ABORIGINAL BURIALS IN SOUTHWESTERN OREGON

By L. S. CRESSMAN

NOTE. Read before Section H of the American Association for the Advancement of Science at Pasadena, June 16, 1931. The work was financed by a grant-in-aid from the Research Council of the University of Oregon.

IT SEEMS wiser not to speak of this group of burials as in a burial mound for that expression has a significance quite lacking in this case. A "mound," as used in this connection, should mean something made by man, an element of culture, whether heaped up by the direct efforts of men or a by-product of a manner of life, as the kitchen-middens of our coast lines. In this case we have a deposit of soil laid down along ago by the Rogue river.[1] To the east of Gold hill within the triangle made by the twelve hun-

[1] Dr. Warren D. Smith of the Department of Geology of the University of Oregon took samples of soil from a test hole at different levels. The results of his examination of these specimens are stated as follows:

"May 28, 1931

"Memorandum to Dr. L. S. Cressman:

"The deposit at Gold Hill, Oregon, in which the Indian burials were found, consists of river deposited material of probable Pleistocene age. The mound is roughly oblong. It is on the highest of three terraces on the south bank of the Rogue river opposite a bend in the river and directly across from the business part of the town. The top of the mound is between forty-five and fifty feet above the present river level.

"The first terrace is about ten feet in height and is made up almost entirely of cemented river gravel. The second terrace, some fifteen or twenty feet back from the first, is also some ten or fifteen feet in height and is made up largely of cemented river gravel. The third and highest terrace is approximately fifteen to twenty feet in height and is made up almost entirely of river silt. At the top there are about two feet, though the thickness varies, of rather fine rounded sand. The middle portion is made up of somewhat coarser material and more firmly compacted with a high percentage of pellets of pumice which vary from little more than the size of a pinhead to nodules of an inch or more in diameter, though in the main of rather fine material. There is also a sprinkling of charcoal fragments.

"The lowest level of the deposit excavated by us about eight feet from the top of the mound was sampled and is made up of considerably coarser material with not so much pumice in it but with sand grains of approximately the same mineral character as the layers above.

"No very distinct stratification was apparent in the deposit although the deposit was entirely water laid. When examined with a microscope the four samples taken from the deposit indicated about the same mineral content—fragments of quartz, feldspar and the darker ferro-magnesian minerals. Frequent small grains of olivine were seen in the sand. These are the normal minerals one would expect to find in deposits laid down by the Rogue river, the pumice indicating very clearly the origin of the deposit, as the upper regions of the Rogue drain a territory having an abundance of pumice from which these small grains could be derived. The material in the upper part of the deposit which was darkened by humus showed under the microscope a considerable coating of carbonacious matter surrounding each of the

dred foot contour, and south of the unnamed creek on the accompanying map, there is this river deposit. Kane creek has cut its way through the terrace to a depth of about twenty feet, flowing in a westerly and then northerly direction. The eastern part of the field and the edge along the south, that is, along Kane creek, has been under cultivation and is cut down to a considerable depth below the top of the first terrace. This results in the present site, where the skeletal remains and artifacts have been found,

