

## THE PANAMINT INDIANS OF CALIFORNIA.

BY FREDERICK VERNON COVILLE.

To a traveler passing by rail across our southwestern desert region it is a matter of great wonder how the Indians of that country contrive to subsist. Those who are not familiar with the desert can imagine an apparently unlimited plain, devoid of trees and grass, without streams or springs, but provided with a vegetation of cactus and scattered low shrubs of greasewood and creosote bush. Nor does a closer inspection affect one more pleasantly, for all the shrubbery is either woody and indigestible, or resinous and rank both in smell and taste. There appear to be no animals but lizards, an occasional rattlesnake, and sometimes an abundance of hungry-looking jack-rabbits. The very first necessities of life appear to be absolutely wanting, and this state of affairs exists not for one mile only, nor for ten miles, but for hundreds.

Viewed from this point the desert Indians' means of subsistence is a subject of unusual interest. As a matter of fact, in their domestic economy the selection of raw food-materials has reached a refinement of a kind quite opposite to that of civilized communities. The question in the case of the latter is, "What will furnish us the best food?" of the former, "What will furnish us any food?" The writer could not but notice in the Chinese markets in San Francisco, with their dried cabbage, abalone meat, and duck's feet, a similar result of generations of contrivance to make a scant food-supply suffice. So unusual is it among American Indians that a tribe cannot procure sufficient food with comparatively little work that Fremont says, "These [the Indians of the Mohave Desert region] belong to the people who are generally known under the name of *Diggers*, and to these I have more particularly had reference when occasionally speaking of a people whose sole occupation is to procure food sufficient to support existence."<sup>1</sup>

The Panamint Indians of Inyo county, California, belonging to the widespread Shoshonean family, are representatives of this class of beings, and as they are now nearly exterminated and their customs

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<sup>1</sup> Fremont's Second Report, p. 267.

and language are little known, the writer desires to put on record the following observations, made among them while he was performing the duties of botanist of the Death Valley expedition in 1891. A few notes on the neighboring Paiutes are included, designated in each case as such.

About twenty-five individuals of the Panamint tribe were seen, all of whom were living in the Panamint mountains, on the west side of Death valley. The total number probably does not greatly exceed this. The distance from Hot springs, in the vicinity of which three of the Panamint families live, to the nearest railroad station, Keeler, Inyo county, California, is about eighty miles.

In winter the Indians, leaving the mountains on account of the intense cold and deep snow, descend to the valleys and remain there until the extreme heat of summer compels them to return to higher altitudes.

At the mouth of Hall cañon, near Hot springs, at the west foot of the Panamint mountains, and in Johnson cañon, on the eastern or Death valley slope of the same range, the Indians have under crude irrigation and cultivation two or three acres of ground. The crops commonly raised are corn, potatoes, squashes, and water-melons. Of the last they are especially fond, fully as much so as the African, and the desert climate is admirably suited to their growth.

The cultivation of plants, however, furnishes them neither a sure nor an adequate food supply. They occasionally purchase from miners and prospectors bacon and flour. Their animal food consists principally of jack-rabbits, cotton-tail rabbits, and quails, occasionally mountain sheep or deer, and sometimes wood rats, kangaroo rats, white-footed mice, and a large lizard known as the chuckawara (*chuk'-ā-wā-rā*).<sup>1</sup> They are seldom able, however, to obtain any of these in abundance, and they are compelled to rely mainly on various indigenous food-plants.

As in the case of most civilized communities, the greater portion of their plant food consists of starchy material in the form of seeds. Most important is the Nevada nut pine, *Pinus monophylla*, which grows abundantly in the mountains at an altitude of six to eight thousand feet. In early autumn, after the seeds have matured, but before the cone scales have opened, the cones are beaten from the trees,

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<sup>1</sup> The diacritic marks used in this article are those employed in the Century Dictionary.

gathered in baskets, and spread out on a smooth piece of ground exposed to the heat of the sun. The scales soon become dry and crack apart, and the seeds are shaken out by blows from a stick or the more persistent ones rattled out by hand. The empty cones are then removed from the ground and the seeds gathered in baskets. Large quantities of pine nuts are thus collected, and most of them are cached in dry places among the rocks for use during the year. They are said to remain fresh and edible for several years if properly stored.

