ANTHROPOLOGICAL PAPERS
OF
THE AMERICAN MUSEUM OF NATURAL HISTORY

VOLUME XXX, PART III

AN ABORIGINAL SALT MINE AT CAMP VERDE, ARIZONA

By Earl H. Morris

By Order of the Trustees
of
THE AMERICAN MUSEUM OF NATURAL HISTORY
New York City
1928

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INTRODUCTION

About a mile and a half westward of Camp Verde, Arizona, a mesa tongue juts southward from the foothills, the irregular contour of its crest breaking gradually downward until it merges with the floor of the Verde Valley. That salt was to be obtained from this rib of highland was learned soon after the first white settlers entered the valley. While troops were stationed at Camp Verde, salt for their animals was dug from the hill, and in more recent years stock men of the vicinity have resorted to the same source for their supply. At present the Western Chemical Company is operating an open mine in the eastern face of the hill. As the slope was being blasted down in front of the steam shovel, there came to light conclusive evidence that men of another race, with no tools but those of stone, had once carried on mining operations far below ground. In August, 1926, Mr. Warren S. Smith informed the American Museum of Natural History, that ancient mining had been done at Camp Verde. The letter was forwarded to the writer with the suggestion that he visit Camp Verde to make a brief examination of these early workings.

We are greatly indebted to Mr. George W. Campbell, local manager for the Western Chemical Company, for the series of artifacts he presented to the Museum, as well as for his willingness to give all the assistance possible during the course of our observations; to Mr. E. C. Robinson, for his assistance and description of conditions in parts of the hill that have been dug away; and to Mr. E. W. Richards, who scaled the dangerous exposed face of a cut where archæological débris was exposed. Finally, it should be noted that this journey to Camp Verde was made while the writer was directing the Ogden Mills Exploration in the Southwest.

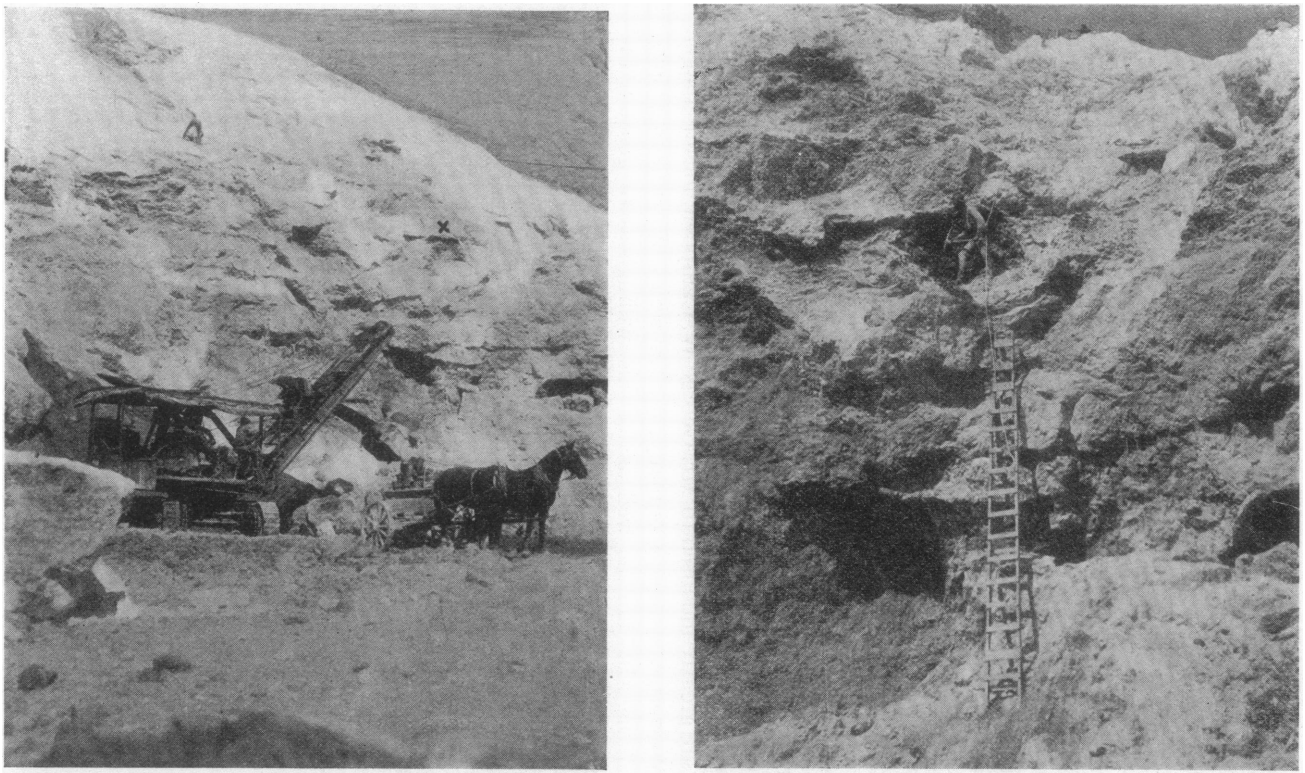


Fig. 1. Two Views of the Modern Salt Mine. *a*, General view with the position of the uppermost ancient tunnel, marked by a cross; *b*, A closer view of the breast of the modern workings. The man at the upper center is standing on the floor of the topmost ancient bore, the roof thereof being at the level of his shoulder.