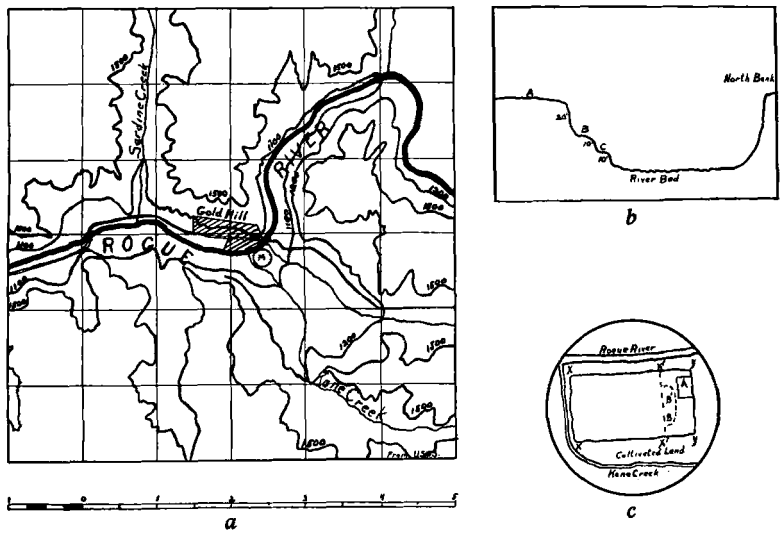


FIG. 1. *a*, Map showing the location of the Gold hill burials.
b, Cross section of the Rogue river showing three terraces opposite Gold hill. A, first terrace; B, second terrace; C, third terrace.
c, Details of the excavations. X'–Y, excavated area; A, 6–7 foot burials; B'–B, 2½–4 foot burials; B', 2½ foot burials. X–Y, 50 yds., Y–Y 33 yards, X'–Y, 20 yards.

mineral grains so it was difficult, until these were cleaned off, to determine just what minerals were present.

"The deposit from top to bottom has every appearance of being quite old and I should refer most of it to the Pleistocene. It is quite possible, of course, that recent unprecedented floods may have added some accumulations on top of the highest terrace and may have reworked to a certain extent some of the top layers. But there was very little evidence of any disturbance three or four feet down in the deposit where several of the bodies were found.

"The bed-rock in the bed of the Rogue river at this point consists in the main of metamorphic rocks, chiefly altered lava flows of presumable Palezoic age. The rocks have been called for convenience greenstones.

"As no fossils were found in the river deposit it is not possible at present at least to date the mound formation more definitely.

W. D. Smith
Department of Geology"

standing out above the surrounding fields as though it were in reality a mound heaped up by man instead of one left as the other soil has been removed. It is in this small area indicated on the map by the circle, lying between Kane creek and the Rogue, that all the burials have been found. Artifacts of different kinds were picked up by various people in other places in the same area, but no other burials have been definitely established in the immediate vicinity.

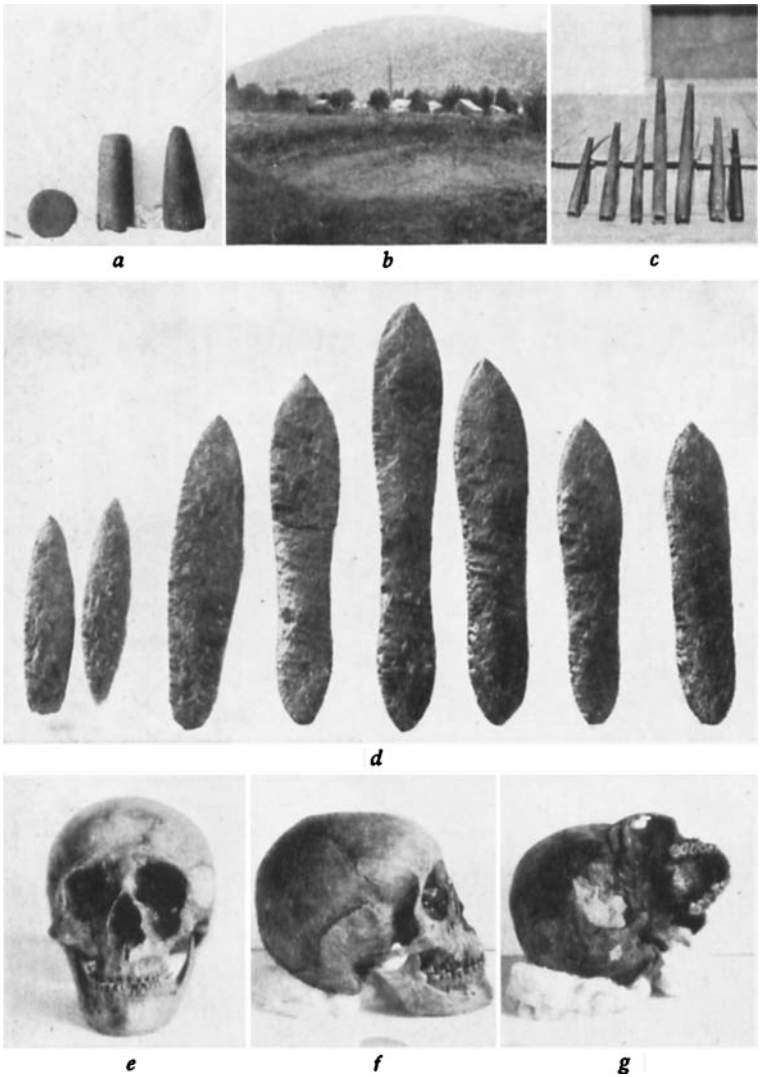
Excavations were made in May, June, September, and November, 1930, and again in May, 1931. The work in June, 1930, was done under the writer's direction, but he was not present.

