



MILLING PLACE OF THE CALIFORNIA INDIANS. PRIMITIVE COSTUMES.

ANTHROPOLOGICAL STUDIES IN CALIFORNIA.

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INTRODUCTION.

It is not intended in the present paper to enter into a systematic discussion of Californian archæology and ethnology, but rather to present such materials as it has been my good fortune to acquire during a brief period of exploration, mainly in the central portions of the State.¹ In order that these observations may have, in a measure, the proper setting, a few introductory remarks in explanation of general anthropological conditions on the Pacific coast are presented.

In considering the archæology of a great region like California, it is proper that the present aborigines and their culture should be studied, and the knowledge thus acquired utilized in discussing the prehistoric monuments and artifacts of the region. To-day there are remnants of many tribes in California, at least twenty separate linguistic stocks being represented, a really marvelous diversity in a province which, howsoever extensive (some 300 by 800 miles in extent), is not separated into very well-defined areas by orographic or other barriers. As laid down in colors on the map, the remarkable multiplicity of stocks along the Pacific coast is especially noticeable, and it seems as if the varied ethnic elements of a vast region must have been attracted, one after another, to these lowland and coastal valleys by some powerful magnet, such, for example, as that furnished by an unfailing food supply; and so formidable are the barriers of mountain ranges on the east and

¹The observations recorded in these pages were made during a brief trip to California in the summer of 1898. The work was conducted under the auspices of the Bureau of American Ethnology, and the writer was accompanied during the major part of the journey by Dr. W J McGee, ethnologist in charge of the Bureau. One of the principal objects of the journey was to look into the evidence relating to the antiquity of man in the Auriferous Gravel region of the Sierra Nevada. This subject has already received attention in a paper published in the *American Anthropologist* for January and October, 1899, and reprinted with additions in the *Smithsonian Report* for 1900, and will not be presented at length in this connection.

so forbidding the deserts on the south, that few communities once settled along the coast would ever take the trouble to seek homes elsewhere. It would seem that the nations were caught as fish in a trap. The way in was easy, but the way out was hard. By some such process California acquired its varied peoples. The remarkable diversity in language is thus probably largely due to the arrival of tribes already speaking diversified tongues rather than to differentiation within present habitats.

Notwithstanding the great multiplicity of languages there is marked uniformity in the physical characters of the people, and culture in general is diversified only in details. We conclude that although the peoples had a common origin, no doubt in the far north, scattering and isolated occupation of vast areas of country led to multiplication of tongues, while all those elements of culture dependent upon immediate environment and readily modified by it have been remodeled into a homogeneous whole. It is probable that conditions nearly identical with those of historic times have prevailed for a long period on the Pacific coast. Archæology seems to have no strong light to throw upon the history of the region. We seek in vain for the presence of distinct peoples or indications of different conditions. We can neither trace any of the present peoples back along the course of their history to more primitive conditions, nor follow them in their migrations far outward into regions from which they may have come. There is nothing in the past of culture that is not comprised in the present. There may have been simpler peoples, less advanced peoples, in the near or far past, but there is no trace of former higher development or the coming of strangers bearing with them germs of strange cultures from foreign lands, northern or southern, Asiatic, European, or Polynesian.

We observe, also, that in its ensemble Californian culture is sharply marked off even from that of most of the neighboring peoples—as, for example, the Pueblos, the Mound-Builders, and the Mexicans. Art in stone, upon which archæology must largely depend, is practically uniform at all points in the California province, differences being due largely to variations in local resources. The absence of certain forms of implements and utensils common elsewhere is especially noteworthy. There are no grooved axes¹ and no celts, past or present. Sculpture of life forms is almost wholly absent, and building in stone was and is unknown. At the same time many of the classes of artifacts found in California are peculiar to the region. The mortar and the pestle are most notable features of the domestic outfit of the coast, and though, in one form or another, present in many sections of America, are nowhere so prevalent and so varied in shape. The grinding plate and

¹An exception is found in the grooved implement, illustrated in the seventh volume of the Surveys West of the One Hundredth Meridian, p. 203.

muller are almost equally numerous, and it is probably to the acorn that the region owes the remarkable development of these utensils; and the wide distribution of the oak tree over the slope in a measure regulates the distribution of the tribes, tending to foster a very general but rather scattering occupation by small communities. It is thus that the tribes have always been but slightly associated and wholly without the ability to unite in concerted action.

Simultaneously with the development of the mortar and grinding plate there grew up the art of olla or stone vessel making, and the discovery of extensive deposits of soapstone on the far-away island of Santa Catalina led to a new and distinctive group of artifacts confined to the channel islands and the neighboring coastal districts.

A most notable peculiarity of the art of the region is the rarity of earthenware, which for some undiscovered reason was never utilized, save in the making of rude balls of baked clay for use in slings and in sporadic efforts at vessel making. The rude earthen vases found in the Tulare region and elsewhere are probably mainly of recent origin, and the practice of the art by the mission tribes of the South is no doubt a late Shoshonean transfer from the Colorado Valley. Utensils of stone and wood occupied the field covered by pottery in other sections, and basketry grew into unexampled importance, displaying remarkably varied phases of form, technique, and embellishment.

Sea shells, which abound along the entire coast, and especially the haliotis and the clam, have furnished material for personal ornaments and helped to determine their character, and the great deposits of obsidian toward the north have probably given an impetus to flaked stone art among all the tribes.

We might expect at first glance to find dividing lines, more or less distinct, between the peoples of the south and those of the north, and between those of the Sierra belt on the east, the chain of valleys traversing the middle of the State from north to south, and the coastal zone, but the differences are not of great importance, as no barrier exists to prevent free intercourse between neighboring sections. The north has evidently been affected by the farther north, but the south has hardly felt the influence of the more advanced tribes of the Colorado Valley.

That the peoples are of Asiatic origin I see no reason to doubt, but to speak of them as Chinese, Malay, or Tartar in origin, without very considerable qualification, is a great mistake. Although all may have arrived, more or less directly, from the north, and primarily from the shores of Bering Sea and beyond, it is not likely that any particular Asiatic strain ever passed the north Pacific arch, ran the gauntlet of interfering and opposing nations, and reached far-away California in even approximate purity. That any particular language of the many

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existing in temperate Asia should be preserved throughout the centuries of migration and struggle and appear in California so unchanged as to be identified with a given Asiatic tongue to-day is not to be expected, and it is manifest folly to continue the search for traces of Asiatic arts and industries other than those that may have been transferred in recent times by means of modern ships. Every art, save the most elementary, would be lost or transformed in passing the frigid gateway. Religion, social institutions, government, industries, all would change with changing conditions and be remodeled in each of the numerous distinctive environments encountered between Tartary and California. Agriculture, pastoral arts, metallurgy, ceramics, and all forms of domestic art would be obliterated, and other activities, such as weaving, stone-shaping, house-building, hunting, and fishing, would be so completely modified that no knowledge of original practices would remain in the mind of any individual or be preserved in any tradition. What is now found, old or new, in the culture of California, is America's own, if not, indeed, fully and absolutely Californian. The incoming populations of the coast had to discover the metals, and could not have developed the arts of using them until ages after reaching the temperate zone. Clay existed everywhere in plenty, but tribes arriving from the far north would be slow to discover its use in the arts and cast aside inherited arctic forms of utensils. It has not yet in any part of the coast usurped the place of skin, bark, and wood in vessel making, although neighboring provinces on the east and south have been potters for many centuries. Before soapstone came into use it had to be found in far out of the way places; and the group of milling arts, now so important a feature in the economy of the people, had no prototypes in the frigid zone, where the diet was exclusively animal. It would be useless even to guess at the time required for the development of the group of arts and industries characterizing the aboriginal culture of California.

Study of analogies in blood and culture, with the view of establishing more than the most general relationships between American and transoceanic nations, has been and no doubt will be quite in vain. The question of a possible very ancient autochthonic people is sometimes raised, but as yet there is apparently no sufficient basis upon which to discuss the proposition. If there were such people in America they must now be merged fully into the Asiatic populations of the present period. The same would be true also of the culture. We may well pursue the study of Californian archæology with practical certainty that, whatever the origin of the people, we are, in the main, elucidating local and sublocal culture. With language it is different. Although changing rapidly with altered conditions, speech has little tendency toward uniformity among distinct nations. Twenty peoples coming from different regions to California, bringing as many distinct

languages, might still speak twenty different languages after the other activities had been modified and remodeled as in a common mold by the local environment.

VICINITY OF NEVADA CITY, NEVADA COUNTY.

The first stop of our party in California was at Nevada City, Nevada County. Here archæological investigations were made and collections of basketry and stone implements were secured from some families of "Hi-eet" Indians (Pujunan stock), whose village is on the table-land about a mile west of the city. A recent fire had deprived these poor people of their wooden houses, and they were lodging in improvised shelters, brooding over their misfortunes. There are hardly more than a dozen individuals, all told. They are not, however, ill favored and debased in appearance, and compare very well with other tribes of corresponding condition and habits. The men work in the mines or at other occupations when opportunity offers, and the women gather acorns—still a large factor in their domestic life—grind them in the stone mills, and prepare the food; they also continue to make baskets in the usual style of the Sierra tribes. It is not pleasant for the ethnologist to note, however, that the gunnysack is taking the place of the strongly woven carrying basket, that the iron pestle and muller are superseding those of stone, and that cooking on iron stoves and in tin utensils is being substituted for the old-time stone-boiling in tightly woven baskets.

