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During my visit to that part of the California coast between Point San Luis and Point Sal, (Map A,) in the months of April, May and June of 1874, I often had occasion to observe extensive shell-heaps, like those I had found about a year previously so numerous along the shores of Oregon. These deposits of shells and bones are the kitchen refuse of the earlier inhabitants of the coast regions, where they are now found, and, though differing from each other in their respective species of shells and bones of vertebrates, according to the localities and the ages to which they belong, they have still, together with the stone implements found in them, a remarkable similarity in all parts of the North American Pacific coast that I have explored -- a similarity that extends further to the shell-heaps or "Kjökkenmøddings" of distant Denmark, as investigated and described by European scientists.

In Oregon, from Chetko to Rogue River\*, I found that these deposits contained the following species of shells: Mytilus Californianus, Tapes staminea, Cardium Nuttallii, Purpura lactuca, &c.; eight-tenths of the whole being of the species first mentioned.

In California, on the extensive downs between the Arroyo Grande and the Rio de la Santa Maria, the mouth of which latter is a few miles north of Point Sal, I found that the shells, on what appear to have been temporary camping-places, consist nearly altogether of small specimens of the family Lucina; so much so that not only can scarcely any other sort be found, but hardly even any bones. My reason for supposing these heaps to be the remains of merely temporary camps, is the small number of flint knives, spear-heads, and other implements found therein, and the total absence of any chips that might indicate the occasional presence of a workshop where domestic tools and weapons of war were manufactured -- a something that immediately strikes the accustomed eye in viewing regularly well-established settlements. On further examining this class of heaps by a vertical section, we find layers of sand recurring at short intervals, which seem to indicate that they were

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\*Of the collections made by the writer at that place, the complete and illustrated description will be found in the Smithsonian Report for the year 1873, p. 354.

\*\*Smithsonian Institution, Annual Report for 1874, pp. 337-350, 1875. (Omitted in the present reprint is the "Catalogue of [116] Implements Found in the Different Graves".)

visited at fixed seasons; those middings exposed toward the northwest being vacated while the wind from southwest was blowing sand over them, and, mutatis mutandis, the same happening with regard to camps with a southwest aspect while the northwest wind prevailed. It is fair, then, to suppose that these places were only the temporary residences of the savages to whom they appertained; that they were tenanted during favorable times and seasons for the gathering of mollusks, which, having been extracted from their shells, were dried in the sun for transportation to the distant permanent villages. The comparatively small quantities of shell-remains now found at these regular settlements going also to support this theory. No graves have been found near these temporary camps. I discovered, however, one skeleton of an Indian, in connection with which were thirteen arrow-heads, but it was plainly to be seen that the death of this person had happened during some short sojourn of a tribe at this place, as the burial had been effected in a hasty and imperfect manner, and the grave was without the usual lining which, as we shall see, is found in all the other tombs of this region.

On the extremity of Point Sal, the northern projection of which is covered by large sand-drifts, we find, down to the very brink of the steep and rocky shore, other extensive shell-deposits, which, with few exceptions, consist of the Mytilus Californianus and of bones; flint chips being also found, though very sparsely in comparison with the mass of other remains. The sea having washed out the base of this declivity, and the top-soil having, as a consequence, slid down, we see on the edge of the cliff shell-layers amounting in all to a thickness of four or five feet; that part closest to the underlying rock appearing dark and ash-like, while the deposit becomes better preserved as the surface is neared. At other places, for example, on the extreme outer spur of this Point Sal, the shell-remains have been so conglomerated or cemented together by extreme antiquity as to overhang and beetle over the rocks for quite a distance.

Leaving the temporary camps, we shall visit the regular settlements of the ancient aborigines. Traces of these are found near the southern Point Sal, at a place where it turns eastward at an angle of something less than 90°, behind the first small hill of the steep ridge which trends easterly into the country, and which, up to this spot, is, on its northern slope, covered with drift-sand and partially grown over with stunted herbage, (Fig. 2.) Further traces of a like kind are to be seen on the high bluff between North and South Point Sal, (Fig. 3). Here the shells are piled up in shapeless, irregular heaps, as they are met in all localities on the coast where there were the fixed dwelling-places of people whose principal food consisted of fresh shell-fish; for in the neighborhood of these permanent homes the shell-remains were always put away in fixed places, while in temporary camps they were carelessly distributed over the whole surface of the ground. Very vividly did these bleached mounds recall to my mind the immense remains of such heaps as I had seen in Oregon, on the right bank of the Chetko, as also near Nat-e-net, and near Crook's Point, Chetl-e-shin, close to Pistol River. I remembered, also how I had observed the Indians in various places; for example, near Crescent City, on the Klamath, and on the Big Lagoon, forming just such shell-heaps; two or three families always depositing-their refuse on the same heap.