GENERAL DESCRIPTION

The ridge penetrated by the ancient salt mine presents a steep slope on the eastern side and a somewhat gentler declivity on the west (Fig. 1). The latter side is covered with a layer of drift, composed principally of water-worn igneous boulders, beneath which is a stratum of varying thickness of yellowish, fine-grained, intensely sticky clay. This clay mantles the eastern exposure. Here and there it contains a gray-brown concretion, presumably of iron. In digging downward one passes gradually into a mass that closely resembles the crushed ice and dirty rock salt that one packs into an ice cream freezer. This fairly loose stratum, ten feet thick where the observations were made, is composed of crystals from a partially disintegrated stratum of salt cake, or Glauber's salt, together with more or less clay which has worked down through the interstices. Upon exposure to the air, the salt cake crystals effloresce and form a dazzling white powder. Becoming progressively harder, this layer finally gives way to the mother rock of the hill, which is, for the most part, sodium sulphate ($Na_2So_4.10H_2O$), much of it in the particular form known as Natronite. Gypsum ($Ca_2So_4.2H_2O$), common salt (NaCl), and clay occur as impurities in the sodium sulphate. The salt commonly occurs in small masses as Halite. The crystalline cubes are as transparent as clear glass, with a beautiful deep blue tint when seen in the sunlight. The largest chunk of the crystalline variety that has been recovered would weigh perhaps twenty pounds, but less pure masses come out up to several hundred pounds weight. The strata appear to lie almost horizontally, with only a slight dip to the north. Possibly the deposit owes its origin to precipitation from a dwindling lake.

ABORIGINAL SALT MINING

The prevailing local opinion is that the artifacts found embedded in the salt cake were thrown in the edge of the "sea" as the strata were being laid down; a notion too preposterous to need disproof. The aborigines mined their salt by tunneling. They chose a stratum where the salt was relatively plentiful and followed it inward, beating to pieces the breast ahead of them, casting the predominance of waste behind, and garnering the precious bits of salt. There is no evidence that they worked with any degree of system, but instead, burrowed about as chance, or a particularly fine lump of salt, directed them. Certainly they did no timbering, nor did they leave pillars to support the always dangerous roof.

At the time of my visit there was to be discerned across the vertical cliff face which rose in front of the steam shovel, a comparatively soft band, brown in contrast to the gray-blue of the undisturbed strata, from 3½ to 5½ feet thick, and 200 feet in length, or, in other words, extending across the entire face of the excavation. This band marked a stratum once dug over, its color being due to the fact that much of the light colored salt had been removed from it, and that it was copiously impregnated with ash and vegetable matter. Toward the north end, pick hafts, torch stubs, sticks, and hanks of fiber protruded. This stratum lay from 10 to 30 feet below the surface of the hill. While soft in comparison to the rock above and below, it was of stony consistency and thoroughly compact; a breccia composed of waste and rubbish cemented together by secondarily precipitated salts. The rapidity with which this re-deposition may take place is evidenced on overhanging ledges along the mine face by the presence of icicle-like stalactites 6 to 8 inches long, hanging from stones uncovered not more than a year ago.

Near the northern terminus of the exposed portion of the stratum, a salt-preserved "mummy" was blasted out some time ago. The head was not recovered. The trunk was that of an adult, apparently caught when in a crouching position by a cave-in; at any rate, it was mashed quite flat. Also, at the northern end of the exposed part of the major stratum, and from 8 to 12 feet beneath it, was the termination of similar workings at a lower level. Mr. Robinson stated that, during the progress of the demolition of the hill, a blast laid bare a cross-section of a shaft some five feet across, connecting these two levels. He also informed me that in a tunnel driven on the level on which the steam shovel is operating, or thirty feet below the major stratum described, he found an ancient bore, still partly open, in which were pick hafts and the ash from fires. This was at a minimum of 70 feet from the surface, both vertically and horizontally. About twenty-five feet farther down, where a crusher was being installed, was to be seen a pick handle sticking out of a mass of re-consolidated waste.

An approximate plan of and a knowledge of the full extent of the aboriginal mine could not be obtained without extensive excavation, dangerous and expensive beyond the end to be gained. It may now be said that the Indians tunneled into the hill at four or more levels, following strata relatively rich in salt. They broke down the rock with such tools as are hereinafter described. The waste, which comprised probably 90 percent of the total mass moved, was not transported to the mouth of the mine, but instead, thrown to one side in the timberless, pillarless

cavity from which the salt had been previously extracted. In such a deposit, naturally enough, there are included a fair number of artifacts; broken, discarded and misplaced implements, some articles of clothing, and quantities of residue from the fires which seem to have been the principal source of light. In the course of time, water from above, heavily laden with salts, dissolved from the rock through which it passed, percolated through the man-made layer, and by a gradual precipitation of a portion of its salt burden, cemented the mass into a compact breccia.