Several milling places were found near the dwellings, where convenient masses of granite happened to be exposed. A dozen conical depressions, some shallow and some deep, were scattered over the rock surfaces, and all about were the mealing stones, some nearly round, others oval, flattish, or cylindrical, a few well shaped, the others rude. Some were suited for grinding by abrasion, others by pounding, the shape being accommodated to the contour of the depression in which they were to be used. These milling places are usually covered by a rude pole and brush shelter, which serves to protect from sun and rain the women (Plate 1), who spend much of their time at the mills. Besides the fixed mortars, there were seen about the dwellings both round and flattish mortars and mealing stones, with accompanying pestles and mullers used in the minor pulverizing work of the household. Illustrations of typical forms from neighboring districts are given farther on. The archæological features of the vicinity are referred to in the paper, already mentioned, devoted to evidences of auriferous gravel man. It was observed that in particular the modern villagers dwelt above the brinks of the great mines, and that stray artifacts necessarily found their way into the excavations. Search was made for the mine from which one of the specimens, a mortar, referred to by Josiah D. Whitney in his work on the Auriferous Gravels of

California, is said to have come, and it was ascertained that this mine was confined to a small gulch, at the head of which stands an oak grove suited in every way for occupation by the acorn-using natives of the district.

Nevada City is picturesquely situated on the banks of a mountain torrent known as Deer Creek, and evidences of former mining activity are visible on all hands. The gravels occur in extensive deposits, and though rich in gold are not yet nearly worked out, the enactment of laws limiting the use of water for hydraulic operations having greatly retarded the work.

VICINITY OF FOREST HILL, PLACER COUNTY.

From Nevada City it is a day's journey to Forest Hill, the county seat of Placer County—a great mining center in former days. The trip was made by rail to Colfax, on the Central Pacific R. R., and thence by stage coach across the magnificent canyon of the North Fork of American River. These Sierra valleys are all of absorbing interest to the student of human history, for it is held by many that man inhabited this region long before the vast gorges began to be excavated, and the grand ranges culminating in the snow-capped Sierra began to be carved out. As our coach crept wearily up the eastern rim of the valley, and, long after nightfall, passed out over the crest through the mining town of Yankee Jim, 2,000 feet above the river behind us, we for the first time realized the full significance and magnitude of the proposition advocated by Whitney, namely, that human bones and relics of advanced culture occur in large numbers in the original formations of these mountain crests—formations laid down in the stream beds of a river system already obliterated in Tertiary times, and long before the erosion of the present valleys began. The particular object of our visit to this district was to learn something of the possible origin of the objects of art reported by Whitney as coming from the mines, and at the same time to collect from the native villages scattered over the district such objects of interest for the ethnologist as the people possessed.

The village of Yankee Jim is located on the brink or rim of the great valley of the North Fork of the American, and Forest Hill, 2 miles farther on across the plateau-like crest, overlooks the superb valley of Middle Fork. Professor Whitney says,¹ on the authority of Mr. C. D. Voy, that stone implements were found in 1864, about a mile south of the town of Forest Hill, at a depth in the gold-bearing gravels of about 10 feet. One of the most interesting of these was a flat dish, or platter, worked out of hard granite, and about 18 inches in diameter. We at once sought out those residents of the locality

¹J. D. Whitney, *Auriferous Gravels*, p. 272.

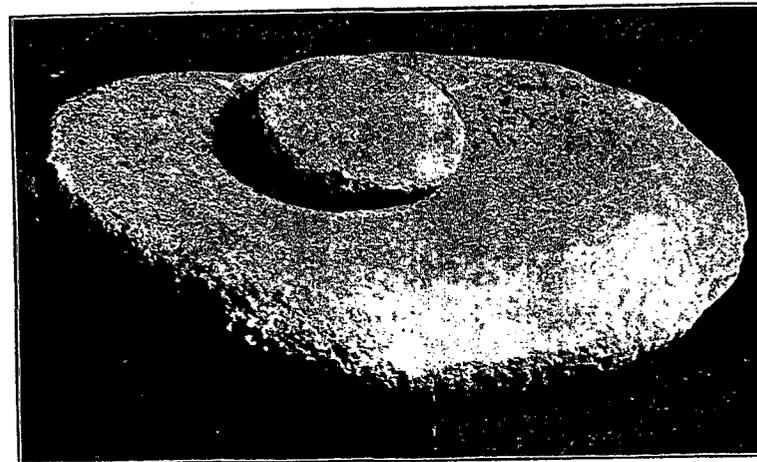
best qualified to inform us regarding the mines and their history, and were so fortunate as to meet Mr. Richard Clark, a well-known citizen and extensive mine owner, who had been in the district from the very beginning. It was soon learned that the great Dardanelles mine, owned and worked by Mr. Clark, was about 1 mile south of the village, and in his company the site was at once visited. The mine occurs several hundred feet down the slope descending into the canyon of the Middle Fork, and on a narrow bench called Oro Flat. Here the outcropping margin of the gravel deposits of a Tertiary river channel are exposed in a heavy deposit 200 to 400 feet thick. The mining operations destroyed a large part of the flat, leaving at the upper margin, when active work ceased ten years ago, an irregular gravel cliff half a mile long, exposing the full thickness of the gravels now considerably weathered down and gullied by erosion. Approaching from above, we descended to the flat and halted upon a rounded portion of the surface overlooking the brink of the mine. Here was a small farm, and a field immediately above the deepest part of the mine was quite bare, although it had not been cultivated apparently for some years. It was soon discovered that the spot had been extensively occupied by the native peoples, and in the course of the forenoon a dozen mealing stones and mortars (Plate 2), thirty hand stones and pestles (Plate 3), and many minor relics—mainly arrow and spear points—were collected. It was noticed that the outer margin of the site had been encroached upon by the mine and perhaps a third or half of it had been destroyed. It was further seen that the site slopes toward the vertical brink of the mine, and that many gullies are cut, growing deeper toward the cliff, and that near the margin they are so deep and precipitous that it was unsafe to enter them. The relics were found all over the field, but more abundantly in the gullies where they had rolled and lodged; but all were surely on their way to the mine. Naturally, only the smaller, flatter objects remained, the round pestles and the globular mortars had long since found their way into the mine below, where they became intermingled with the great mass of loose gravels and boulders. Some specimens were found far down the sides of the mine lodged on ledges and in heaps of débris, and the fact was impressed upon our minds that finds of stone relics in the mine, unless made by expert observers, could have no value as an index of age. On the brink of the mine were found also conical mortar basins worked in the surface of large boulders and outcropping rocks. Mr. Clark assured us that this site had not been occupied by the natives since the opening of the mine in 1852, and it is clear that as the mining work went on all along the lower margin of this site the stone implements rolled in, and it is no wonder that collectors were able to secure from it the flat dish or platter of granite referred to by Whitney, for a dozen of these objects were still scattered along the brink

above ready to fall in as the work of the miner advanced. Plates 2 and 3 illustrate part of the finds made on this spot. It is observed that these relics do not correspond fully with those of the modern Indian sites, that the mullers are smaller and rounder, and more neatly shaped, and that the smaller stone objects are of varieties not now in use. This, however, does not necessarily indicate different peoples, but probably results from changes in habits due to contact with the whites and the degeneracy of aboriginal work in general.

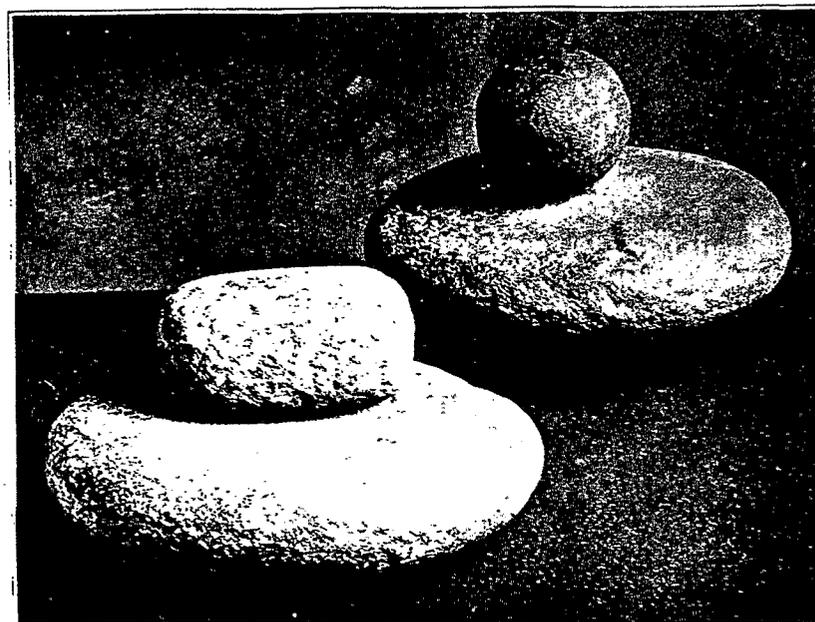
At Yankee Jim, at one time a very lively camp, but now a small village, we visited a mine being opened by Mr. Robert Clark, and spent an hour at an Indian dwelling on the hill slope near the mine. The photograph of a dismantled mill shown in Plate 4 *a*, was secured at this place. The shallow mortars, similar to those shown in Plate 2, were sunk in the ground so that they can just be distinguished in the picture. The hand stones consisted of several rather rudely shaped ovoid and cylindrical stones (Plate 4 *b*), a small, oblong, flattish grinding stone pecked away at one end to make it available as a pestle, and three or four iron wagon-axle pestles. Some of these hand stones evidently served both for pounding and rubbing, while one or two are slightly concave on one side, indicating their use also for cracking acorns upon or as mortars for pulverizing in a small way. The fact that some of the mortars and grinding plates of California are well rounded and finished on the margins and base while others are rude and unfinished has been noted by several writers, but I do not recall mention of the fact that the unfinished ones are intended for planting in the ground, leaving only the concave grinding surface exposed, while the finished ones, at least those of smaller size, are portable household utensils. What ethnical significance there may be in this is not determined. The differences in form may be due to the presence of distinct peoples on the site, or to diversity in the practices of a single people at the same or at different times.

Learning of an Indian settlement in Todd's Valley, 4 miles south of Forest Hill, we drove down and spent a day in the vicinity. Here also we found extensive gravel mines, similarly situated to those at Oro Flat, and native settlements in intimate association with them. The residence of an Indian family stands on the very brink of the mine, and doubtless the site has been long occupied.