To return to Southern California. A deposit similar to that of Point Sal, although much smaller, is found on the left bank of the Santa Maria River,

near its mouth. Both at the first-described fixed camps and at this place there are to be found tons of flint-chips, scattered about in all direction, as also knives, arrow-heads, and spear-heads in large numbers. I was somewhat disappointed, however, in being unable to find any graves; such numerous heaps indicating the existence of important settlements, that should have been accompanied by burying-places. I therefore moved farther inland, seeking a locality where the soil could be easily worked, where a good view of the surrounding country could be had, and where, above all, there was fresh water, all of which requirements appear to have been regarded as necessary for the location of an important village. I soon recognized at a distance shell-heaps and bones, the former of which become scarcer as we leave the shore. Approaching these, on a spur of Point Sal, upon which a pass opens through the coast-hills, and on both sides of which are springs of fresh water, though I did not succeed, after a careful examination, in distinguishing the remains of a single house, I think I found the traces of a large settlement on a kind of saddle on the low ridge, where flint-chips, bones, and shells lie in great numbers. At length search revealed to me in the thick chapparral a few scattered sandstone slabs, such as in that region were used for lining graves. Digging near these spots, I at last found the graves of this settlement, called by the old Spanish residents call Kes-ma-li. (Fig. 4)

Here were brought to light about one hundred and fifty skeletons and various kinds of implements. The graves were constructed in the following manner: A large hole was made in the sandy soil to a depth of about five feet; then a fire was kept in it until a hard brick-like crust was burned to a depth of four or five inches into the surrounding earth. The whole excavation was then partitioned off into smaller spaces by sandstone slabs, about one and a half inches thick, one foot broad, and three feet long; in which smaller partitions the skeletons were found. One of these slabs generally lay horizontally over the head of the corpse, as a kind of protecting roof for the skull, just as I found them at Chetko River, although in the latter place the graves were lined with split redwood boards instead of stones. Such careful burial is not, however, always met with, and must evidently be taken as a sign of the rank or the wealth of the deceased; the more so, as in such graves I usually found many utensils, which is not the case with the more carelessly formed tombs, which were covered with a piece of rough stone or half a mortar. The slabs above mentioned were generally painted, and a piece which I carried off with me was divided lengthwise by a single straight, dark line, from which radiated, on either side, at an angle of about 60°, thirty-two other parallel red lines, sixteen on each side, like the bones of a fish from the vertebrae. In most cases the inner side of the slab was painted red. Unluckily the specimen I took with me became wet, by rain, before I was able to convey it to a place of safety, and the previously well-preserved design was blurred.

In these graves the skeletons lay on their backs, with the knees drawn up, and the arms, in most cases, stretched out. No definite direction was observed in the position of the bodies, which frequently lay in great disorder, the saving of room having been apparently the prime consideration. Some skeletons, for example, lay opposite to each other, foot to foot, while adjoining ones, again, were placed crosswise. The skeletons of females have, instead of the protecting head-slab, a stone mortar or a stone pot placed on its edge, so as to admit the skull, which latter, if too narrow in the neck to

admit the skull, is simply buried underneath it. Cups and ornaments, both in the case of men and women, lie principally about the head, while shell-beads are found in the mouth, the eye-sockets, and in the cavity of the skull, which latter is almost always filled with sand, pressed in through the foramen magnum. The skeletons were, in some cases, packed in quite closely, one over another, so that the uppermost were only about three feet below the surface of the ground. The indications of poverty are very evident in regard to these, in the scarcity of ornaments, except, perhaps, when they are females, as they are in the majority of cases. I cannot accept the hypothesis that these were the slaves of some rich man and buried with their master; for the lower skeletons were generally found to have been disturbed in a very singular manner, such as could only have been occasioned by a re-opening of the grave after the decomposition of the bodies. I found, for example, a lower jaw lying near its right place, but upside down, so that both the upper and the lower teeth pointed downward; in another case the thigh-bones lay the wrong way, the knee-pans being turned toward the basin; and, in other instances, the bones were totally separated and mixed up; all tending to show that the graves had been repeatedly opened for the burial of bodies at different times. Once I even found, upon piercing the bottom-crust of a sepulchre, another lying deeper, which, perhaps, had been forgotten, as the bones therein were somewhat damaged by fire. Plenty of charcoal is found in these tombs, usually of redwood, rarely of pine, and I could not determine any third variety. Sometimes there were also discovered the remains of posts from three to six inches in diameter, and of split boards about two inches in thickness. There are probably the remains of the burned dwelling of the deceased, placed in his grave with all his other property, after the fashion I observed in Chetko last year.