At least a few thousand cubic yards of rock were worked over by the early people. To have mined such a quantity of moderately hard substance by the arduous method of abrasion with what were, at best, blunt-pointed tools certainly would have required a lapse of time, long in comparison to the span of an individual. This is especially apparent when it is considered that the digging of salt probably was not an occupation followed consecutively, but occasionally, as demand might dictate. But even so, the life cycle that those most capable of offering an opinion would grant to sedentary corn-growing culture in the Southwest, would more than suffice to have given time for all of the mining now known to have been done at Camp Verde. Geologically, the workings are recent rather than old, for with the exception of wash cutting and possible shifts in river bed, the topography of the Verde Valley was then as now.

Descriptions of Specimens from the Mine

The collection contains the following types of objects:—

1. Cedarbark torches.
2. Yucca leaves.
3. Prepared yucca fiber.
4. Sandals.
    a. Of partly macerated leaves of yucca.
    b. Of prepared yucca fiber.
5. Matting, made from yucca leaves.
6. Roll of twigs bound with yucca fiber lashings.
7. Mat of sticks held together with lashings of yucca leaf
8. Wooden club.
9. Pick hafts.
10. Stone picks in process of manufacture.
11. Heavy stone picks, not intended for hafting.
12. Stone picks grooved for hafting.

In addition to the above, the breccia contains much ash, fine charcoal, and many twigs, most of them partially burned. Among the woody matter are distinguishable numerous fragments of reed stem, some grass,

and a few bits of gourd or squash shell. There also occur crude implements of the sort described elsewhere[1] as pecking stones. They are boulders of a size that can be held in the hand. Spalls were struck off from one side, leaving sharp edges and jagged points. The side left smooth was grasped in the half-closed hand, the arm thus serving as a haft. Articles described but not seen by the writer were bits of matting, deer horns, a long "queue" of black human hair, and a blade shaped like that of a common butcher knife, broken at the broad end. The latter may have been part of a digging-stick.

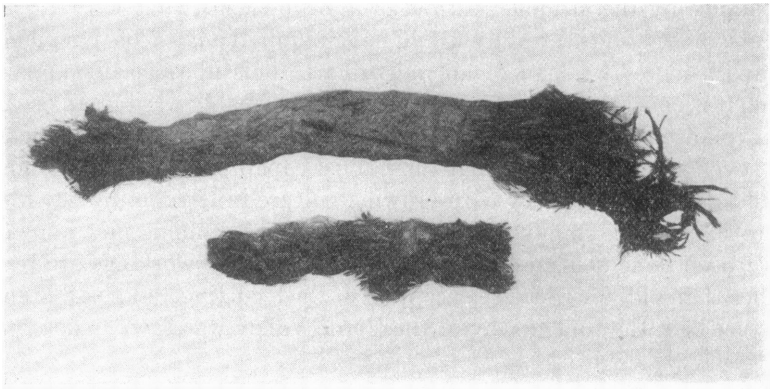


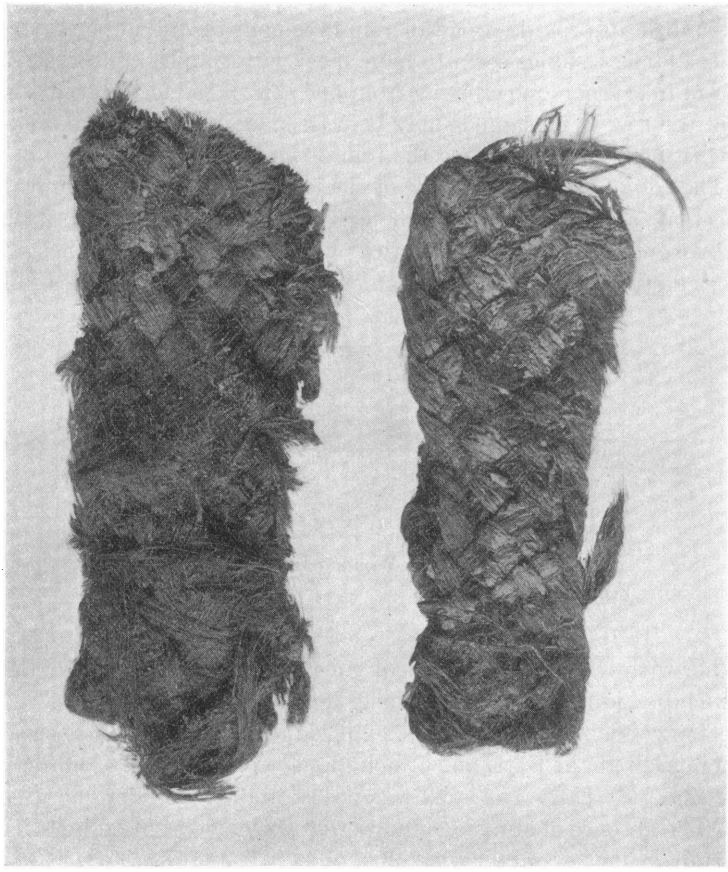
Fig. 2 *ab* (29.1–5510, 5517). Cedarbark Torches from the Salt Mine. The upper one was unused, the lower nearly consumed.

Some of the torches are new and unused. The best-preserved (Fig. 2*a*) is a roll of bark 16 inches long, and though now flattened, was about 1½ inches in diameter. It is bound throughout the central three quarters of its length with a spiral wrapping of yucca fiber, ¾ to 1 inch between the spirals. A well-preserved used torch (Fig. 2*b*) has been burned off at one end until only 8 inches of it remain.