While Dr. McGee was engaged in his usual occupation of securing vocabularies and hints of the customs and history of the people, I looked into their milling places and learned what I could of their arts. The principal dwelling is a frame house of two or three rooms and a porch, while about are the mill house and other simple shelters. An elderly woman, Susan by name (her native name could not be learned from any source), having tattoo marks on her chin, had near at hand a very snug little shelter made of sticks, bark, and foliage, in which



Diameter 15½ inches.



Diameter 7½ inches.

Diameter 7½ inches.

STONE MEALING PLATES, ORO FLAT.

she lived and carried on her share of the family drudgery. She ground acorns on a flat stone disk set in the ground near the middle of her shelter, and by the side of this was a slight depression in the hard earth used as a hearth. She boiled the porridge outside by heating small stones in an open fire and lifting them into the cooking baskets with a pair of neatly trimmed and pointed pine sticks about 5 feet in length. When the water was boiled the stones were removed with other sticks, and when the porridge became somewhat firm it was dipped out with a cup into another basket and was ready for use. This food was not at all unpalatable, as it had been deprived of the bitter taste of the acorn by leaching. This process consists in scooping out a depression in a bed of sand, into which the meal is poured and soaked with water until the bitterness is absorbed by the sand. The gruel is then taken up and is ready for cooking. The baskets used were of excellent make and tastefully ornamented. By dint of long bargaining and insisting we were able to secure half a dozen examples of the good woman's handiwork. Some of these are shown in Plates 5, 6, and 7. They are typical specimens of the basketry of this portion of California, and seem to combine some of the characteristics of the basket work of the surrounding tribes. They are new, and we were quite unable to buy the baskets in present use. We were shown one feather-decorated piece, said to have been made by an aunt of the young woman of the household at some distant point. It was valued very highly, having been a gift, and we could not secure it. It was stated that the use of feathers was not common among the American River tribes. Some of their carrying baskets and the gleaning paddles and meal-fanning trays, they informed us, were of Paiute make.

A very interesting mealing outfit was encountered on the hillside above the dwelling and near the margin of the mine. It had been deserted for some time, but the poles of the shelter were still in place. There were four or five shallow mortars worked on the surface of a rock even with the surrounding ground, and sixteen hand stones, comprising numerous shapes ranging from a flat ovoid rubbing stone to a well-formed and symmetric pestle. We were also shown an acorn-cracking outfit, consisting of a small round stone with a shallow pit on the upper surface for resting the acorn and a globular stone for striking. The acorn is set on end to receive the blow. Stones of various shapes are used, according to the supply on hand, and in the absence of suitable stones the cracking is done with the teeth. Details of the grinding and other operations are given a little farther on.

On the bottom of the mine, 200 feet beneath the spot occupied by the mealing place just described, we found a large stone having a deep conical mortar on one side. It had evidently fallen in from above, and had probably escaped the attention of seekers after evidence of Tertiary man.

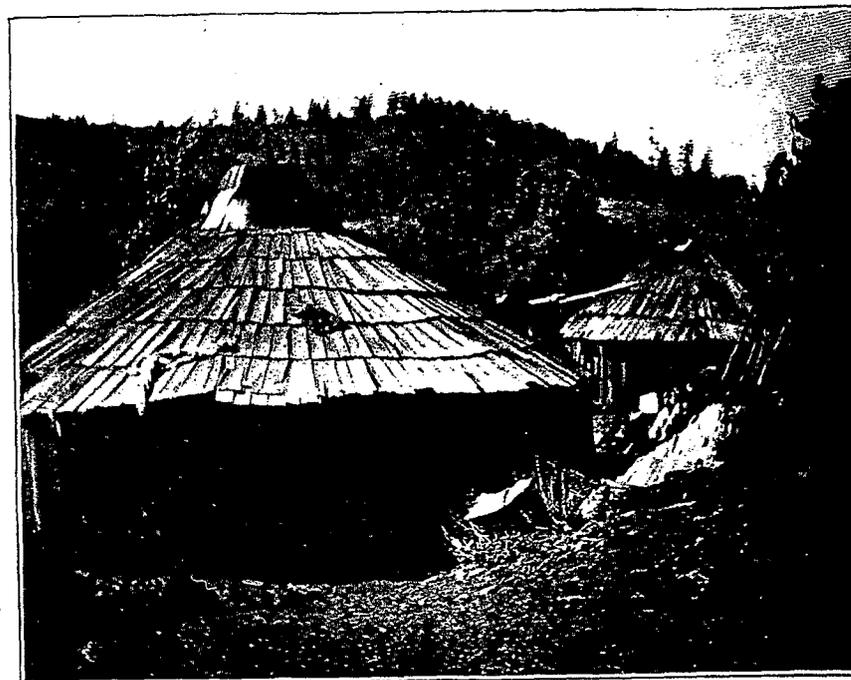
The dwelling of Porter, the headman of the small group of native families in this vicinity, is a short distance below the mine. It is of rude construction, and is distinguished from the ordinary dwellings by its circular shape and radiating clapboard roof. Similar houses were encountered in Calaveras County, and an illustration is given in Plate 8. They are probably the communal or council houses, or survivals of these.

TUOLUMNE TABLE MOUNTAIN REGION.

From Forest Hill we returned to Colfax, and were soon in San Francisco. From this place visits were made to other points of interest. Another excursion to the auriferous gravel region was made, by way of Stockton, Oakdale, and Jamestown. At Jamestown we were within easy reach of many interesting points ethnologically and archaeologically. This district includes Tuolumne Table Mountain and the mining towns of Sonora, Murphys, and Angels, and has furnished much of the testimony upon which the theory of an auriferous gravel man has been supported. In recent centuries it has been occupied by a numerous population of the Sierra tribes. The finds in the auriferous gravels are fully discussed in a paper already referred to, and I need here mention them but casually, giving chief attention to the remnants of native population scattered here and there in small bands over the hills and along the valleys. Half a mile south of Jamestown we encountered a small aboriginal community occupying half a dozen houses, built in the main of sawed lumber and fairly comfortable. The people were carrying on the usual acorn industry, using utensils of native make and grinding and preparing the meal in the native way, but otherwise showing many indications of contact with the whites.

A second community of like character and proportions was located a mile to the west, on the slopes of Table Mountain. These people showed indications of thrift, and their simple arts were carried on under the shade of their own vine and fig tree. One man, exhibiting traces of negro blood, and having a wife quite half white, was engaged in rounding the ends of the shingles to be used in giving an ornamental effect to the walls of his house. It is said that in this district, when the mines were being extensively worked and a large white population filled the country, there were also large numbers of Indians gathered on the outskirts of the towns, ten or a hundred times more than are found in the vicinity at the present time.

Ancient village sites are numerous, and old native burial places are common. At Springfield, 10 miles north of Jamestown, an old miner named John Cannon had two well-shaped globular mortars in his back yard. These were so highly valued by Mrs. Cannon as receptacles for watering the chickens that we had difficulty in securing one



NATIVE VILLAGE AT MURPHYS.



SHELTER FOR SUMMER USE, NEAR MURPHYS.

of them (Plate 9a). Mr. Cannon stated that he found them several years ago in a mine on Mormon Creek near by. They were embedded in auriferous gravels 5 or 6 feet deep, and at the same place, but a little deeper, he uncovered a number of skeletons, accompanied by various relics—implements of stone and ornaments of shell. That the burials were comparatively recent is indicated by the fact that the hair of the scalps was well preserved. From Patrick Shine, a little farther on, I secured a flattish, plate-like mortar, some 8 inches in diameter and of usual type, that he declared had been obtained from a mine on his place at a depth of 80 feet.

Old village sites were found at Saw Mill Flat, 8 miles northeast of Jamestown, on the brink of a deserted mine, and at the entrance to the tunnel of Montezuma mine, on Table Mountain, 3 miles southwest of Jamestown. Near Columbia, which was a great mining center in the early days, there is a large granite outcrop, exhibiting a considerable group of mortars of the usual form, sunk in the surface.

The journey from Jamestown to Murphys and Angels gave us the opportunity of crossing the valley of the Stanislaus at two points—Robinson and Parrott ferries—and the impression made on our minds by the gorge of the American Fork was strengthened by the experience. The proposition necessarily entertained by believers in auriferous gravel man that these vast valleys with their lofty and wide-spreading walls have been eroded within the human period seems too preposterous to be entertained. The descents are made by well-kept roads, but the way is long and often precipitous, and the scenery is exceedingly impressive.

On the plateau beyond the canyon the limestone belt begins, and as a result canyons, caverns, and natural bridges are common. Near Murphys a visit was made to Mercer's cave, which is entered by a contracted irregular opening descending almost vertically and expanding into a series of irregular crevice-like chambers, the result of the solution of a particular limestone stratum by underground waters. Through the appreciative courtesy of Mr. W. J. Mercer we were able to examine the cavern and to dig for human remains in the débris directly beneath the opening. A few fragments only were found, but Mr. Mercer had previously secured some skulls and other portions of skeletons. They were not old and were not coated with calcareous matter, having been buried but a short time in the loose earth which had fallen in from the opening. One of these skulls was presented to the U. S. National Museum by Mr. Mercer, and the result of an examination by Dr. George A. Dorsey shows that it resembles very closely the so-called Calaveras skull of Whitney.¹

At a considerable depth, and not directly beneath the opening, we were shown portions of a skeleton of some large animal. Some frag-