I examined other graves resembling those described at Point Sal. These others are known by the name of Te-me-te-ti. They lie about fourteen miles north of the Point Sal graves, and are situated on the right bank of the Arroyo de los Berros, opposite to the traces of former settlements about seven miles inland. These tombs only differed from those of Kes-ma-ti in not being lined with the thick burned brick-like crust mentioned above, but with a thin light-colored crust, slightly burned, and not more than a quarter of an inch thick.

To these graves I paid a second visit, hoping to obtain more material, having been there only a very short time at my first visit. But the proprietor of the land disappointed my desires, for he appeared, in spite of my scientific explanations, to be inclined, according to squatter-fashion, to prevent, with his rifle, my visit to the land, to which he possessed no title. These were the graves where I found the bronze cup, and a buckle of the same material, which later, I am sorry to say, was unaccountably lost. I had hopes to discover more of such articles, enabling me to trace the connections of these people. The location of this village is rather hidden; it is situated on a small plain between a bluff elevation on the left bank, and the rather high and wooded right banks of the Los Berros Creek. I could plainly notice the excavations where houses had formerly stood, and particularly the large sweat-house.

In company with the well-informed and industrious antiquarian, Dr. W. W. Hays, and Judge Venabel, of San Luis Obispo, I explored another aboriginal settlement known by the name of Ni-po-mo. It is situated on the large rancho

of like name, about eight miles inland, and distant about a mile and a half from the Nipomo Ranch House, occupied by the hospitable Dana brothers. These graves are also in sandy soil, near a former settlement, the existence of which is well marked by quantities of flint-chips, fragments of tools, bones, and a few shells. Only about three hundred yards from the graves, and nearly in a straight line with them and one of the houses of Nipomo Ranch, there is a large spring of good water, surrounded by willows. These graves were indicated by an elder-bush, a plant which I always found near the graves, or in the neighborhood of ancient settlements.

Lastly, I examined the Wa-le-khe settlements, (Fig. 5). I hesitated to undertake the trip to these graves, because I only had four days left before the departure of the steamer; and consequently I would only have about six hours remaining for work. But, as I supposed this country offered much of interest to the explorer, I made only the following examination:

About twenty-five miles from the mouth of the Santa Maria River the Alamo Creek empties into it, discharging a large amount of water. Following the wide bed of the Santa Maria for about seven miles farther up stream, we reach a smooth elevation, which at this place rises about sixty feet above the bend of the river, and which trends in a curve toward the mountains on the right bank. At the farthest end of this, at a place where a fine view over the whole valley is had, we find the traces of the ancient village, now known as Wa-le-khe. A short distance from the former dwellings, on the highest point of the ridge, an excavation marks the spot where once a house stood, probably that of a chief.

I started from San Luis Obispo to visit this place, passing by the remarkable tar-springs, which are situated at about a distance of eighteen miles from the town. Near them I found traces of what had formerly been a large ditch. As before stated, I had not time to make thorough examinations, yet I found that the ditch was still three feet wide, and entered the creek some miles above the tar-springs, on the banks of which creek the said springs are found in different places. Near the road I observed, in the middle of the ditch, an oak tree, measuring twelve inches in diameter, and which plainly had taken root after the abandonment of the ditch; for it was not torn up, as would have been caused by the running water, but was at this place well preserved.

I also visited Ostion rancho, (sometimes called Ranchito,) at which place there are extensive beds of oyster-shells, and also some other species of shells, among which are prominently Tapes. At one place, about fifty yards from the right bank of the Arroyo Grande, the shells are closely packed and bound together with coarse sand, forming quite an extensive bluff. I collected a few specimens, which I presented to the California Academy of Sciences.

At the place where Alamo Creek empties into the Santa Maria River, on its left bank, I found several earth-works, and they appeared to me to have been built on this level but elevated spot, the entrance of the valley, for defensive purposes. During my hasty examination I could not discover any place where a house might have been, nor any graves, but nevertheless I incline to the belief that near this place had been an important settlement; for

Alamo Creek has better drinking-water than the Santa Maria River, and its width and the adjoining country form quite a picturesque landscape, which, together with the excellent hunting-ground, is really most inviting for a settlement. Probably, on closer examination, the remains of a settlement might be found in the plain on the right bank, where the elder-bushes give welcome shade to man and beast. I have no doubt that the banks of Alamo Creek and the surrounding country will yet yield many remains of former settlements, as also the banks of the Santa Maria River and its tributaries, where, besides the settlement of Wa-le-khe, which I explored, there are two others, known to the ever-roving Vaqueros.