Systematic examination of the mound is carried on by the removal of the soil in terraces. First the ground is plowed and then the soil is removed with a fresno and pair of horses. (The preliminary work with the plow and scraper was made necessary because of the small sum available for the work. As soon as any sign of a burial was discovered small hand tools and brushes were used for further excavation.) As a general rule, a burial is marked by fire-broken stones, in some cases very obviously mortars and pestles, and between the stones and the skeleton an area of black soil varying in depth from one to two and a half feet, and about the length and breadth of a flexed body. This black soil shows the same composition as that around it, so it was not brought in from the outside. The evidence seems to indicate that the hole was dug, the body placed in it, and the sand which had been removed then replaced, and the broken stones thrown on top of the grave. None of these sections of black soil reaches the present surface, some of the deepest being as much as five to six feet below it. Some of the oldest inhabitants remember the river to have flooded this highest terrace at one time—in the '80's, I believe.

We shall consider the results of the excavations in the following order: the skeletal remains, burials, stone implements, obsidian blades, shells and seeds, and identification of the culture represented.

SKELETAL REMAINS

Approximately twenty-two skeletons were unearthed either whole or in part. As a matter of fact, practically all of them were in such an advanced stage of disintegration that it was impossible to do more than expose the best *in situ* and discover the nature of the burial. In only one case did we succeed in securing a practically complete skull (pl. 3). Even this one is not absolutely complete. The left zygomatic arch is broken and there are two holes in the skull vault, while the posterior part of the foramen magnum is lacking. It does lend itself to some measurement, but is prac-



a, *c*, Stone implements; *b*, east end of mound; *d*, obsidian blades; *e*, skull showing supernumerary teeth.

tically useless for identifying the people to which it might belong, since we have no way of discovering where it belongs on a curve of distribution of such measurements. The cephalic index of this skull is 85.0. The upper facial index is 53.7.[2] This burial was four feet below the present surface.

The teeth of this specimen of which the skull was secured showed some interesting pathological conditions. The upper jaw has eighteen instead of sixteen teeth. On the right side the supernumerary tooth grows bucally and from between the second premolar and the first molar. This has resulted in the use of the roots of the first molar for chewing, since the first molar is pushed so far to the rear. The supernumerary tooth on the left has grown lingually between the first and second pre-molars. The teeth are well worn, and in one case the pulp was exposed. The lower mandible shows evidence of two abscesses, one with each of the third molars.

The teeth, in all cases except in the complete skull, show the direction of wear to be outward and downward, while those of the skull are lingually and downward.

The dental specimens show teeth excessively worn. A detailed study would probably reveal evidence of dental pathology quite similar to that of Leigh's study on aborigines of California.[3]

BURIAL

Burial shows a characteristic form. All undisturbed skeletons were lying on the left side with the head toward the south, facing west, legs flexed with knees against the chest, feet pulled in against the pelvis and arms folded across the chest. The shallowest burials were about three feet below the surface, while the deepest were between seven and eight. It is probable, however, that the deeper burials were made at an earlier time and resulting floods have deposited the silt to the present depth. Four skeletons, three of which were at the seven foot level, were buried with two obsidian blades each, a red and a black, while one at the four foot level was buried with the two smaller black blades. One grave contained three varieties of shells, and a collection of shells of "Digger Pine" seeds. There were no other artifacts found with the skeletons. Bits of worked flint, arrow heads, and some stone implements have been found scattered through the deposit, but no single unbroken stone implement except the blades have been recovered from the graves.