The yucca leaves, partly macerated, and the prepared yucca fiber served as tying material. No true cordage was mentioned as having been observed to come from the mine. The fragment of matting represents an object of unknown size made of leaves of yucca *latifolia* laid side by side with the ends plaited to hold the fabric together.

Of sandals there are four nearly complete and part of a fifth. One (Fig. 3*a*) is of partly macerated leaves, the others of well-cleaned fiber

[1]This series, vol. 26, 19.



a *b*

Fig. 3 *ab* (29.1–5521, 5522). Typical Sandals from the Salt Mine; *a*, Plaited from partly macerated yucca leaves; *b*, Of well-cleaned yucca fiber.

(Fig. 3*b*). The weaving of all is essentially the same. Work was begun at the toe end. The leaves or hanks of fiber, as the case might be, were plaited thence backward until the desired length had been attained. Then the remaining ends were folded over and caught through elements of the fabric to provide a pad or reinforcement on the upper side under the heel. The lashings seem to have been very simple, consisting of two hanks of fiber, each one crossing from one side of the heel to the opposite side of the toe. The sandals may be classed as very crudely made, their most distinctive feature being the reinforced heel.

The roll of twigs is a bundle of slender stems, crescentic in form, 20 inches long, and 1½ inches in diameter. Possibly it is a pot ring or burden pad, broken apart. The mat of sticks was at least 2 feet 4 inches square. Unpeeled sticks 3/16 to ½ inch in diameter were laid side by side and laced

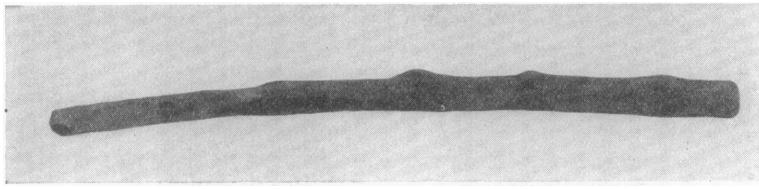


Fig. 4 (29.1–5529). Club-like Wooden Implement of Unknown Specific Function. From the Salt Mine.

together with transverse lashings of yucca leaf. The two rows of lashings of which portions remain are 5 inches apart.

The wooden club (Fig. 4) is a curved, tapering limb 25 inches long, 1½ inch thick at the butt, and 1 inch at the tip. The ends and limbs are fairly smoothly cut. The stick was peeled and the slender end used as a grip. The absence of abrasions shows that the club was used little if at all, or certainly not in contact with hard objects.

Of pick hafts there are sixteen, varying in length from 9½ inches, measuring from the handward edge of the pick (Fig. 5*b*) to 13¼ inches (Fig. 5*a*), and in diameter from ⅜ to 1¼ inches. Moderately straight sticks were selected. The majority were peeled, but from some the bark was not removed. One of the hafts is of cottonwood and all appear to be from deciduous trees rather than from conifers. In the making of a haft, the following recapitulates the procedure. After the stick was cut to the desired length and the limbs dressed off, a transverse notch was cut into one side as far as the heart, from 1½ to 3 inches from the thicker end.

The length of the groove in the pick to be hafted was roughly measured off on the stick and a second notch cut on the same side of the stick at whatever distance this might be from the first. The wood between the notches was split out and the flat surface thus produced made convex, the better to fit into the concave groove on the pick. The stick was bent

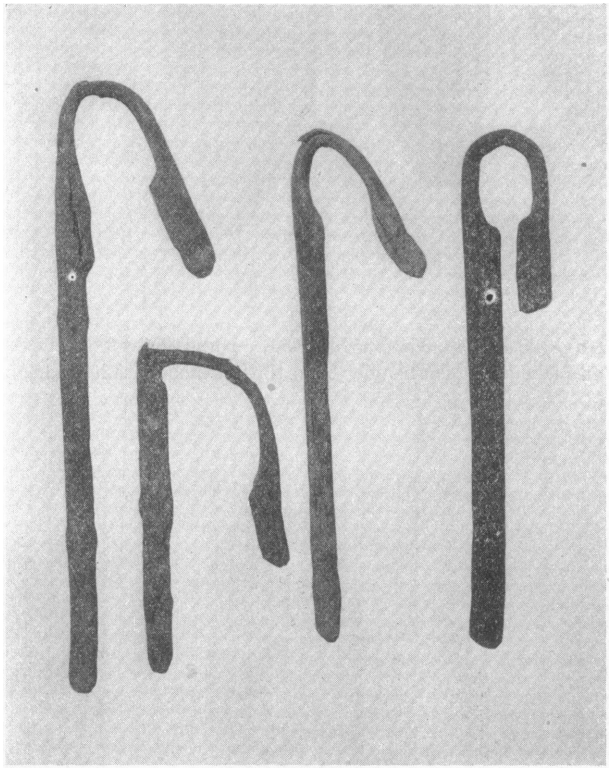


Fig. 5 *a-d* (29.1–5532, 5530, 5535, 5477). J-shaped Pick Hafts. This shape of haft explains the three-quarters groove characteristic of the Gila type of ax. *a-c*, From Salt Mine; *d*, From cave.

the thinned, more pliable part filling the groove. The short end was forced as near as possible to the long one and the two bound together with yucca fiber. The wood for these hafts had to be cut green to be sufficiently pliable and perhaps was soaked as well. In five of the sixteen cases the short end of the haft was encircled with a groove (Fig. 5*c*), the better