With regard to the general character of the domestic utensils, arms, and ornaments which I found in examining about three hundred skeletons in the graves of Kes-ma-li, Te-me-te-ti, Ni-po-mo, and Wa-le-khe, they all resemble each other very closely, seeming to show that their possessors all belonged to the same tribe. First of all, the large cooking-pots attract attention. They consist of globular or pear-shaped bodies, hollowed out of magnesian mica. The circular opening, having a small and narrow rim, measures only five inches in diameter in a pot with a diameter of eighteen inches. Near the edge of the opening, the vessel is only a quarter of an inch thick, but its thickness increases in a very regular manner toward the bottom, where it measures about one and a quarter inches. Made of the same material, I found other pots of a different shape, namely, very wide across the opening, and narrowing toward the bottom. With these I have also now in my possession many different sizes of sandstone mortars, of a general semiglobular shape, varying from three inches in diameter and one inch and a half in height to sixteen inches in diameter and thirteen inches in height, all external measurements, with pestles of the same material to correspond. There were, further, quite an assortment of cups, measuring from one and a quarter to six inches in diameter, neatly worked out of serpentine, and polished. The smallest of these was inclosed, as in a boudly-covered dish, by three shells, and contained paint, traces of which, by the wau, were found in all these cups, from which we may suppose that they were not used for holding food.

Neither spoons nor knives were found in these graves. I got, however, three beautiful serpentine pipes, shaped like cigar-holders, much stronger than, but similar in shape to, those found in Oregon. Not many weapons were picked up here, only a few arrow and spear heads; these, however, were mostly of exquisite workmanship. A spear-head of obsidian, five and a half inches long, was the only object I found of this material; another lance-point of chalcedony, nine and a half inches long and one and a quarter inches wide, was beautifully shaped and carefully made.

A remarkable object is a bronze cup which was found at Te-me-te-ti. It was filled with red paint, and contained also the pretty paint-cup inclosed in the three shells mentioned before. I also found in the same grave, a Spanish coin of the last century, and a bronze buckle, which latter was lost. The bronze cup, the coin, and a pot of burnt coarse, sandy clay which was found at Ni-po-mo, and also a few remains of corroded iron knives, found in the three graves, tell us of the last days of the existence of these people at a time when they evidently had hold intercourse with the advancing missionaries, who, almost everywhere in America, were the pioneers of civilization.

Most of the objects were found perfect; and those which were not, had been broken by the pressure and shifting of the soil, as could easily be seen from their position. It is, therefore, certain that the bulk of the property buried with a person was not purposely broken nor destroyed, the same thing being true of my investigations in Oregon. I even found mortars and pestles which had been repaired and cemented with asphaltum. The richer occupants of the graves had shell and glass beads in great numbers, sickle-shaped ornaments of the abalone (halictis) shell, and an ornament resembling dentalium, but made of a large clam-shell, strewed about their heads.

During my explorations I also diligently searched for caves which might have been inhabited and from which important information might have been obtained. But in these investigations I did not meet with much success, partly because I had not the time necessary at my disposal, for scarcely had I got to a place where they existed, when my duties demanded my attention and obliged me to give up the exploration. I could, therefore, only designate on my map the place which I might, with some degree of certainty, suppose to be a formerly-inhabited cave, so as to facilitate later investigations. Once I was obliged to suspend work at Point Sal for a whole week on account of thick fog. I had time, however, to search in the gorges and rocks, hoping to find ethnological objects. I discovered and opened at that time the graves of Kes-ma-li, and not far off the cave, (Figs. 4 and 6). But I was rather disappointed, when, after clambering through and over almost inaccessible places, I reached the cave, and found that it was only eight by four feet wide and eight feet high; and that there were in it only one pestle, with many oyster shells, bones, and teeth. The floor was formed of stratified brown ash-like soil, in which were the above-mentioned objects. The circular entrance to the cave measured three feet in diameter. On the right-hand side of the entrance was a niche which had evidently been worked out of the hard but cracked sandstone, and was large enough for one person to sit comfortably therein. Toward the back part, the cave has also been worked out, so that a person might lie down stretched out; that is, I found that I could comfortably occupy these positions, although I am seventy-three inches in height. The whole cave, it appears to me, has been artificially made with a chisel. I did not examine the articles which it contained very closely, and must, therefore, refer to the collection itself. For the same reason, I have not said much about all the other objects of the collection, but refer for more particulars to the following catalogue and to the collection itself.