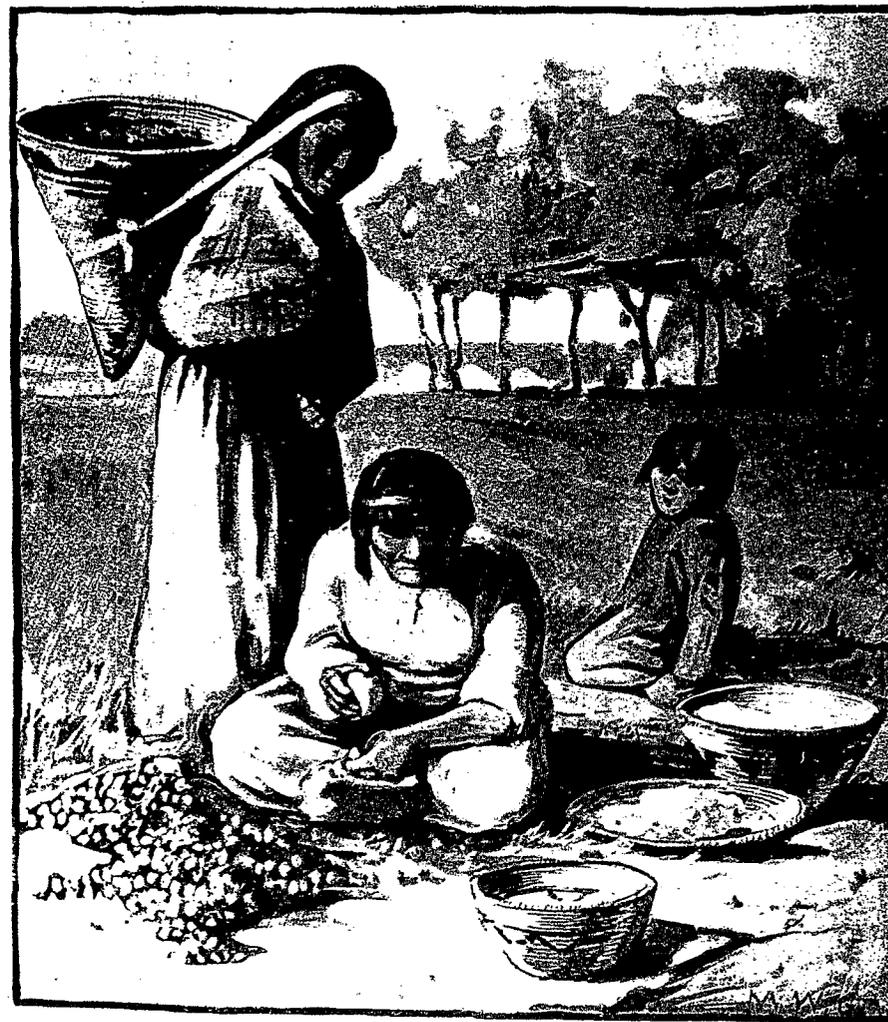
¹Smithsonian Report, 1899, p. 465.

ments were secured and examined by Mr. F. A. Lucas, of the U. S. National Museum, who found them to belong to a gigantic sloth, one of the Tertiary Mylodons. Mr. Mercer says that about 2 miles beyond the cavern there is a burial pit from which he previously obtained human bones and obsidian implements.

On the partially wooded ridge overlooking Murphys on the north and within half a mile of the cave, we came upon an Indian village, comprising half a dozen dwelling houses and the usual accompaniment of summer shelters and milling places. Two of the houses are shown in Plate 8. They are round and upward of 25 feet in diameter. The walls are formed of planks and the roof is covered with clapboards radiating from a conical, shingled chimney. The framework is of poles and the construction does not differ essentially from that of the aboriginal round-house of many tribes. The men and women all appeared to be busy with domestic affairs, the work being conducted in a large roofed structure, open at the sides; and in a little conical shelter made of sticks and brush, on the slope below the village, we found two old women pounding acorns.

In one of the houses was quite a store of basketry, some of the pieces evidently homemade, but others the work of the Paiute and other neighboring tribes. Within the group of houses was an interesting granary—a tall wattlework receptacle resting upon a stem of wood and further supported by four marginal poles. Its purpose was no doubt to place the crop of acorns, corn, or other food material beyond the reach of rats and pigs.

A single family, the remnant of a larger community, is located on the Adams place, a little to the eastward of the village of Murphys, and a small village was encountered on the road from Vallecito to Angels, a few miles south of Murphys. Here I procured some photographs of a rather comely Indian woman engaged in the arduous task of grinding acorns, her interesting family of three children entering prominently into the pictures (Plates 12 and 13). Plates 10 and 11 serve to illustrate two of the first steps in the acorn industry, the carrying and hulling of the acorns, and the use of the mealing plate in grinding. The upper view in Plate 12 shows the miller as she sits over the crater-like cone of pulverized acorns with the heavy pestle raised in front of her face. As the pestle descends into the center of the heap, spreading it out over the margin of the mortar, one hand or the other is freed and deftly rakes the meal toward the center of the stone again and joins the other hand to raise the stone, the whole movement being so rapid that there is no pause in the operation of pounding. The shallow mortar, formed of a flattish stone, is planted in the ground even with the surface, and the meal spreads out on the firmly-impacted soil. The basket receptacle for the meal, covered with the fanning basket tray, is at her right hand, and the children, engaged in play,



CARRYING AND HULLING ACORNS.

are on her left. Two mealing stones are seen in the foreground, which combine the functions and shape of both muller and pestle. The ends are used as a pestle for pulverizing (Plate 12 *a*), and the slightly flattish sides are fashioned for rubbing (Plate 11). In the lower picture (Plate 12 *b*), the woman is engaged in tossing the meal in the fanning basket, separating the husks and brushing them off at one side. The partially filled basket of meal is seen on her right. In the upper picture (Plate 13) the meal has been nearly all cleaned up and the basket receptacle is well filled with the fine flour. In the lower picture (Plate 13) a curious change has come over the scene. By some misadventure the woman became conscious of the fact that the visitors were taking her picture and ceased to work, appearing frightened, for they all seem to know what the little black kodak box means and seriously object to being photographed. As a rule it was unsafe to show the camera among these people, for in a moment there would be a general disappearance and a necessary cessation of friendly communication and trade. Behind the miller in the last picture two stone mortars may be seen set in the ground. Formerly there was a considerable group of milling stones here, but at the time of our visit the shelter had been removed and the mill had apparently been for some time neglected.

I introduce here four other pictures, illustrating successive steps in the work of preparing the acorns for food. The upper view, Plate 14*a*, shows the process of clearing the meal of chaff by tossing and blowing. Plate 14*b* is intended to illustrate the process of leaching the meal in a bed of sand. The boiling in baskets is shown in Plate 15, *a* and *b*.

The houses in this rancheria, three or four in number, are built, as usual, of slab walls and clapboard roofs. The lower view, Plate 8, shows one of the brush shelters or summer houses under which the family sits and most of the domestic work is carried on. Here, as elsewhere, there is a distressing admixture of tinware, ovens, etc., with the native utensils. The only man seen in the place was a strong, swarthy individual, who took no notice whatever of the visitors, being absorbed in the task of filing a crosscut saw.

COLLECTIONS IN SAN FRANCISCO AND VICINITY.

There are many collections of archaeological and ethnological objects in California, but altogether they inadequately represent the rich field so conveniently at hand. There has been little systematic collection, and a splendid opportunity has been lost. The vast accumulations of wealth for which the coast is noted have accrued to those who had no appreciation of the native history of the coast or who lacked the public spirit to endow museums. The future Californian will realize this more fully and regretfully than the Californian of to-day.¹

¹ Fortunately the statement here made is no longer true. Subsequent to the stereotyping of this paper it is announced that Mrs. Phoebe Hearst has provided liberally for anthropological researches, to be under the direction of the University of California.

In San Francisco the Golden Gate Museum has acquired considerable material, portions of which are well identified and of value to science, but Curator Wilcomb has not been able to give any considerable time or funds to collection. The Academy of Sciences also has a large collection, but so heterogeneous in character and so deficient in associated data as to be of no great anthropological value. Private collectors have done good work in limited fields, and I refer with pleasure to the very valuable collection of baskets brought together by Mr. and Mrs. C. F. Briggs.

The State University at Berkeley has not attempted to acquire collections, but has had placed in its care a large number of stone implements and utensils brought together by Mr. C. D. Voy and attributed in the main to the auriferous gravels of the central districts of the State.¹ The Stanford University has made a very creditable effort to gather and preserve the precious relics of native art, but so far has not been able to enlist the services of curators competent to give the collections standing as scientific material.² Such collections as I was able to examine in other parts of the State are referred to in connection with notes relating to the localities to which they pertain.

POMO RESERVATION, MENDOCINO COUNTY.

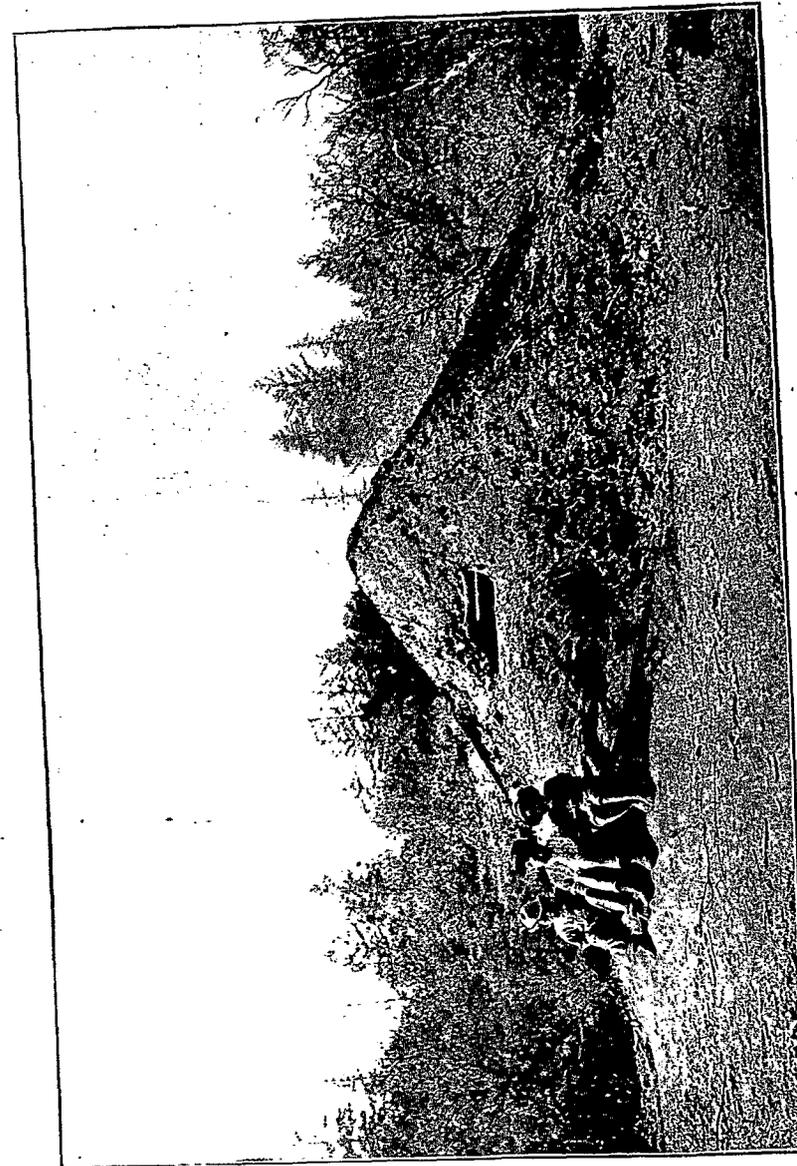
From San Francisco a run was made north to Ukiah, in Mendocino County, the chief object being to pay a visit to Dr. J. W. Hudson and have a look at his collection of basketry, reputed to be one of the finest in the West. While at Ukiah we had the opportunity of visiting two villages of the Pomo Indians (Kulanapan linguistic family), who are among the most interesting tribes of the region. Their dwellings are roughly constructed of frame and weatherboarding, and must be comparatively comfortable, save in severe winter weather. Little trace is seen of aboriginal construction or modes of life. The ruin of a large earth lodge, used formerly for ceremonial purposes, is found in one of the villages. It is illustrated in Plates 16 and 17.