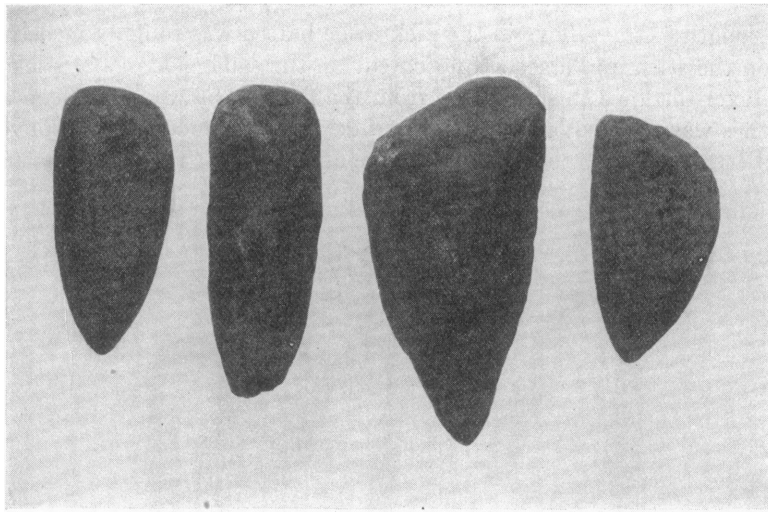


Fig. 6 *a-d* (29.1–5548, 5549, 5546, 5550). Hand Picks from the Salt Mine. These hand picks are much heavier than those which were hafted.

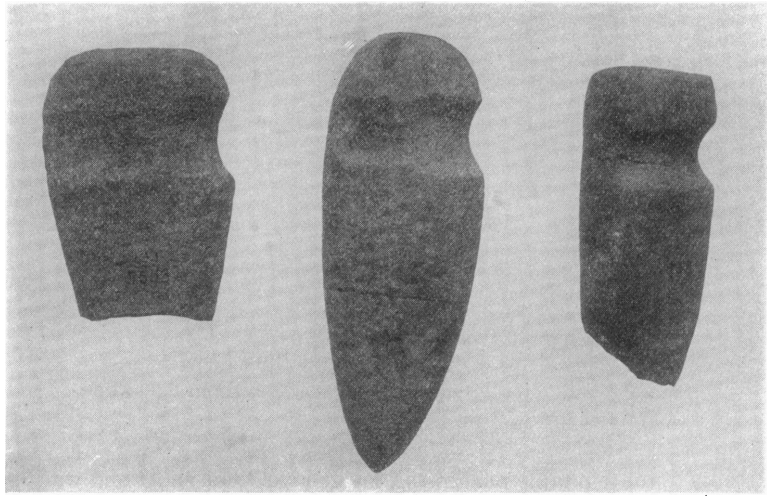


Fig. 7 *a-c* (29.1–5553, 5551, 5552). Picks grooved for Hafting, from the Salt Mine. Round-pointed stone picks have not been found in the South-west except in localities where salt mining was practised.

to hold the lashings. For the making of picks, hard tough igneous boulders were selected. These were reduced by pecking to the desired form; that is, to a roughly conical shape, sharp-tipped at one end, and blunt at the other. Fig. 6*c* shows a pick which has been only partly fashioned.

The hand picks average considerably larger than the hafted variety. Of the four shown in Fig. 6*a-d*, the complete one (Fig. 6*a*) is 9 inches long and weighs 6¾ pounds. Of the grooved picks in Fig. 7, Fig. 7*b* is the only complete one in the collection. It is 8 inches long and weighs 2¾ pounds. This specimen is probably as excellently made a tool of its kind as has come from the mine. The only one that has been recovered in perfect condition, that is, unbroken, with haft in place is in the possession of Mr. George W. Campbell (Fig. 8). It is shorter and thicker

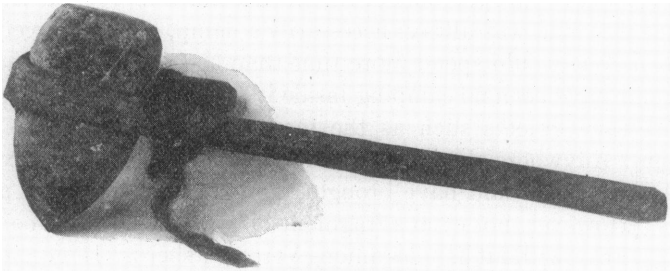


Fig. 8. A Stone Pick from the Salt Mine, retaining Its Original Haft. Courtesy of George W. Campbell.

than the one in Fig. 7*b*. That these two represent an average run of the hafted picks is indicated by the fact that the flattened portions of the hafts show that they were fitted to implements within this range of girth. The most notable fact about these tools is that they are definitely shaped *picks*, and not axes; a type that, as far as I know, did not develop elsewhere in the Southwest except in the salt mining district of Nevada explored by M. R. Harrington.[1] Also the manner of hafting is of interest since it explains the three-quarters groove which is the diagnostic feature of the Gila type of ax. Since the haft encircled only the two broader and one of the narrower faces of the tool, a groove on the fourth side would have been to no purpose. In contrast to this the San Juan axes and those from the Rio Grande, as well, were completely encircled by their more slender, more pliable hafts, not once, but twice, thus necessitating the complete groove, or at least one through the thinner edges of the implement.