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[2] Ales Hrdlicka, Anthropometry 1920, p. 152.

[3] R. W. Leigh, Dental Pathology of Aboriginal California, UC-PAAE 23, no. 10: 399–440, pls. 6–67.

STONE IMPLEMENTS

The stone implements consist of a great many fragments of fire-broken pestles and mortars, a round thin stone, basalt, 87 mm. in greatest diameter, and 15–17 mm. in thickness, perhaps a whetstone; one cylindrical stone, granite, 170 mm. in length and 60 mm. in diameter, probably a maul; and another instrument, basalt, conical in shape, 182 mm. in length, 79 mm. across at the base, probably a pestle (pl. 3*a*). There is a large stone, almost kidney-shaped, 330 mm. long and 115 mm. across, which has probably been used for smoothing or polishing purposes. However, the bed of the Rogue at this point is full of boulders and rubble of every conceivable shape. Consequently, this stone may have been one brought from the river bed for some use by the occupants of this site. Another stone, perhaps a "charm stone," 59 mm. in length and 20.5 mm. in median diameter, and 8 mm. at the ends, was found in the site, but not with any grave. The stone has neither a hole nor a depression for fastening to a string for suspension, a fact which would not necessarily preclude its use as a "charm stone."[4] No evidence of the existence of the metate was found.

OBSIDIAN BLADES

Eight obsidian blades (pl. 3*d*) have been recovered. These were buried in pairs with four bodies. There are three red and five black ones. There were three burials with a red and a black blade each, and one with two black ones. One black blade, found with a red one, showed traces of red pigment as though the owner had tried to color it to give it the appearance of the more valuable type. This blade is the poorest type of workmanship of all eight. They range in length from 147 mm., the small black one with a blunt base, to 340 mm., a magnificent black one. There is an exquisite red one, 280 mm. in length, with a maximum breadth of 57, and a minimum of 45 at the point for grasping, widening again to 47 mm. at the base just before it is turned again to the point. The thickness of these blades is remarkably uniform, varying from 11 mm. to 14 mm., but no single one shows this variation. The greatest variation in any single one is in the long black one which is 14 mm. through at the grasping part, but 12 mm. at each end. This symmetry and control of technique is striking evidence of the skill of these aboriginal craftsmen. The two smaller knives are an approximate "laurel leaf" type and do not lend themselves to the same measurements or comparisons as the others which show the maximum breadth at the forepart of the blade receding to the minimum breadth at the point where they

[4] Article on "Plummets" *in* Handbook of the American Indians, BAE-B 30, pt. 2: 266–8.

are meant to be grasped, and then spreading to a slightly greater width just below toward the base. The knife which has been painted red flares to its maximum breadth at the center, and corresponds in shape to Blade #3 of Mexican origin in Plate XLI of Rust's paper.[5] One of the two shorter knives, as may be seen from the photograph (the second knife from the left), is streaked with almost transparent gray shafts which run diagonally across the material. The measurements of these blades is given at the close of this article.

ARROW POINTS AND FLINT CHIPS

Fragments of arrow points and some very small unbroken but curved points were recovered from the deposit. These fragments, as well as those of flint showing evidence of chipping, have been very numerous and no effort is made here to classify them.

SHELLS

One grave, that of a child about eight years old, provided a large collection of three different kinds of shells. This burial lay at a depth of about thirty inches from the present surface to the top of the skeleton. A large collection of shells, several hundred of the species Olivella Biplicata, a few specimens of Glycymeris Obsoleta Carpenter and four pieces of abalone shell, two cut into oblong shaped pieces, and one triangular piece, 39 mm. across the base and 46 mm. long, unperforated, and one nearly square segment. The largest piece of abalone measures 30 mm. across the base, 22 mm. at the top, and 49 mm. from top to bottom. There is one piece of abalone cut in an oblong shape 12 by 30 mm. This piece has evidently been perforated at each end, while the other two pieces were perforated only at the top or narrower end. The piece which is nearly square has the suspension hole in one corner or just off the exact point. The shape may have been determined by a prominence which prevents the oblong design, since such would be at variance with the form of the material. The range of the olivella and the glycymeris is from Puget sound to San Diego, while the abalone is found as far north as the Oregon coast. The specimens are small, so that these large flat specimens could not have been cut from them.