To prepare them for food the nuts are put into a basket with some live coals and shaken or stirred until they are gradually roasted. In this state pine nuts are often sold in market in California and other Western States, being disposed of precisely as peanuts are in the East. These roasted seeds, after the removal of their thin shells, may be munched entire or ground in a wooden mortar with a stone pestle and eaten dry or made into a soup.

The seeds of many other plants, indeed of almost all that are not poisonous, are also used. The methods of procuring them differ with the mode of growth of each plant, but the process of roasting is always the same. The pulverizing, however, in the case of harder seeds, is accomplished by grinding between two stones, the upper and smaller one being manipulated by hand on the lower, which is larger and slightly hollowed.

*Oryzopsis membranacea*, the common sand grass of the desert, produces an abundance of seed and is generally used. In gathering it the squaw carries in one hand a small basket and in the other a paddle made of wicker-work, resembling a tennis racket, but of only about two-thirds the size. With this she beats the grass panicles over the basket. After the process of grinding is completed, the chaff that remains attached to the grains is winnowed or sifted out.

*Echinocactus polycephalus*, a large round-headed cactus known as devil's pin-cushion, grows in rocky soil throughout the desert and fruits abundantly. The seeds are well protected among the spines and enclosed in white woolly capsules. These are pried out with sticks, broken open, and the seeds poured out. This cactus is especially serviceable to the Indians, as its seeds remain fresh and edible until spring, when most other sources of supply have failed.

The seeds of the joint pine, *Ephedra nevadensis*, are roasted and ground and the flour made into a bitter bread. *Oenothera brevipes* and other species of evening primrose are also commonly used.

Berries and similar fleshy fruits are rare in the desert, and only one is known to be edible—that of *Lycium andersonii*. This shrub has a small red berry resembling a minute tomato and in its fresh state is quite palatable. It is often dried by the Indians and made into a mush or soup, apparently without cooking.

One of the prickly pears, *Opuntia basilaris*, is used by the Indians, prepared in a peculiar manner. In May and early June the flat fleshy joints of the season's growth as well as the buds, blossoms, and immature fruit are fully distended with sweet sap. They are broken off with sticks and collected in large baskets. Each joint, having been carefully rubbed with grass to remove the fine barbed prickles, is exposed to the heat of the sun. When they are thoroughly dry they will keep indefinitely, and are prepared for eating by boiling and adding salt. Instead of the drying process another more elaborate one is sometimes adopted. A hole, about ten inches in depth and three feet in diameter, is dug in the ground and lined with stones. Upon this a fire is built and other stones thrown in. When they are all thoroughly heated, the ashes, coals, and all but one layer of stones are scraped away, and some fresh or moistened grass spread in the hole. Next a layer of cactus joints is added, then more hot stones, and so on till the pile is well rounded. The whole is then covered with sacking (originally with a mat of sedges), and lastly with moist earth. After about twelve hours of steaming the pile is opened and the *nā'-vō*, as the cooked cactus is called, is salted and eaten. Prepared as it is, in larger quantities than can be disposed of at once, a portion is dried and preserved. It is then in texture and appearance similar to unpeeled dried peaches.

There grow in the desert several large crucifers, whose leaves and stems have about the taste of cabbage and are tender and probably easily digestible. Among these the most abundant are *Stanleya elata*, *S. pinnata*, and *Caulanthus crassicaulis*. The process of preparation for the first of these species, and undoubtedly for the others also, is as follows: The leaves and young stems are gathered and thrown into boiling water for a few minutes, then taken out, washed in cold water and squeezed. The operation of washing is repeated five or six times, and the leaves are finally dried, ready to be used as boiled cabbage. The operation of washing removes the bitter taste and certain substances that would be likely to produce nausea or diarrhoea. I was told by Mr. Frank Kennedy, a miner who had

lived many years among the Panamints, that when food is extremely scarce almost any green herbage is eaten, after a similar preparation.