[1]Harrington, M. R., "A Primitive Pueblo City in Nevada" (*American Anthropologist*, n.s., vol. 29, pp. 262–277, 1927), 274–275; also, "A Hafted Stone Hammer from Nevada" (*Indian Notes, Museum of the American Indian, Heye Foundation*, vol. 4, no. 2, pp. 127–131, 1927).

CHRONOLOGICAL POSITION OF THE SITE

No potsherds whatever have been observed in the salt mine. The writer questioned everyone he met who had been on hand during operations there and received always the same answer. Also he made some excavations in the breccia *in situ* and examined the surface of a good many yards of it thrown down by several blasts without finding a trace of burned clay. At first thought, this condition might be taken to indicate that the mining was done before pottery came into use in the Verde country, or in a culture stage comparable to the Basket Maker horizon in the San Juan area. While there is no reason to doubt that the obtaining of salt from this locality may have begun soon after the Indian discovery of the valley; hence, probably in the pre-pottery period, we are inclined to believe that the bulk of the work is much more modern. The interior of the mine was always necessarily a damp, dark, unlovely place in which no one would spend more time than necessary. Consequently, there would have been no camping inside it and little incentive to carry in unnecessary objects such as the majority of pottery vessels would have been. Anywhere else in the Pueblo country it might be expected that the workmen would have brought their drinking water in pottery canteens. However, not even a fragment of a small-mouthed container was seen, with or without handles among Verde potsherds. Hence, it would appear that even during the pottery-making periods, gourds, rather than clay vessels, served as canteens.

To fix the relative age of the Salt Mine, it would be necessary to establish the contemporaneity of the workings in it to some of the ruins existing in the surrounding country, which ruins then might be fitted into their proper place in the culture history of the Southwest as a whole. The range of artifacts from the mine is too limited, especially because of the absence of pottery, to render determinations based on them entirely satisfactory. However, since they afford the only evidence in hand, it remains to utilize them to the utmost.

The observations in the vicinity of Camp Verde were brief. Nevertheless, we present here such data as they yielded. The small early sites which one might justifiably expect to be plentiful in a well-watered valley with plenty of tillable land, are very few indeed. None were observed, but Custodian Jackson, of Montezuma's Castle National Monument, provided me with a handful of black-on-white sherds from a site on Beaver Creek, some 3½ miles northeast of Camp Verde. This black-on-white ware appears to be identical with that found in the neighborhood of Flagstaff, Arizona.

Some four miles southeast of Camp Verde there is a large group of ancient habitations. Clear Creek, an eastern tributary of the Rio Verde, comes down from the western scarp of the Mogollon Range to a confluence with the Verde. On the tip of an elevated headland overlooking Clear Creek Valley to the south and a broad low mesa flanking the Verde to the westward, there is the wreckage of a stone building which was perhaps

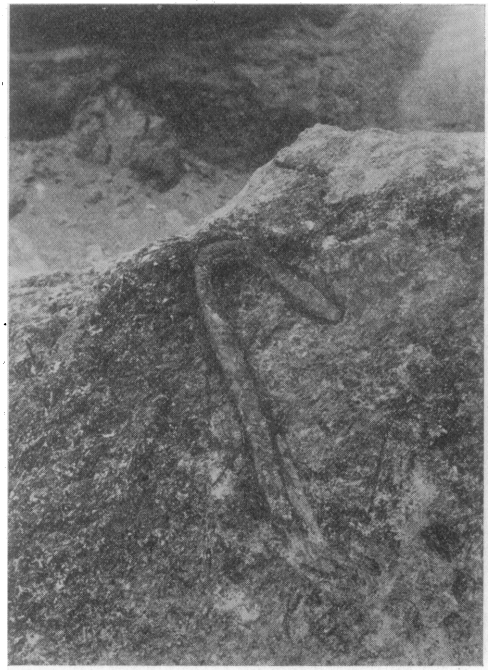


Fig. 9. A Pick Haft photographed *in situ* in a Block of Breccia blasted down from Mine Face.

150 feet east and west by 60 to 70 feet in width. Most of it is a jumbled heap of stones, but at the northwest corner two walls, meeting at a right angle, rise 5 to 8 feet above the débris. They are as well built as the refractory nature of the stone of which they are composed would readily permit, from 15 to 18 inches thick. A lintel, composed of several round poles, is in place over one doorway. Below this house, on the steep northward slope, a few burials have been found in pockets among the rocks. In all directions are scattered numberless potsherds, invariably small.