The people have not entirely lost their nomadic habits, and at certain seasons wander in small bands along the rivers and over the mountains, hunting, fishing, and gathering fruits and seeds, carrying their possessions on their backs, and putting up simple brush shelters for protection against the weather.

These Indians are past masters in basket making, and Doctor Hudson, in his twenty years of practice in the vicinity and his frequent visits to the villages, has had exceptional opportunities for making

¹I have to acknowledge the kind assistance of Professor J. C. Merriam, curator of the State University collections, in my study of these relics.

²To Prof. John C. Branner, of this institution, I am greatly indebted for data relating to the auriferous gravel finds.



UNDERGROUND COUNCIL CHAMBER, POMO VILLAGE.
From photograph by Dr. J. W. Hudson.

collections. He has gathered only choice pieces, and among these are many feather-decorated specimens of exceptional beauty. Arrangements were made for securing this collection for the Smithsonian Institution, and before the end of the year it was forwarded to Washington. I will not attempt to describe it, leaving that pleasant task to Professor Mason, who has made minute studies of that branch of native art, and, with the help of the carefully prepared notes of Doctor Hudson, a valuable contribution may be expected. In Plates 18, 19, and 20 a few notable specimens are shown. They serve for comparison with the Sierra Indian and Tulare work, illustrated in other portions of this paper.

I was interested in watching the women making baskets, Plate 21 *a*, and the men grinding and drilling clam-shell wamapun, Plate 21 *b*. These people rely very largely on the acorn for their food, and the carrying basket, Plate 22 *a*, and the mortar and pestle, Plate 22 *b*, are constantly in evidence. The drawings represent the people in their native costumes, which have, however, been superseded in recent years by trousers and calico gowns.

The following interesting notes, furnished Professor Mason by Doctor Hudson, relate to Pomo bread making, dress, and forms of the drill:

Indian corn, or maize, is not indigenous west of the Sierra Mountains, and is not and never was used by our "Diggers." Acorns, buckeyes, and weed seed (about twenty-five varieties), notably the tar weed (*Madaria sp.*), also berries of a number of plants, especially manzanita (*Arctostaphylos tomentosa*), madrona, wild rose, and mountain laurel, are their staples, important in the order mentioned. Teuni bread is made of any of the eight varieties of acorns—Nuci, from *Quercus agrifolia*, and Tsupa, from *Quercus densiflora*, being valued as the sweetest. The nuts are sun dried, then hulled, then reduced to flour by the stone pestle and basket mortar, and cleaned by frequent siftings. A shallow pit is made in fine sand and pressed smooth with the hands; the meal is poured in and covered with leaves of iris (*Iris macrosiphon*). Fresh water is then poured on in quantities and the meal is stirred until it is thoroughly leached. Within an hour it can be gently lifted out in large pieces. Another pit is prepared for the oven, in which a fierce fire is started; stones the size of a smoothing iron are thrown in and, when very hot, half of them are taken out. The remainder form a griddle in the coals and are covered with wet leaves, oak and iris, on which the dough, which is the acorn meal mixed with 5 per cent of Masil, or red earth in solution; also sometimes the same amount of tar weed meal, Mako, is evenly spread. Wet leaves are placed over this; then the hot stones; then about 6 inches of earth. In six or eight hours the oven is opened, disclosing a large, flat cake incrusting in leaves, and smelling somewhat like bread. The Masil, or red ceremonial yeast, has given a dark-red cast, while the Mako turns it almost black. The taste is not unpleasant. It is flavored with an impure salt gathered either on the coast or at a spring on Eel River.

Buckeye Disa: The nuts are roasted in hot rocks, hulled and peeled with a deer-rib knife, then mashed in a basket with a heavy billet, like a giant potato masher, Disapawohai, then leached as above, and in the form of paste eaten hot or cold.

Pinole (Spanish) or To-o is a mush of acorn meal, leached of course, mixed with a percentage of other seed meals, boiled in a Tee or Bamtoosh basket by dropping hot

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round stones into it until the contents are cooked. It has the consistency of mush, and is quite insipid. Wheat is now often substituted. It is toasted in a plaque with live coals, then mortared out into flour and cooked as above.

Other cakes are Mako, Malalkato, Bimu, named from constituents and methods of preparing. Yuhu is a coarse, unpalatable cake made from acorns (*Quercus wislizeni*).

All of the above except the wheaten cakes are of ancient origin.

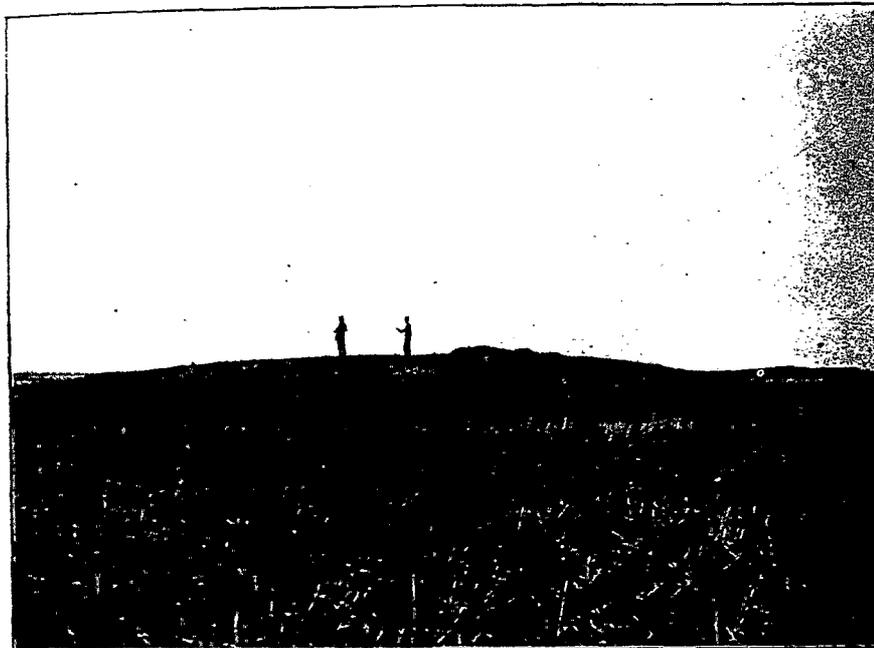
The ordinary aboriginal dress of a man was a skirt, Kauxi, of the bark of a willow (*Salix nigra*), or of bulrush stems shredded. A mantle of skin, panther preferred, is tied over the shoulders and belted at the waist. A thick chaplet of mountain laurel covers the head. The woman has a deerskin mantle or chemise above and the Kauxi below; the head is usually bare. She sits generally on a tule mat at her work; the man kneels when drilling wampum, or at like labor.

The pump drill was introduced into Ukiah Valley by a Spaniard in the early seventies, and was carried into Potter Valley about the year 1876 by old blind George, now living. The aboriginal tool was called Dawihai (da win, to bore, hai, a stick), and was a straight shaft of wood, 2 feet long and half an inch in diameter at the middle [twirled between the palms of the hands]. The drill point was of jasper or flint, and fastened to the shaft by a lashing of hemp (*Apocynum cannabinum*), and coated with pitch. Its origin is beyond tradition.

STOCKTON DISTRICT.

Early reports on the antiquities of California somewhat casually mention the occurrence of mounds in various parts of the State. Later investigations have furnished definite knowledge of the shell mounds and kitchen-middens along the coast, and of the earthworks in the interior valleys. Quite recently a new chapter has been added to the history of aboriginal California as a result of researches among the mounds of the great inland basins, including the valleys of the Sacramento and San Joaquin rivers and the basins of Tulare Lake and Kern River. These earthworks were erected by a much simpler and less ambitious people than the mound-builders of the Mississippi Valley. They are scattered over the low lands, mainly in the tule flats, where annual inundations are or were common. They are not arranged in any systematic order and show none of the specialization of form characterizing the mounds of the east or of Mexico and Central America on the south. They are roundish in outline and rarely more than 10 or 12 feet in height, although a few are reported to reach 20 feet; the profiles are gently rounded as a result of the crumbling nature of the earth of which they are composed (Plate 23 a), and the area covered is often quite extensive. It appears that in the main they were erected primarily for domiciliary purposes and as places of retreat in time of overflow. They were also used as burial places, though probably not originally erected for this purpose, and a few are literally filled with human remains (Plate 23 b).