The olivella shells have had the apex rubbed off after the manner reported by Stearns[6] for the California Indians. The method of stringing the shells was evidently the same (cf. Stearns, p. 324, fig. 16) from the position

[5] Horatio N. Rust, The Obsidian Blades of California, with notes by A. L. Kroeber, AA, n.s., 7: 690.

[6] Robert Stearns, Ethno-Conchology—A Study of Primitive Money. SI-AR pt. 2: 32, fig. 17, 1887.

in which they lay, although there was not the slightest evidence of the material upon which they had been strung. The glycymeris shells were strung through a small hole in the base of the shell.

SEEDS

With this same burial there was a large collection of shells of the seeds of the "Digger Pine," Pinus Sabiniana Douglas. The seeds have been strung along with the various shells for ornamental uses. They do not seem to have been on any garment such as that illustrated by Goddard for the Hupa, though such use is possible.[7] They were mixed with the larger shells about the thorax of the skeleton and with the small Olivella shells and a small piece of abalone about the wrists, where the arrangement of the olivella shells was clearly evident. Most of the pine seed shells have one end rubbed and a hole punctured through one side just below. Some of them are not rubbed off at the end, but are perforated laterally with two holes. A good number show signs of carbonization, while others do not. A piece of partially charred fir about twenty inches long and three inches through was found lying over the wrists of the skeleton, but the shells against which it lay showed no sign of carbonization. Consequently, the wood must have been burned before being thrown into the grave, or placed there, for the shells under it were not crushed. The carbonized shells are in a good state of preservation, but those untouched by fire are very much deteriorated. The range of these shells, as given by Jepson, Sargent and Sudworth,[8] is

[7] Pliny Earl Goddard, Life and Culture of the Hupa, UC-PAAE 1, pl. 8, figs. 1, 2, 1903–4.

[8] "California—Foothills, lower mountain slopes, and high valleys (at north) of coast ranges and Sierras.

"*Coast Ranges.* From upper Sacramento and Trinity rivers and Hoopa Valley (on Klamath River, Humboldt County) to southern cross ranges: generally at elevations of 500 to 4,000 feet—occasionally to 5,000 feet. *Shasta County:* North limits, delta in Sacramento River Canyon, above mouth of Pitt River, at 1,150 feet, and at point 15 miles up McCloud River; eastern limits, isolated bodies in northeastern corner of county on hills west and south of Fall River, and on Hat Creek (Near Cassel), main body ending two miles east of Montgomery Creek (tributary Pitt River); west limit, on west side of Sacramento Valley on ridge west of French Gulch at 2,400 feet; south limit, immediately on Sacramento River at Anderson (11 miles south of Redding). *Trinity County:* North limits; Trinity River and Weaver Creek considerably above Weaverville at 2,100 feet, Canyon Creek (10 miles above Junction) at 2,400 feet; western limit east side Mad River Valley on bottom slopes of South Fork Mountain. *Humboldt County:* only in Trinity River Bottoms, mainly in Hoopa Valley (north limit), Supply Creek Canyon and Redwood Creek (west of Hoopa Valley near Bair ranch, west limit . . . .

"Reported northward in Coast Mountains to slopes of Siskiyous, eastward to Owens Valley, and southward to San Bernardino Mountains."

George B. Sudworth, Forest Trees of the Pacific Slope, pp. 55, 56. U. S. Department of Agriculture, Forest Service, Government Printing Office, Washington, D.C., 1908.

limited to the north by the southern Siskiyous or by a line conforming approximately to the 41st degree north latitude. This species has never been reported farther north than the southern slope of the Siskiyous, a full hundred miles as the crow flies from the nearest point on the line to the Rogue valley where these burials occur.

Artifacts recovered by persons other than the writer:

OBSIDIAN BLADES

Three or four blades, both black and red, were previously recovered by the owner of the ranch during his plowing. These are of the same type as those we have described and average about the median size of our series.

STONE FRAGMENTS

Stone fragments, broken by fire in some cases, have also been previously recovered. Flint and obsidian arrow points have provided numerous articles.

