon Anthropological Papers, No. 8.

Wilkes, Charles (U.S.N.)
1845 Narrative of the United States Exploring Expedition, During the Years 1838, 1839, 1840, 1841, 1842. Lea and Blanchard, Philadelphia, 5 Vols.

Wilkes, Charles (U.S.N.)
1849 Western America, Including California and Oregon, with Maps of Those Regions, and the Sacramento Valley. Lea and Blanchard, Philadelphia.

Willey, Gordon
1966 An Introduction to American Archaeology, Vol. 1 North and Middle America. Prentice-Hall, Inc. Englewood Cliffs, New Jersey.

Williams, Howell
1942 The Geology of Crater Lake National Park, Oregon. Carnegie Institution of Washington, Publication 540.

Williams, Howell
1949 Geology of the MacDoel Quadrangle. Division of Mines, Bulletin 151. State of California Department of Natural Resources, San Francisco.

Wilmsen, Edwin N.
1968 "Functional Analysis of Flaked Stone Artifacts." American Antiquity, Vol. 33, pp. 156-161.

Wilmsen, Edwin N.
1970 Lithic Analysis and Cultural Inference: A Paleo-Indian Case. University of Arizona Press, Tucson.

Woodward, A.
1927 Some Tolowa Specimens. Indian Notes, Museum of the American Indian, Heye Foundation, Vol. 4, pp. 137-150.

Woodward, John A.; A. N. Murdy & Franklin Young
1975 Artifacts from Fuller Mound, Willamette Valley, Oregon. Archaeological Studies in the Willamette Valley, Oregon, ed. C.M. Aikens. University of Oregon Anthropological Papers, No. 8.

Woolfenden, W.D.
1969 A Study of 4-Gle-10: The Brownell Indian Cemetary. In Archaeology of the Black Butte Reservoir Region, Glenn and Tehama Counties, California, San Francisco State College, Anthropology Museum Occasional Papers, No. 2.

Work, J.
1943-1945 Fur Brigade to the Bonaventura: John Work's California Expedition of 1832-33 for the Hudson's Bay Company. A.B. Maloney, ed. California Historical Society Quarterly, Vol. 22: 193-222, 323-48; 23: 19-40, 123-46.

Wormington, H.M.
1949 Ancient Man in North America. The Denver Museum of Natural History, Popular Series, No. 4.

Worminton, H.M.
1948 A Proposed Revision of Yuma Point Terminology. Proceedings, Colorado Museum of Natural History, Vol. 18, No. 2, pp. 1-19.

Wright, G.F.
1889 The Nampa Image: Correspondence Relating to Its Discovery With Explanatory Comments, etc. Proceedings of the Boston Society of Natural History, 24: 424-450.

Young, C.A.
1958 A Walking Tour in the Indian Territory. Chronicles of Oklahoma, XXXVI, pp. 167-80.

Young, F.G. (Ed.)
1899 The Correspondence and Journals of Captain Nathaniel J. Wyeth, 1831-36. Sources of the History of Oregon, Vol. 1, No. 3-6, Eugene.

Ziegler, Alan C.
1973 Inference from Prehistoric Faunal Remains. Addison Wesley Module in Anthropology, No. 43.

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