The use of the mesquit bean, the fruit of *Prosopis juliflora*, is well known. The ripe pods, about four inches long, contain very hard bony seeds, but the spaces between them, morphologically the body and septa of the pod, are stored with a small amount of nutritious matter, consisting principally of sugar. Mesquit pods are exactly homologous in the position of their sugar deposit with the *Johannis-brod* or *St. John's bread* of the Mediterranean region. Mesquit pods are seldom used in the autumn, but at that time are gathered and cached until spring. The usual method of preparation is to pound the dry pods in a wooden mortar, sift out the flour, and make it into small cakes or loaves.

*Phragmites vulgaris*, the common reed, furnishes what is known as "sugar." In early summer, commonly in June, when the plants have attained nearly their full size, they are cut and dried in the sun. When perfectly brittle the whole plant is ground and the finer portion separated by sifting. This moist, sticky flour is moulded by the hands into a thick gum-like mass. It is then set near a fire and roasted until it swells and browns slightly, and in this taffy-like state it is eaten.

Although the Panamint Indians live in a region where no species of *Agave*, or mescal, grows, they use in a similar manner a certain part of the tree yucca, *Yucca brevifolia*. In April when the flower-buds are swelling, but still covered with young leaves, they are in the proper condition for food. The buds are terminal upon the branches, and are protected by a close rosette of serrated, stiff, pointed, almost dagger-like leaves. The fiber of these leaves is so tough and the situation of the buds on the stem such that it would be difficult to cut one out even with an axe or hatchet. The Indians substitute dexterity for instruments. The four or five uppermost mature leaves are drawn together over the apex of the bud and grasped by the hand; then, by a twist and a quick, sidewise bend, the head is broken off. This is rendered possible by the skill of the worker and by the fact that the stem, although in age exceedingly tough, in its young stage is quite brittle. The mature leaves and the green tips are discarded, leaving an egg-shaped, solid, cream-like, juicy mass. This is roasted on hot coals and eaten at once or kept until cold. The tissues of these young buds are full of sugar

and other formative carbohydrates, and are undoubtedly very sweet and nutritious.

In some parts of the Charleston mountains, Nevada, the Piutes use a small mescal plant, *Agave utahensis*, which grows there in great abundance. Near the summit of Mountain Spring pass, north of Olcott peak, some of the hillsides are almost covered with the plant, and in suitable places near by are the holes where in previous years mescal has been cooked. These mescal pits, as they are called, are in their present condition circular depressions in the ground six to twenty feet in circumference, and sloping evenly to a center one to three feet in depth. They are deeply lined with water-worn stones, best described as coarse gravel, too small to be called cobblestones. In the center of some of the pits were a few larger similarly worn stones and an occasional piece of charcoal. One of the Indians, an old man living near Vegas ranch, described to me imperfectly the method of cooking it. A great fire is built in a pit and kept up until the stones are very hot. The fire is then raked out, the mescal plants put in, and covered with grass. After two days' steaming the pile is opened, and the mescal is ready to be eaten. The edible portion is the short, thick axis and the bases of the young leaves. Mrs. Stewart, at Vegas ranch, described the cooked mescal as having a jelly-like appearance and texture and a delicious taste. Extending through the pulp of the young leaves are tough fibers that are not softened by the cooking. These are ejected from the mouth after the edible portion has been chewed out. At some forsaken Indian camping grounds on the banks of the Colorado river, close by the mouth of the Vegas wash, we found dried and weathered wads of this fiber of such size as to indicate that the mescal must have been eaten in tremendous mouthfuls. It should be stated here that this species of *Agave* closely resembles the common century plant, but its leaves are more numerous and more closely compacted, while their length rarely exceeds eight inches. When the plant is a few years old it sends up a flower-stem sometimes ten feet high, bears fruit, and dies. The spring buds of plants about to flower contain the accumulated reserve material necessary for this extraordinary growth, and are therefore evidently full of food-material. I was informed that the cooking of mescal took place late in April, and that it is accompanied by certain ceremonies.

The Panamints have retained the majority of their original culinary utensils, although a few others have been adopted from white

people. The knife, spoon, tin plate, iron kettle, and flour sieve are frequently used. Nowhere were clay or stone pots seen, but various receptacles made of wicker-work, such as pack-baskets, plates, pot-baskets, and water-baskets, were in every-day use.