PIPES

The most important find was the series of pipes made of serpentine and greenstone schist. Exact information as to the depth of burial is not available. It has been reported as seven feet, but the writer was told personally by the owner that it was after the third plowing, which would make it something over three feet in depth. The seven pipes (pl. 3*c*) were found in one grave and without other artifacts. No other pipes have been found. The longest pipe is 465 mm. long and 35 mm. at its greatest diameter. The smallest is 206 mm. long and 26 mm. in diameter. The smaller pipes are of serpentine, while the larger are made of a variety of greenstone. One has but a small shaft bored through, while the others are hollowed out until there is but a shell remaining.

BONE ORNAMENT

In a pocket of a gopher hole just across Kane creek on the west side of the deposit, a bone ornament about one half inch wide and six inches long, flat on one side and rounded on the other, was found. There was a perforation at one end and an indentation opposite the hole on the end showing that this was meant to be suspended. There was evidently a simple form of ornamentation used, made by incising lines so as to form triangles with the points toward the median line of the object. The points did not quite reach the center line. The triangles were grouped in units of threes and twos to make a series of fives. Some of the triangles were formed by five lines, while

others were made by three. The triangles were incised along each edge, but on only the rounded side. There was a larger number of designs on one edge than the other. The ornament, in so far as the writer has been able to observe it, seems to correspond to the type worn by girls during adolescense, as reported by Goddard for the Hupa.[9] This seems to have been a surface find.

CULTURAL RELATIONS OF THESE BURIALS

Southwestern Oregon, because of the accidents of history, is politically aligned with a state to which it does not naturally belong. Beginning with the Umpqua divide, the physiography and the flora change so that from there on south there is a greater similarity to northern California than to west central Oregon. The moist climate of the Puget sound area gives way to the dry climate of the higher altitudes. That this was a natural line of division for aboriginal culture in historic times has long been definitely established.[10] The southwestern Oregon area has, however, been exposed to lines of influence from three main directions. On the north and west were the southern boundaries of the Puget sound or Northwest Coast culture area, to the east was the southwestern tip of the Plateau and the Great Basin area, while to the south was the northwestern California area. The very scanty ethnographic data of southwestern Oregon, and particularly the Rogue valley as reported by some excellent but meager studies and the reports of early travellers and explorers, indicated that the southwestern area was not only particularly open to California, but was in reality a part of that area even though the culture showed some variations. Our archaeological investigations show that the culture was essentially that of northwestern California and certainly differed from that of the aborigines at the time of their contacts with the whites. While there are these variations, for instance in the type of burial, the difference is such that the later burials with the body placed in a box[11] might very easily have developed from the simple burial in the flexed position without the box, especially if the technique of wood-working had been a later development. One thing is conclusive, the area was even then more akin to the prehistoric culture of California than it was to that north of the Umpqua divide.

[9] Goddard, *op. cit.*, Plate 10, Fig. 4.

The writer has not had these artifacts found by others in his possession to make any detailed study of them. He has been limited to as detailed a study as was permitted by the courtesy of the present owners in making them available to him for a short period of time while engaged on the main work of excavation.

[10] Lewis, *op. cit.*, p. 177.

[11] Schumacher, *op. cit.*, pp. 27 ff.