The exceptional environment furnished by these interior valleys has evidently given rise to a somewhat peculiar phase of local culture,



A. MOUND NEAR STOCKTON.



B. EXPOSURE OF SKELETONS IN MOUND, STOCKTON.

From photographs by Mr. H. C. Meredith.

differing from that of the coastal belt on the west and from the foothills and sierra on the east. There was a tendency toward sedentary life, fostered, no doubt, by an unfailling food supply, which consisted of fish and waterfowl in great plenty, and many vegetable products, including acorns, seeds, roots, and various kinds of fruit. The occurrence of inundations in the lowlands must have interfered to some extent with full sedentation, the people being driven periodically into the higher plains and foothills.

It seems likely that the earthworks scattered along these valleys were built by one or more of the tribes found in possession—the Wintun, the Maidu, the Mutsun, the Yokuts, and the Shoshone (Powers)—since neither the works themselves, their contents, nor the miscellaneous artifacts of the valley present features discordant with the condition and achievements of these peoples. I believe that no important distinction has been drawn between the implements and utensils of the mounds and those of the surface of the country generally. The osseous remains exhibit no novel or distinctive features.

Implements and utensils have a wide range in form and in the classes represented, but withal are simple in character and indicate no unusual advance in culture. They include mortars, milling plates, pestles, and rubbing stones, of usual range of form, cylindrical steatite vases of local type (Plate 24 *a*), stone pipes, rings, discoidal stones, grooved pebbles, and flaked implements of many forms. Certain obsidian implements of the Stockton district present exceptional characters (Plate 25). There are also tools of bone and shell and ornaments in great variety. There are many objects of baked clay, globular, discoidal, dumb-bell shape, etc., some of which may have served for use in slings (Plates 26, 27 *a* and 28). This use of clay balls is noted as occurring among some of the modern tribes. The artistic sense was evidently not greatly developed among these people, as attested by the almost entire absence of the carving or engraving of life forms. In Plate 28 *b* a number of bone implements obtained from these mounds and tastefully decorated with incised workings are shown. They are, for the most part, whistles, or flutes, and correspond closely with similar objects found in mounds and middens along the California coast. Among the pendant ornaments of abalone shell are specimens representing, apparently, a double-headed bird, suggesting the double-headed eagle of European nations (Plate 24 *b*), but the conception is quite as likely to be of purely native origin. In general the contents of the mounds include few relics of recent origin.

Enterprising archæologists in Stockton have made valuable collections from the mounds of the neighboring lowlands. Mr. H. C. Meredith has published a number of articles describing and illustrating his explorations and finds; and Mr. J. A. Barr has made a most valuable collection, chiefly from local mounds. Prof. Edward Hughes,

of the city schools, has also taken a deep interest in local archaeology and kindly drove out with our party to the neighboring flats, where a number of mounds were examined.

The objects shown in the accompanying plates belong to the Stockton collections or were presented to the U. S. National Museum by Stockton collectors. Brief descriptions are given in connection with the plates and more detailed information may be obtained from the writings of Mr. Meredith.¹

TULARE RESERVATION, TULARE COUNTY.

On our way south from San Francisco to Los Angeles we made it a point to stop at Porterville, in Tulare County, long enough to pay a visit to the Tulare Indians² located on South Fork of Tule River, 20 miles eastward from the village. Their reservation was originally situated on the fertile lowlands where the river valley opens out upon the plain, but this land was acquired by the whites and is now largely under cultivation. The Indians were removed to the upper valley, where they now dwell in comfortable, though simple, frame houses. Here the narrow, rocky banks of the river rise abruptly into massive and precipitous mountains. It is indeed a secluded and lonely spot, an ideal retreat for the humble remnant of a people once laying claim to the broad, rich lowlands now traversed by railways and dotted with incipient cities. The houses are scattered at short intervals for 2 or 3 miles along the valley. A little farming is done and some stock is kept, and there is a school near the agent's residence, attended at the present time by twenty or thirty children.

Near the upper end of the reservation a most interesting spot, known as Painted Rock, or The Painted Rocks, was visited. Here the little stream is confined to a narrow gorge bordered by enormous masses of granite, over which the torrents pour in the wet season. At the sides, however, there is enough comparatively level ground to accommodate dwellings and small fields. This site, it appears, was a favorite resort of the native peoples, the Tulares or their predecessors, for a long period of years. The protected surfaces of the great granite blocks are still covered with symbolic paintings in bright colors, and some of the flatter exposed surfaces are pitted with mortar basins wherein the women of many generations have come to grind acorns and seeds. In Plate 29 are shown two excellent illustrations of one of these milling places, there being between forty and fifty more or less deeply sunken conical mortars visible. Another large, rounded mass near by contains upward of seventy-five of these pits, varying from shallow basins or incipient mortars to conical depressions a foot in depth.

¹ H. C. Meredith in Moorehead's *Prehistoric Implements*, p. 258; *Land of Sunshine*, October, 1899; *American Archaeologist*, II, p. 319.

² The Yokuts of Powers. *Tribes of California, Contributions to North American Ethnology*, III, p. 369.



MORTAR ROCK, TULARE RESERVATION.

Portions of this rock are now covered with soil, so that a number of the mortars are probably hidden. Possibly some of the depressions may originally have been pot holes, worn by the descending waters of the cascade, but all are now manifestly artificial in contour. The present inhabitants do not appear to use these particular mills, but employ mortars, both fixed and portable, in the immediate vicinity of their dwellings. This may be the group of mortars referred to by Powers, who says that "in remote times they were accustomed to rub their acorns to flour on a stone slightly hollowed, like the Mexican metate, which was a suggestion of the Mouse, but nowadays they pound them in holes on top of huge boulders, which was a suggestion of the wiser Coyote. On a boulder in Coarse Gold Gulch I counted 86 of these acorn holes, which shows that they must have been used many centuries."¹

My own feeling about this matter is that the metate is a late rather than an early form of the millstone, since these great groups of mortar pits must be very old, and the mortars dug up at considerable depths in this valley as well as elsewhere are generally globular. I was especially interested in observing that the process of shaping stone by pecking with hammers is known to the Tulares. Some specimens show recent work, and inquiry of Mr. James Alto elicited the statement that the women shaped mortars and pestles in this way, employing "days pecking and pecking."

At one of the dwellings, which had the appearance of an ordinary, comfortable farmhouse, the entire family was engaged in thrashing and cleaning up the recently harvested crop of beans. Plate 30 shows the man thrashing with a flail, while the women are seen separating the beans from the hulls by fanning in shallow basket trays. From the old woman of the household—the grandmother—who seemed to be owner of all domestic articles, we secured baskets, stone boiling sticks, mortars, and pestles. The large, roundish mortar shown in Plate 31 was in use by one of the women, but we were told that this piece had been found at a depth of several feet in digging an irrigating trench; that it was very old, and belonged, they believed, to peoples that had preceded the Tulares. However, such mortars, as well as others of varying form, were seen in use on the reservation.

The manner of using snares in capturing pigeons is shown in Plate 32. Roundish earthen platforms from 5 to 8 feet in diameter are constructed among the great boulders in favorable locations, on which are set willow-twig loops for securing decoy birds. At one margin of the platform a brush or reed shelter is built, in which the man with the snares hides himself. The loops of the snares lie extended upon the platform, and when the birds, alighting to feed with the decoys,

¹Tribes of California, Contributions to North American Ethnology, III, p. 376.

become entangled they are quietly withdrawn beneath the shelter and secured (Plate 32 *b*). The lower illustration, *a*, shows James Alto, the reservation policeman, emerging upon the platform from the shelter. Powers mentions the use of snares, probably of this class. He says that "for snaring quail, rabbits, and other small game they employed cords made of a kind of 'wild flax' found in the Sierras. I presume this 'wild flax' is milkweed (*Asclepias*).” In Plate 33 *a* we have a drawing of one of the snares and in *b* a game basket of peculiar form. In the same plate are included a pair of wooden fire sticks or tongs, *c*, and a looped stick for lifting stones from the boiling baskets, *d*. The native scrubbing brushes and the yucca bulbs from which they are made are illustrated in Plate 34.

At one of the houses near the pictured rocks I was so fortunate as to obtain parts of a ceremonial costume, consisting of a feather head-dress, ear ornaments, thorn needle with asphaltum head, etc., shown in Plate 35. The importance attached to these articles was made apparent by the care with which they were wrapped up in especially prepared coverings and hidden away. There was also a more complete costume in possession of one of the men of the family, but this could not be secured. It included the primitive skirt made of long strands, forming a fringe, upon which are strung pine nuts and beads. It was said that these were parts of old time ceremonial dance costumes, still used on great festal occasions.

The Tulares are among the most expert of basket makers. Plate 36 illustrates three winnowing baskets, and Plates 37 and 38 three bowl shaped pieces of excellent quality. The fine specimen shown in Plate 39 *a* and *b* and Plate 40 was obtained from the good woman, Mrs. Pedro Tennis, who had just completed it. The low, flat-topped bottle form is apparently peculiar to this tribe. Occasionally a piece is seen much flatter in the body than this specimen. The workmanship and æsthetic treatment are of a high order, and the deteriorating influence of modern conditions is seen only in the use of red worsted, which I suppose takes the place of red feathers of earlier times. The baskets in use to-day include also carrying baskets of usual California types.

The native names for the basket-making materials and for the various articles illustrated in the accompanying plates are not given for the reason that I had no time to verify the data secured from James Alto, although he seems a thoroughly honest and intelligent man.

I was particularly anxious to secure one of their gambling trays, which are large, flat basket plaques, but the last specimen in the valley, so it was said, had recently been carried away by a collector. We were so fortunate, however, as to secure an unusually old and fine example through the courtesy of Mr. and Mrs. C. F. Briggs, of San Francisco, who had obtained it from an old woman living on a ran-



THRASHING AND WINNOWING BEANS, TULARE INDIANS.

cheria near Lemoore, in Kings County, who parted with her treasure only after the strongest persuasion on the part of the visitors. It is shown in Plate 41.