The pack-baskets have the form of a funnel, from one and one-half to two and one-half feet high and not quite so broad. A median vertical section is V-shaped, with a blunt base. This is the ordinary receptacle for carrying, or "packing," as it is called in mining regions, any kind of material. The loaded basket is held against the back between the shoulders, either by the hands grasping its rim or by leather or rope thongs passed around the forehead, the body meanwhile bent forward.

The plates are small, flat, circular pieces of closely woven wicker-work, usually nine to twelve inches in diameter. They are flexible and sometimes slightly saucer-shaped, and are used not only as plates and pans but also as substitutes for sieves. The material to be sifted, composed of ground seeds, is placed upon the plate and the chaff winnowed out. This primitive method is probably more difficult and less satisfactory than that used in our kitchens, for in the possession of nearly every Indian family a common wire flour sieve was seen.

The name pot-basket is used to designate wicker-work receptacles that have the form of a pot or bowl. The one in most common use has the shape of a rather deep bowl with curved sides and a flat bottom, and has a capacity of about three pints. The squaw uses it as a general measure, as a bowl for dry food and for soup, and often, when in the sunshine, as a hat. Its texture is so close that, when well made, it holds water. It is probable that before the advent of the iron kettle the Panamints used these wicker-work pots for the purpose of boiling and stewing food, applying the heat by the ordinary process of dropping hot stones into the liquid. Most of their starchy food, however, is roasted dry by mixing seeds, before they are ground, with hot coals and stirring them in a basket. This process is still largely used.

The water-basket has commonly a capacity of two to three gallons. Its general outline is that of an urn with a narrow neck and a rounded, conical bottom. The entire inner surface and frequently the outside is coated with pitch. Woven into the shoulder of the basket on one side are two loops of horsehair or other strong material, to which is attached a thong. In carrying, this thong is

passed around the forehead, while the basket is rested on the back between the shoulders.

Besides these articles of domestic use others of modified form are employed suited to individual taste and needs. Among the mixed Paiutes and Shoshonis at Ash Meadows, Nevada, was seen a very broad, shallow, flat-bottomed kind of bowl about one to one and a half feet across and about four inches deep. Loosely woven bird-cages are also used by the Panamints.

All these wicker-work utensils are woven by the squaws at the cost of a great deal of time, care, and skill. The materials are very simple. They consist of the year-old shoots of some species of tough willow, commonly *Salix lasiandra*, the year-old shoots of the aromatic sumac, *Rhus trilobata*, the long, black, slender, flexible horns on the mature pods of the unicorn plant, *Martynia proboscidea*, locally known as devil horns, and the long, red roots of the tree yucca, *Yucca brevifolia*. These materials give three types of color, the white of the willow and sumac, the black of the devil horns, and the red of the yucca roots. This last material, although it has a strong fiber and a pretty red color, is rarely used, for it is too thick to plat closely and the resulting fabric is full of interstices.

Sumac and willow are prepared for use in the same way. The bark is removed from the fresh shoots by biting it loose at the end and tearing it off. The woody portion is scraped to remove bud protuberances and other inequalities of the surface, and is then allowed to dry. These slender pieces of wood, that they may be distinguished from the other elements of basket materials, will be called withes. The second element is prepared from the same plants. A squaw selects a fresh shoot, breaks off the too slender upper portion, and bites one end so that it starts to split into three nearly equal parts. Holding one of these parts in her teeth and one in either hand, she pulls them apart, guiding the split with her fingers so dexterously that the whole shoot is divided into three equal even portions. Taking one of these, by a similar process she splits off the pith and the adjacent less flexible tissue from the inner face, and the bark from the outer, leaving a pliant, strong, flat strip of young willow or sumac wood. This is here designated a strand. Both withes and strands may be dried and kept for months and probably even for several years, but before being used they are always soaked in water.