Culturally we can say that all the burials so far unearthed are pre-Columbian. There has not been one single piece of evidence of any European culture. The complete absence of any beads or anything of the sort in the grave of the child in which the shells and pine nuts were found would indicate that this burial was antecedent to contact with the whites. This grave was at the shallowest depth below the surface. With white contacts established, beads and buttons very quickly began to displace the more attractive but technically more difficult material. Yet the carefully sifted soil from this grave failed to show any sign of traders' stores. This body, while interred at about thirty inches and with evidences of ornaments but nothing else, was buried in exactly the same position as those at all the lower levels, even those at seven feet with which were found the obsidian blades. We have called attention to the piece of partly burned fir with this child's body, but it must have been thrown in upon the body after it was burnt, for there was no evidence that the olivella shells or the pine seed shells, which adhered to the wood when it was removed, had been subjected to fire. The depth of this burial would correspond to that customary among the Hupa[12], and some of the ornaments are of the same type, but there are too many other variants in the details to identify the two, certainly at this juncture. The variation in depth of burial seems to indicate a considerable lapse of time between the burial of the child and of those graves at the greatest depth over which river silt has obviously been deposited. While the deposit in the main has been identified as pleistocene by Professor Smith, it would not necessarily mean that the burials were those of pleistocene man, unless there were evidence of no post-pleistocene deposit, and the burials showed water-laid soil above them. As he points out, there is evidence of disturbance of the soil above the four-foot level, but none below that. This body at the thirty-inch level would be in that area, yet it offers no sign of European culture. The depth is such that it hardly seems plausible that there has been any soil deposited above it, although such might have been the case in view of the disturbance of the surface soil by agriculture. This manipulation of the soil tended to work the surface material down into the soil previously lacking it. In view of the geological nature of the deposit, the water-disturbed nature of the upper area, and the great depths of the lowest burials with every evidence of water-laid soil above them and between the top area, we are in all likelihood dealing with burials of a substantial period in the past.

The persistence of the culture traits would not interfere with this sup-

[12] Goddard, *op. cit.*, p. 70.

position, as Kroeber has called attention to the remarkably static nature of the culture of the California area.[13]

TYPE OF BURIAL

Lewis says,[14] in speaking of the Indians of southwestern Oregon, in particular at the headwaters of the Umpqua,

> the dead . . . were doubled up and buried in the ground, the grave covered with stones, and the person's property piled around. The excavations of Schumacher show a similar method of burial. Smith says that the only burial he saw was that of a chief who was placed in a sitting posture in the ground.

Schumacher reports for the mouth of the Rogue,

> The corpses were found doubled up in the usual manner, lying on their backs, or sideways, and facing the *rancheria* in a southeastward direction, although some were found just in an opposite way.[15]

His account is more explicit than that of Lewis on the Umpquas and on Schumacher's excavations. The significant thing about Schumacher's account is the lack of any uniformity in the method of burial at the same village, but he was dealing with post-Columbian burials and the diversity in a trait so likely to be fixed as burial may be due to a gradual change from a type previously consistent and fixed, especially in view of contacts with whites.

Kroeber[16] reports the "sitting position" for southwestern Oregon.

The burials in the present excavation were all consistent except where the bodies had been disturbed by action of the water or where disintegration had destroyed the skeleton. Especially was this the case where burials had been made in pumice formations, almost as compact as hardpan. The bodies were buried with the arms folded across the chest, the knees flexed and pulled up as near to the chest as possible, and the feet pressed back against the pelvis. The bodies all lay on the left side, head to the south and facing

[13] Kroeber, Handbook of the Indians of California, B-BAE 78: 898–939. "When it is remembered that the best authority—estimating, indeed, but using as exact data as possible and proceeding with scientific care—puts the beginning of this period (shell mound) at more than 3,000 years ago, it is clear that we are confronted by a historical fact of extraordinary importance," (p. 930).

[14] Albert Buell Lewis, Tribes of the Columbia Valley and the Coast of Washington and Oregon, AAA-M 1, pt. 2: 177.

[15] Paul Schumacher, Researches in the Kjökkenmöddings and Graves of a Former Population of the Coast of Oregon, Bul. of the United States Geological and Geographical Survey of the Territories, 3, no. 1: 34. Washington, Government Printing Office, April 5, 1877.

[16] A. L. Kroeber, California Culture Provinces. UC-PAAE 17, no. 2: 160, 1920.

the west. Four of the bodies had buried with them obsidian blades in pairs, three of them having a red and a black one in the pair. These were at approximately the seven foot level. The other at the four foot level had the two smaller black knives with it. One blade, a red one, was broken into two pieces, but this was undoubtedly accidental, as none of the others was damaged.

Kroeber states that the obsidian blades were not buried with their owners, but passed from generation to generation,[17] or were used commercially, for example, in wife purchase. Here blades of an exquisite workmanship are buried, and buried according to definite pattern, in pairs, of red and black. We have here, then, in all probability, a firmly established pattern of burial with characteristics that mark it off definitely from that of the surrounding area.