The following account of the game as played by the Tulares is quoted from Mr. Stephen Powers:

The Gualala style of gambling prevails all over the State, but the Yokuts have another sort which pertains exclusively to the women. It is a kind of dice throwing, and is called u-chu-us. For a dice they take half of a large acorn or walnut shell, fill it level with pitch and pounded charcoal, and inlay it with bits of bright-colored abalone shells. For a dice table they weave a very large, fine basket tray, almost flat, and ornamented with devices woven in black or brown, mostly rude imitations of trees and geometrical figures. Four squaws sit around it to play, and a fifth keeps tally with fifteen sticks. There are eight dice, and they scoop them up in their hands and dash them into the basket, counting one when two or five flat surfaces turn up.

The rapidity with which the game goes forward is wonderful, and the players seem totally oblivious to all things in the world beside. After each throw that a player makes she exclaims *yet-ni* (equivalent to "one-y"), or *wi-a-tak*, or *ko-mai-eh*, which are simply a kind of sing-song or chanting. One old squaw, with scarcely a tooth in her head, one eye gone, her face all withered, but with a lower jaw of iron and features denoting extraordinary will—a reckless old gambler and evidently a teacher of the others—after each throw would grab into the basket and jerk her hand across it, as if by the motion of the air to turn the dice over before they settled, and ejaculate *wiatak!* It was amusing to see the savage energy with which this fierce old hag carried on the game. The others were modest and spoke in low tones, but she seemed to be unaware of the existence of anybody around her.¹

The account given by Mrs. Briggs is to the same effect. In Plate 42 I venture to reproduce a drawing illustrating the use of the gaming tray as set forth so vividly in Mr. Powers's account.

SOUTHERN CALIFORNIA.

Southern California has much to interest the student of archæology as well as the traveler seeking an ideal country. It is a region occupied formerly by numerous and probably greatly diversified peoples, presenting, however, no great dissimilarity in culture. Their contact on the east and south was with peoples lower in the scale of progress than themselves, and it appears that few elements of culture from the more distant regions ever crept in. A small number of widely scattered aboriginal communities still survive to the present day, but present no very considerable points of interest to the student, their original customs having been destroyed or greatly modified by mission rule.

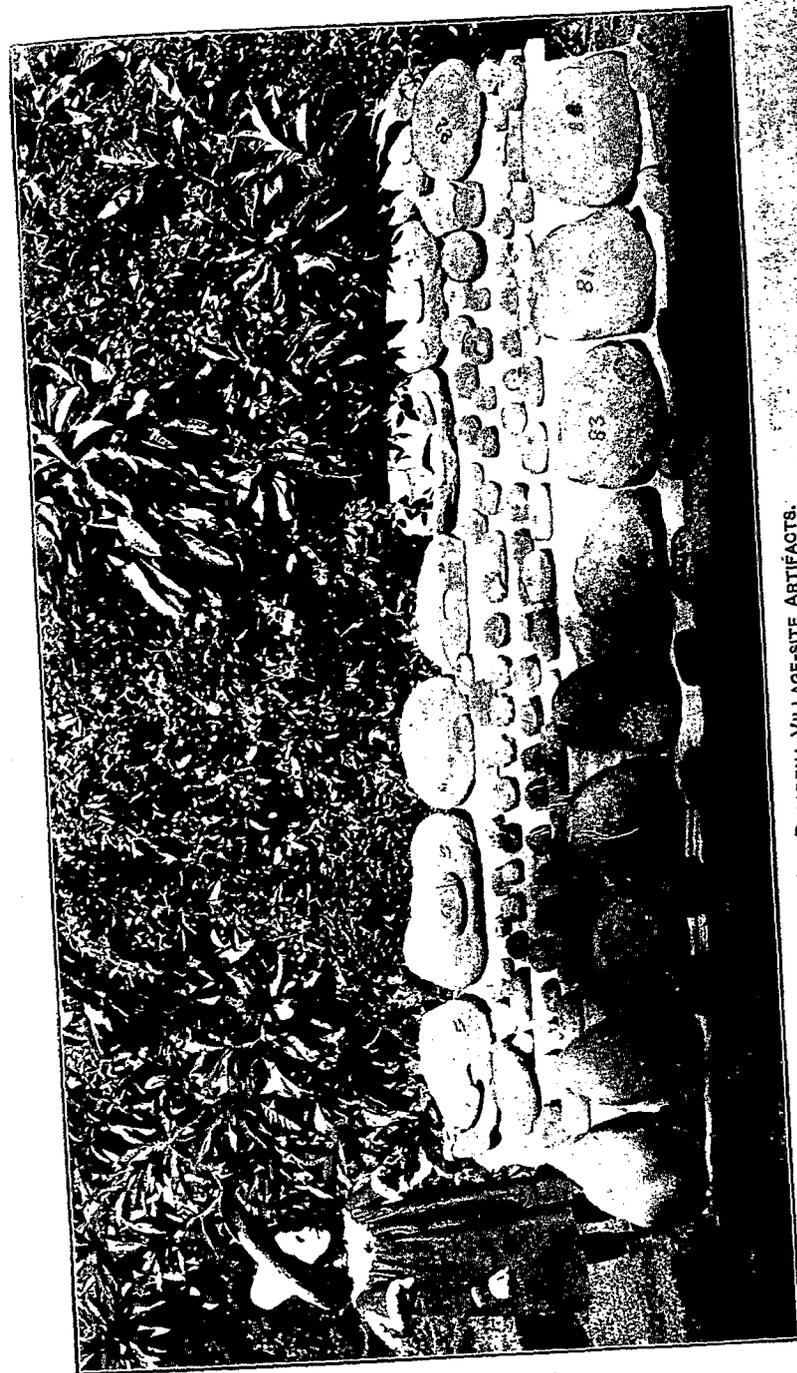
The region including Santa Barbara County and the group of islands lying off the coast is probably the richest, archæologically, in California and furnishes vast numbers of artifacts of usual classes, among which the mortar and pestle predominate to a remarkable degree. A

¹Tribes of California, Contributions to North American Ethnology, U. S. Geographical and Geological Survey of the Rocky Mountain Region, III, 1877, p. 377.

number of enterprising collectors have occupied this field, and in Los Angeles I had the pleasure of studying some fine collections made by Dr. F. M. Palmer, a type series, well arranged and labeled, being displayed in the museum of the Chamber of Commerce. Mr. W. S. Campbell, a local dealer in Indian relics, has many interesting things, prominent among which are a number of rare and beautiful baskets made by the Santa Ynez Indians, a tribe now approaching extinction. Other collections made by Rev. Stephen Bowers are partly in his own hands and partly in possession of Mr. H. N. Rust, of South Pasadena. In addition, a large and valuable collection, not, however, purely local, is owned by Mrs. A. C. Low, of Pasadena. Mr. Rust's collection also contains an interesting series of objects from an ancient village site in the suburbs of Pasadena, and he permits me to introduce here two plates, in which are seen a large number of the objects collected—Plates 43 and 44. In this collection there are no globular mortars or cylindrical pestles, but numerous mealing plates showing extensive use, and many oblong and discoid mullers. Several annular and stellar shaped stones are unique. The whole group seems to indicate a people related in many ways with the tribes of the Sierra. The village site from which the specimens illustrated were collected is situated on the bluff overlooking South Pasadena and on the line of Buena Vista street. When the grading of this street was under way Mr. Rust watched the work daily, saving more than a hundred implements and utensils. He was able even to locate some of the lodge sites by the larger number and greater variety of specimens found within limited areas. Besides the stone implements shown in the plates, one bone awl and a fire stick were recovered. Few flaked implements are found in the Pasadena region, and there is no pottery, and burial places and human remains have been sought for in vain.

At Santa Barbara I was permitted to examine a valuable collection made by Mr. L. G. Dreyfus, and the museum of the local historical society has many specimens of interest. The region has been explored by a number of scientific students, including Schumacher, Henshaw, Yarrow, and Yates. The principal village site at Santa Barbara is on the extreme end of a picturesque promontory at the lower end of the city, and the sea is slowly cutting it away. The location of the burial ground is indicated in the view presented in Plate 45 by a group of apple trees seen distinctly in the lower picture. Near by, on the low ground, is a large oblong mound, now occupied by a residence and believed by Mr. Dreyfus and others to be of artificial origin.

From Los Angeles it is a short railway journey to San Pedro, on the coast, and a steamer voyage of 25 miles out into the Pacific carries one to Avalon, a village occupying an exquisitely picturesque little harbor near the east end of Santa Catalina Island. While at this place I had the opportunity of examining two of the noted archaeological



PASADENA VILLAGE-SITE ARTIFACTS.
Rust collection.

sites of this island—the soapstone quarries of Potts Valley and the shell deposits of the isthmus. These sites were explored by Schumacher many years ago, and the rich collections obtained by him are now preserved in the museums at Washington and Cambridge. I need not do more in this place than briefly record my observations and impressions regarding these sites.

Early in the morning of November 2, 1898, I set out on horseback with Mexican Joe as guide, to find the soapstone quarries some 10 miles to the northwest. We climbed the steep slopes from Avalon, meandered the lofty sinuous crests of the island, passing across the shoulder of Black Jack—a mountain rising nearly 1,800 feet above the sea—and descended into Potts Valley, which, if my identification be correct, opens down to the sea on the north of the ridge. At many points we encountered outcrops of steatite, and evidences of ancient mining were apparent on all hands. There were shallow excavations and heaps of débris surrounded by fragments of partially shaped vessels and the rude stone picks, hammers, and chisels with which the quarrying and shaping work was done. Near the site of the principal quarry reported upon by Schumacher there has been some recent quarrying by white settlers, but fortunately the outcrop from which the aborigines cut so many pots remains undisturbed. At the head of the shallow amphitheater of Potts Valley, which descends to the shore half a mile or more below, some great masses of rugged rock rise from the otherwise smooth slopes. Portions of these masses are composed of soapstone, and the surfaces from which lumps of soft rock were cut are in plain view. A vigorous growth of cactus plants covers the lower part of the exposure, but enough remains in sight to tell the story of former enterprise. The scars left by the workmen extend over 400 or 500 square feet of the steep surfaces of the rocky mass, and the views shown in Plate 46 disclose the scars and chisel marks to excellent advantage. The work of removing the rounded masses of stone from which the vessels were to be shaped was identical in character with that observed in the many soapstone quarries of the Eastern States, but so far as the markings now remaining show, the cutting has been more skillful, and it seems not improbable that the work in the examples illustrated has been done with metallic tools. It is reasonable to suppose that the trade in soapstone pots, carried on extensively between the islanders and the tribes of the mainland, continued to flourish for a considerable period after the coming of the white man, and in the latest work iron picks and shovels must have been used. Scattered about this rock and on the slopes above and below were fragments of partially shaped and broken vessels, besides numerous rude cutting tools and picks of hard stone. The latter implements had been shaped by flaking with hammer stones, some of which are distributed with the débris.