The pack-baskets and some, at least, of the water-baskets are made



of these strands and withes. They begin at the bottom with two layers of withes superimposed and fastened by their middles at right angles. The free ends are bent upward, and in and out between them the strands are woven, new withes being inserted as the basket widens. An attempt at ornamentation is frequently made by retaining the bark on some of the strands or by staining them, and by slightly varying the "weave." A squaw commonly occupies an entire month constructing one such basket.

The plan of the pot-baskets and plates is very different from that of the pack-baskets. The materials are all carefully selected and prepared. They consist of willow or sumac strands like those described above, but narrower and of the finest quality, similar black strands from the devil horns, and the long-jointed, slender stems of a native grass, *Epicampes rigens*. The strands of devil horns are exceedingly tough, of a coal-black, very persistent color, and attain a length of from four to ten inches. The grass is particularly adapted to this use from its firm texture and the fact that the portion above the uppermost joint, which alone is used, is very long, often eighteen inches.

Starting from a central point a bundle of two or three grass stems and one very slender withe is sewed by a willow strand to the part already finished. The process is very similar to the crocheting of a circular lamp mat. At the proper point the bundle is drawn more tightly, so that the remainder of the spiral forms the sides of the basket. The wall has the thickness therefore of one of these bundles, and is composed of a continuous spiral of them. The willow withe furnishes a strong hold for the stitches, and the punctures are made by an iron awl. When such an instrument cannot be obtained an admirable equivalent is substituted in the form of a stout, horny cactus spine from the devil's pin-cushion, *Echinocactus polycephalus*, set in a head of hard pitch. The grass stems, when the stitches are drawn tightly, make a perfect packing, and the basket when finished is water-tight. Curious patterns in black are woven into the basket by the occasional substitution of strands of devil horns for those of willow.

Although the majority of the Panamint men use a short gun or a rifle in hunting, they still retain, as an accessory instrument for shooting small game, the bow and arrow. They shoot with remarkable accuracy and force, and since time is of little value to them, they are able to lie in wait for their game and creep so closely to it

that this method of hunting is very effective. I have seen an arrow-shaft that bore dried blood and rabbit hair five inches backward from the point.

The bows are made from the desert juniper, *Juniperus californica utahensis*. The Indian prefers a piece of wood from the trunk or a large limb of a tree that has died and seasoned while standing. One must remember that at low altitudes in these desert mountains moist rot of dead wood never occurs, but that a mature tree subjected to the intensely dry heat of the region is in perfect condition for this use. The bow rarely exceeds three feet in length, and is strengthened by glueing to its back a covering composed of strips of deer sinew laid lengthwise along it. The string is made of twisted sinew, or sometimes of cord prepared and twisted from Indian hemp.

Arrows are made from the stems of the reed, *Phragmites vulgaris*, and from willow shoots. The shaft is about three and one-half feet long. Nearly mature but still green reeds are cut, their leaves removed, and the stems dried and straightened in the hands before a fire. In the straightening process use is often made of a small stone across the face of which have been cut two grooves large enough to admit an arrow-shaft. This stone is heated and a portion of the crude arrow is laid in one of the grooves until it is hot. The cane is then straightened by holding it crosswise in the teeth and drawing the ends downward. By repeating this process throughout the whole length of the shaft a marvelously straight arrow is produced.

The head of the arrow is a pin of very hard wood, taken, I believe, from some species of *Atriplex* or greasewood. It is about five inches long and tapers evenly to a blunt point. The base is inserted about three-fourths of an inch into the hollow of the reed and rests against the uppermost joint. It is bound in place by a thin band of sinew. At each joint of the arrow-shaft is burned a ring of diagonal lines, either for ornament or as a tribal mark. The base of the shaft is notched to receive the bow-string and feathered with three half-feathers bound on with sinew and slightly twisted to give the arrow a rotary motion.

Willow arrow-shafts are made in a similar manner, one of the processes, corresponding to what we know as sand-papery, being accomplished by drawing the stick back and forth in the angle between two flat stones held in the palm of the hand. Stone arrow-heads appear to have fallen into entire disuse among the Panamints since the days when they were employed in war.