The pipes are undoubtedly a California type, probably prehistoric, and likely have religious significance, that is, comprise part of the paraphernalia of a shaman. The lack of the metate also indicates a prehistoric culture.

The shells might have come up the Klamath, the Rogue, or less likely, the Umpqua. The pine seed shells, however, could have come from only one direction, south of the Siskiyous. Some of these shells are carbonized, while others are not. This lack of consistency would indicate that the burning was not a definite act which was performed upon all of them. The carbonized shells are far better preserved than the others, which are so fragile that they fall to pieces if more than touched. Sudworth[18] states that it was customary for the Indians to burn the cones to secure the seeds more easily. This might well account for the presence of carbonization while there is no evidence of fire in the grave.

In conclusion, there seem to be two, and probably three, strata represented by these burials. The first consists of those at approximately the seven foot level, with which were buried obsidian blades in pairs; the second would be at the four foot level at which artifacts were absent except in one case where there was a pair of rather inferior blades, more of the weapon type than ceremonial; the last would be at the two and a half foot level. In this last would probably fall the burial containing the pipes and the one with the shells and nuts. These last, in view of the customary greater depth of burial, might be considered intrusive in the area, but the child burial followed the usual flexed position. We cannot speak for the other. The lack of dentalium among the other varieties of shells would tend to

[17] A. L. Kroeber, Notes to "Obsidian Blades of California" by Horatio N. Rust, AA, n.s., 7: 691.

[18] Sudworth, *op. cit.*, p. 54.

date this burial antecedent to the introduction of this variety among the Indians of the northwestern California area.

Speculating briefly, one might visualize the earliest burials with these ceremonial obsidian blades of exquisite workmanship as antecedent to the period when property came to be so important that it served as a basis of social status, and these valuable knives were no longer interred with the corpse. The two small blades at the four foot level are more of the weapon type (blunt base) than the ceremonial and might serve as evidence showing the development of the attitude which regarded these blades as valuable property to be preserved. The upper level would seem to indicate clearly established social differences as suggested by the abundance of ornamental objects from that burial. If we apply Kroeber's chronology[19] to these periods we should date the first stratum between 2100–500 B.C. or earlier, the second in the late second or early third, about 500 A.D., while the last would come in the third period, 500–1200 A.D. Kroeber puts the beginning of the shell industry along the southern coast in the second period. The shells from this level are from the south. Allowing generously for diffusion, we could put this burial in the third period and it would still be prior to 1200 A.D. Granting that this speculation may miss the mark as to approximate chronology, it seems certain that we are dealing with different strata of culture which show significant, although not striking, differences from one another and from the culture of historic times. The culture in its main lines probably has its base in northwestern California on the lower Klamath, but has developed along slightly different lines for a variety of reasons, giving and taking from the groups at the focus of the culture.

UNIVERSITY OF OREGON
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[19] A. L. Kroeber, The History of Native Culture in California, UC-PAAE 20, Phoebe Apperson Hearst Memorial Volume: 128 ff., 1923.

MEASUREMENT OF ARTIFACTS

(*All measurements in mm.*)

Type	Material	Length	Breadth			Blade Thickness (heel)		Depth of burial (ft.)
			Max.	*Min.*	*Med.*	*Min.*	*Max.*	
Obsidian blade	Black	147						4
" "	"	160						4
" "	"	340	56	39	49	12	14	7
" "	Red (broken)	270	55	41	45	11	13	4
" "	"	280	57	45	47	12	12	6
" "	Black	234	49	43	43.5	11	12	6
" "	"	239	57.5	(center)	—	11	14	7
" "	Red	233	51	39	40	12	13	7
Maul	Granite	170	63	60.5	57			
Pestle	Basalt	182	71	21	64			
Charm stone(?)	Basalt	59	20.5	8	(at ends)			
Whetstone	Basalt	Max. dia.		87				
		Thickness						
		Edge		17				
		Center		15				

Pipes[20]	Length	Max. Diameter
1	206	26
2	238	27
3	270	30
4	304	25
5	405	35
6	465	35

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[20] One broken, no measurements.

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