The margin of the mesa on the south side is a series of ragged ledges, with a talus slope below, running down to the brink of another ledge. The upper ledges are honeycombed with chambers dug into them. Where the talus was of suitable breadth and slope, a haphazard row of stone buildings was built upon it. Down the slope before them refuse was cast, and some dead buried. Behind them, rooms were hollowed out of the rock, and even where there was no space for structures in the open, ledge faces were riddled with perforations, until now, when seen from a distance, the chaos of black holes reminds one of an empty comb (Fig. 10). These chambers vary in size from cubby holes scarcely large enough to

Fig. 10. Mouths of Artificial Caves in the Clear Creek Group. The cliff is an indurated mud, soft and easily worked.

crawl into, to rooms fifteen or more feet in diameter, with incurving more or less domed roofs high enough to stand beneath. The rock is an indurated, light-colored mud, relatively soft and easy to work. The following was the procedure in constructing one of the larger, domiciliary cells. An entry was driven a short distance into the face of the rock. The entrance was then enlarged on both sides and above, and continued inward until the dimensions of the room in mind had been attained. If the original entry was too large, it was reduced with a thin masonry wall to the proportions suitable for a door. Some of the doors exhibit jambs and lintels very neatly smoothed with adobe. The rooms are so nearly shapeless that there is no definite descriptive term to apply to them.

They are, perhaps, more vaguely circular than anything else. Branching off from practically every one of them, are from one to half a dozen minor recesses, doubtless storage places. Some extend back into the cliff on a level with the floor of the room; others go obliquely backward and downward from the floor; and others are dug vertically downward along the floor margin. The floors, where extant, are of hard smooth adobe, with a firepit, commonly near the center. The roofs are smoked black. Some rubbish, crushed-down pots, rats' nests, and bat deposits are conspicuous elements of floor covering. A great deal of rummaging has been done in these cave rooms. Local residents describe the finding of cavities behind the walls which were minor recesses sealed with masonry, the latter subsequently smoked as black as the rest of the room. In these cavities have been found burials, stores of corn, cotton, and pottery.

Description of Specimens from Clear Creek Sites

We did some digging in one of the large rooms and secured objects from the few inches of refuse encountered, as indicated by the following catalogue copy:—

29.1-5477 Wooden haft.
5478 Worked stick.
5479 Worked stick.
5480 Worked stick.
5481 Wooden stick, foreshaft (?).
5482 Wooden stick, foreshaft (?).
5483 Wooden stick, foreshaft (?).
5484 Nock end of reed arrow.
5485 Part of reed arrow with wooden foreshaft.
5486 Section of thick reed, end cut.
5487 Cylinder of pith painted green and black, one end perforated probably to receive feathers.
5488 Cylinder of pith painted green and black, one end perforated probably to receive feathers.
5489 Cylinder of pith, similar to the above, but unpainted and unperforated.
5490 Large piece of pith.
5491 Horn-shaped container made from neck of very slender gourd. Contains yellow-brown vegetable powder. End plugged with wad of fiber.
5492 Hank of partly prepared yucca fiber.
5493 Hank of prepared yucca fiber.
5494 Hank of partly macerated yucca leaves.
5495 Wad of cotton waste containing seed hulls, bits of string, etc.
5496 Twisted yucca cord.
5497 Braided yucca cord.

5498 Sandal of partly macerated yucca leaves.
5499 Sandal of prepared yucca fiber.
5500 Fragments of plaited yucca matting.
5501 Coarse cotton rag.
5502 Cotton rag, finer weave.
5503 Bone awl.
5504 Small tanned hide sack wrapped and tied. Contains black pigment and a slender brush made of twig with wad of cotton fiber at end.
5505 Small grooved stone.

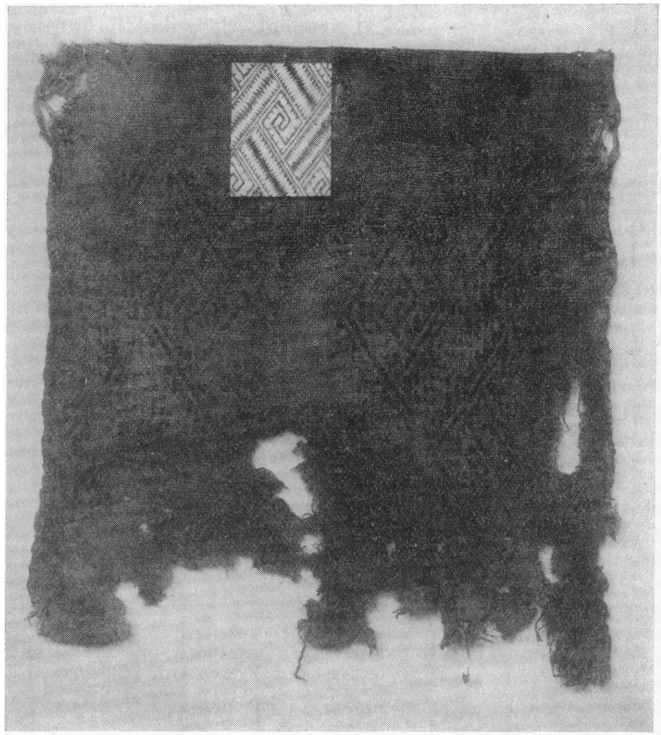


Fig. 11 (29.1–5508). Embroidered Cloth from Grave of Child in Clear Creek Group. The ground color is a tawny yellow, the pattern a deep brown. A unit of the decoration, traced in black and white appears in the insert.