No textile fabrics are manufactured by the tribe, for they buy from the whites sufficient cloth for their wants. They do, however, manufacture from the Indian hemp, *Apocynum cannabinum*, a strong, fine-grained white cord, which is used instead of sinew whenever there is danger of moisture. Horsehair is undoubtedly sometimes made into rope by these Indians. At Vegas ranch, east of the Charleston mountains, Nevada, a Paiute was seen making a lariat of this material.

Of the facial paints that are used, principally by the women, little could be learned, but some of them are made of colored stone ground to a powder; and one kind, of a brilliant vermilion hue, is known, curiously enough, to have been purchased from the Chinamen at Keeler. It was a genuine imported article.

For cements are used a glue made by boiling the horns of the mountain sheep, pitch gathered from the Nevada nut pine, *Pinus monophylla*, and a gum found upon the creosote bush, *Larrea mexicana*. This last product is an interesting one. In its crude form the larrea gum occurs in the form of small, reddish, amber-colored masses on the twigs of the shrub, and is deposited there by a minute scale insect, *Carteria larrea*. The crude gum is mixed with pulverized rock and thoroughly pounded. The product, heated before applying, was once used to fasten stone arrow-heads in their shafts, and is at the present time employed for other similar purposes. At Ash Meadows, Nevada, I was shown a broken sugar-bowl cover that had been neatly and firmly mended with this cement by an Indian.

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THE FISH IN LOCAL ONOMATOLOGY.—Names taken from fish and fish species are rather frequent in well-watered countries. The Algonkin term *náme* is the generic word for "fish," but in the Ojibwē language spoken around Lake Superior it has passed into "sturgeon," this being the fish most sought after on that rock-bound lake. *Námek*, a derivative of *náme* and abbreviated into *ámek*, retains the definition "fish" in the combination of *atikámek*, "white-fish," in Ojibwē; this is found also as a hydrographic name. On the Pacific coast we may expect the various names of salmon to be largely applied to rivers, for that fish was the staple food of the natives long before the advent of the whites. We have the Californian Cósุมue river, named after *kóssumi*, the term for salmon in the Mutsun

dialects spoken west of the towering range of the Sierra Nevada. Choupique is found repeatedly in this French orthography throughout Louisiana as the name of rivers, bayous, and lakes in which the *tchúpik*, a small fish species, is living (Cha'hta). A similar signification belongs to the term *káyus*, in the Yakima dialect of the Shahap-tian family, as spoken on middle Columbia river, and the Cayuse tribe appears to have originally dwelt on a brook or rivulet frequented by this fish. Tchúla pápa or Trout creek, in Florida, is a name worded in the Seminole-Creek language, the verbatim rendering of the term being *tchúla*, "trout;" *pápa*, "eating place," from *pápās*, "I feed upon." To the same language belongs and worded in the same manner is "Charley Apópka," in De Soto county, near Charlotte harbor, southwestern coast of Florida. This is a corruption of *Tsála pápka hátchi*, "catfish eating creek," *hátchi* being the generic term for "river," "creek," and "bayou" in Cha'hta, Creek, and Hitchiti. The catfish is also represented in the Wissahickon, a brawling tributary of the Schuylkill, near Philadelphia. Here for many years existed a number of restaurants with the ever-repeated shibboleth of "catfish and waffles." One of the Indian names of the man-eating Botocudo tribes, upon and near the eastern coast of Brazil, was Gaimurés or Aimorés, a Tupi term referring to a species of the thorny rock-fish family inhabiting the ocean on that coast. Its roe was known to be quite poisonous, and was therefore carefully avoided. Tallahatchie river, a tributary of the Yazoo in northern Mississippi, is named after the pearls found in it, and Pearl river, which empties into the Gulf of Mexico in the same State, once had the same Cha'hta Indian name. *Tála* in the latter dialect means "stone," "rock," and here it stands for the pearl found in the shell of the bivalve.

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ORNAMENTS OF HUMAN TEETH AND BONES.—In parts of British New Guinea, particularly on the island of Kitava, widows wear the ornamented lower jaw of the deceased husband as a pendant, and widowers wear the seventh or first cervical vertebra of the deceased wife tied into the hair behind. Both sexes also wear on the neck the teeth of the deceased.—*MacGregor in Scottish Geog. Mag., Sept., 1892, p. 497.*