My own contribution to the study of this interesting spot was the discovery of an ancient grave on the nearly level top of a rounded knoll some 40 or 50 feet above the upper quarry face. I happened to observe the broken edge of a soapstone platter projecting above the hard soil. In removing this specimen other objects were brought to light. Remnants of a skull and jawbone and numerous bones of the trunk were found, but all were so near the surface that they had been more or less dissociated and broken up. There were also parts of three or four steatite vessels, one small pot, a round shallow dish, two oblong dishes, and a flattish oblong plate with squared end, probably a baking plate. Other articles were evidently mere burial offerings made for the purpose and doubtless symbolic. They include a steatite hook of a form common in the region, a miniature pestle of steatite, a peculiar object, apparently a much conventionalized fish or finback whale, three handles of steatite utensils, apparently dipper handles, an obsidian arrow point, and some much decayed shell ornaments. A number of these objects are shown in Plate 47.

The relation of the grave to the quarry face is shown in Plate 48. The figure in the foreground represents my companion engaged in exploring the grave, and the worked soapstone surface is behind him at the right. Beyond are the rugged cliffs, with a bit of the sea visible at the left.

My study of this site was far from exhaustive, but I gained the impression that the ancient occupation had extended over a very long period. This must be the case if the vast number of utensils found in the region have had their origin in these quarries. I observed that the phenomena are practically identical with those of soapstone quarries of the east.

In a rock shelter some 200 yards southeast of the quarry examined I found evidence of ancient occupation. Deposits of kitchen-midden refuse cover the slope below, and in these were many abalone shells and some rude stone utensils, the latter including a flattish spatulate stone, one end of which was covered with asphaltum, as if used for a trowel in applying the liquid material.

Santa Catalina Island is extremely rugged and picturesque, and the coast is in large part inaccessible, but there are a number of small bays and inlets about the inner margins of which there is land enough to accommodate small settlements. One of the most favorable localities for a native village was at the point called the Isthmus, about 14 miles north of Avalon, where the opposite shores approach within a few hundred yards, and there is a low pass, not 20 feet in elevation, between the opposing beaches. The upper view in Plate 49 looks from this pass outward toward the Pacific, and the lower picture shows the opposite side turning toward the north. The houses in the latter view were occupied at the time of my visit, but I have learned from



TRACES OF ABORIGINAL WORK IN SOAPSTONE QUARRY, SANTA CATALINA ISLAND.

Mr. E. L. Doran, of Avalon, who kindly carried me in his gasoline launch to this spot, that Banning Brothers, who own most of the island, have begun extensive improvements, changing the appearance of the place and obliterating the ancient cemetery. The houses in the view are situated on the village site examined so carefully by Dr. Paul Schumacher and reported upon by him in a number of publications. The site was covered by several feet of midden refuse composed of black earth and shells, and in which were many burials. It is clear that this site was extensively utilized by the natives, and that an important village stood here for a long period. It appears also that it was occupied at the time of the arrival of the whites and for a considerable period subsequently, as the graves contained many articles of iron and glass.

Numerous interesting details regarding the ancient remains of the island are given in a charming little book published by Mr. Charles F. Holder,¹ who has adopted the island as a home, and a map is presented in his work locating many village sites, cemeteries, and shell heaps. The evidences of occupation are so numerous and extensive that, as with the other islands of the group, there must have been formerly a large population, not differing essentially, however, in blood or culture from the people of the mainland.

Although soapstone was used so extensively on the islands and carried in great quantities to the mainland, other stones were not neglected, and sandstone especially was employed. In some cases, no doubt, it was cut from the living rock, but more commonly waterworn masses, already approximately shaped, were used. In some sections also concretionary forms were utilized, many of which were already rounded and hollowed out on one side, making the work of shaping easy. The manipulation of sandstone in the making of mortars and pestles is illustrated in Plate 50.

Mr. Horatio N. Rust, of South Pasadena, whose collections have already received attention, has had more or less intimate contact with a number of Mission tribes, and I prevailed upon him to visit the Coahuilas and other convenient communities for the purpose of making collections for the Museum. At Coahuila Mr. Rust called upon José Costa, prominent among the Indians of southern California. The family was found in a new wooden house, the old adobe residence having recently been destroyed by an earthquake. He found the old mother sitting under the brush shelter where she lives, making a basket. This, when finished, was purchased, and along with an unfinished specimen was forwarded to the Museum. In the collection also are specimens of the materials used. In making the better baskets she used a strong grass, which is scarce and much prized. It grows only high up

¹ Charles Frederick Holder, Santa Catalina, an Isle of Summer, San Francisco, 1895.

in the mountains. Mr. Rust found it on the banks of a small stream at Bergman post-office at an altitude of about 5,000 feet, growing in bunches like pampas grass and resembling that variety very closely. These people also make baskets of bulrushes which are dyed black. The rich brown mottling seen in many of the baskets is due to the natural color of the base of the bulrush, the upper stem being lighter in hue. Splints of a hard wood are also employed in basket making. A woman was seen reducing these to a uniform size by drawing them through a hole in a tin can cover, and often biting them into shape with her teeth. Children were learning to make baskets, and it appears that many more are manufactured than formerly, since ready sale is found for them. Southern California baskets are much coarser than those farther north in the State. They make rude baskets, from 3 to 5 feet in diameter and 3 feet high, of willow splints, in which they store grain, acorns, and other food products. These are placed upon scaffolds about 6 feet high, constructed by setting strong forked posts in the ground and laying poles across.

At Agua Caliente women were seen making pottery, and specimens were secured at Coahuila, Santa Rosa, and San Felipe. After grinding the clay in a mortar and kneading it they form the base of the vessel by placing a small portion upon a flat stone and bringing it into the desired shape with the fingers. When the base has assumed the form of a saucer they hold a smooth waterworn stone on the inside to support it, while with a smaller stone kept wet they rub the outside, curving the walls gradually upward; then drawing in the edge they form the neck by skillfully manipulating the clay with the fingers. To harden and even up the walls of the vessel they hold a smooth stone inside and beat the outside with a rude paddle. Specimens of the modeling tools were secured for the Museum. At Agua Caliente pottery is baked in an oven, to form which they dig into the side of a bank and line the walls with cow dung. The vessel is then introduced and covered with the fuel. When the fire is well under way they close up the opening and permit the vessel to remain until properly baked.

These people spin strong hempen and mescal cords by twisting the thread in the fingers. Next they hold the newly formed cord against the thigh and twist it under the palm of the hand. At Agua Caliente they make valuable saddle blankets of mescal fiber. These are woven on four stakes driven in the ground, the weavers sitting on opposite sides on the ground.

At Mallyayon Mr. Rust witnessed the spinning of hemp and the making of nets. The hemp is prepared by beating the ripened stems until the wood is thoroughly broken, when the bark fiber is separated and ready for spinning. The meshes of the net are tied about a stick held between the knees.

The dressing of deer skins required very simple devices. A smoothly shaved, flattish stick about 6 feet long was placed in a slanting position against a convenient tree. The skin was hung over the stick and held at the top by a peg, and the hair and flesh were removed by pressing the skin against the flat stick and scraping with an old iron drawing knife. The skin was first soaked in water until the hair and flesh were easily scraped off. In earlier times stone implements were used, the skin being spread on the ground or over a smooth rock. In finishing the Indians apply grease or brains and scrape and rub until soft.

The magüey or American aloe or mescal grows wild among the mountains of the California desert. To prepare it for food the Indians dig or cut out the bases of the stalks which bear the leaf stems. These vary from 6 to 20 inches in diameter. To cook them they dig a saucer-shaped pit from 10 to 20 feet in diameter, then set a large stone up in the center and pave the entire surface with smaller stones. Upon this they build a fire, mixing the mescal stumps and wood together and thus burn the woody fiber from the mescal. The smaller stumps are kept near the outside, and as they become sufficiently burned are thrown out, then the larger ones in turn. When they are done the mescal is piled about the central stone and covered with hot stones. Next they cover all with earth, allowing it to remain forty-eight hours. When the pile cools down the mescal is ready for use. Cooked specimens often measure 6 inches in diameter. The taste resembles that of sirup baked out of sweet apples. It is very agreeable food and will keep perfectly good for months.

Sometimes it is necessary to go a long way for wood to burn, and several families make their pits near together for the sake of company. When they have no metal they burn an ironwood of the desert and sharpen the end for a digging tool. The mescal is ready for cutting when it begins to send up its flower stalk. If the Indian can not cut and bake all he wants at the proper time he cuts out the growing flower stem, which checks the growth, and the plant keeps in this condition for months.

Acorns form an important article of food. The Indians crack them with the teeth or a stone, partly dry, then shell and dry again. When dry they are ground in stone mortars, then the fine flour is soaked in ollas to remove the tannin, and the mixture is poured into basins formed in the sand. For some days they pour water into the basins until the tannin is all filtered out; the flour settles in the sand basin as a thick paste. This is scooped up by hand and placed in an olla. Having thus secured the most of it without sand, they gather up the balance regardless of sand, put it in another olla, add water, stir it well, and pour off the paste, leaving the sand. In this way the "Byota" or acorn meal is prepared, sweet and wholesome, and much preferred by the Indian to our wheat flour.