At the east edge of the room, beneath a heap of débris shoveled aside by a previous visitor, was a cist 2½ feet across and slightly more in depth. It was filled with ash, dust, and refuse. On the bottom, against

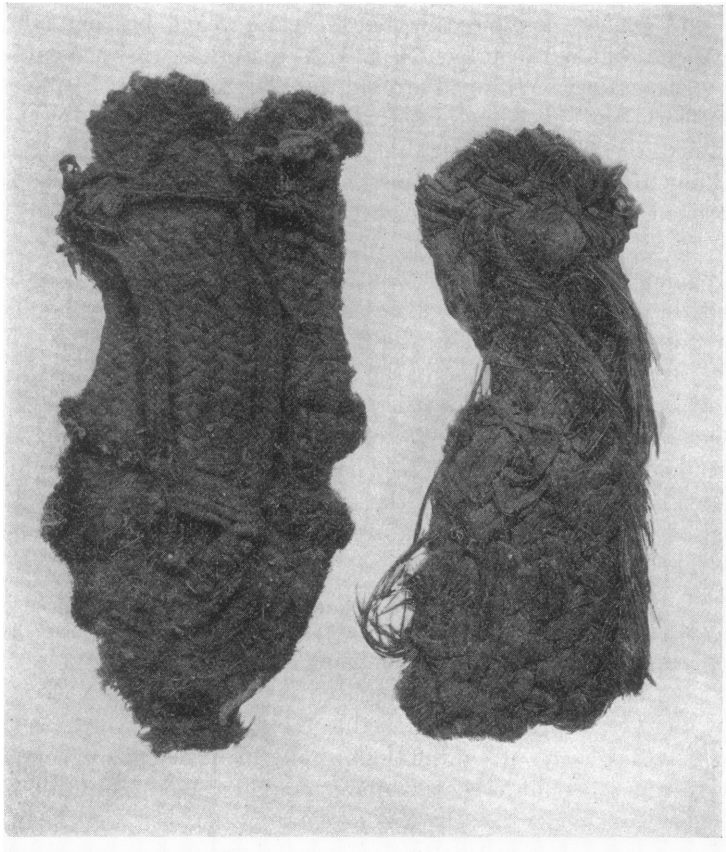
the north side, was the burial of an infant. The tiny skeleton lay, tightly flexed, on back, with head to the east. Under the skull was a pad of cloth somewhat longer and thicker than one's hand. It was made from a long strip of woven cotton cloth sewed together from two or more pieces, then rolled up. One of these pieces was of fine close weave, bearing a delicate pattern embroidered in brown (Fig. 11); the other was of coarser and more open texture. Wrapped around the body were two large pieces of cotton cloth, the inner one of a texture comparable to that of the last mentioned, the outer so coarse that it resembles gunnysacking. Leaning from floor to wall over the remains were nine round sticks, the ends cut, not broken, from fourteen to eighteen inches long, and from 1½ to 2½ inches in diameter. Upon these were spread three thicknesses of stiff tightly-made twilled matting of which the strands are yucca leaves.

Of the objects from the cave room, only two classes bear upon the major point in hand, namely, the haft and the sandals. The haft, as may be seen in Fig. 5*d* is exactly the same as those from the salt deposit, the only exception being that it is in a better state of preservation.

One of the sandals (Fig. 12*b*) has the same rather shapeless contour, the same weave, the same reinforced heel, and the same manner of attachment to the foot as those from the mine. The other sandal (Fig. 12*a*) is of an altogether different type. It is excellently braided of strands of well-cleaned fiber. The toe is round, the heel fragmentary, and the fastening of a sort not previously seen by the writer. A U-shaped band, tightly and neatly braided, lay along each side of the foot and crossed over at the base of the toes. From each corner of the bottom of the U extends a twisted cord which is caught around a strand of the sole. The two of these formed what functioned as a loop through which certain of the toes passed. The tips of the U are similarly attached, and connecting them, so that it would have passed above and engaged the protuberance of the heel, is a slender, loosely-twisted cord.

Thus it appears that the type of haft and one variety of sandal from the Clear Creek caves are the same as those from the near-by salt mine. Unfortunately, the range of these types is as yet unknown. However, judging type of haft to coincide with type of groove, this J-shaped handle was predominantly used all along the Gila Valley, as far eastward as the Mimbres region, and as far to the north and east as Winslow, Arizona.

The sandals from the mine are, in all essential respects, and, especially in regard to the reinforced heel, like those found in a cave on the Mimbres by C. B. Cosgrove. Thus, both haft and sandal were distributed over many hundred square miles of territory.



a *b*

Fig. 12 *ab*, (29.1–5498, 5499). Sandals from the Clear Creek Group. *a*, Has an unusual method of attachment to foot; *b*, A sandal similar to those from the Salt Mine.

Now as to the potsherds from the Clear Creek Ruin. Aside from an extremely few bits of black-on-white, the tens of thousands of fragments are of wares red to black in color, bearing no painted decoration whatever. As an occasional exception, there is a scrap of Little Colorado yellow. Corrugated ware seems not to be an element of this redware complex, but conspicuous among it are sherds with a reddish cast outside and polished black within. This sort of pottery has a very wide distribution. On the basis of the author's observations, it occurs from the La Plata Valley in the extreme northern edge of New Mexico southward to the Mimbres Valley, thence westward to the Gila around Solomonsville. It is plentiful in the Roosevelt Lake district on Salt River. From the Verde it continues northeastward to the country in the neighborhood of Flagstaff.

The crude redware most conspicuous at Clear Creek is prevalent at Roosevelt Lake. Sherds from Montezuma's Castle, which is not more than five or six miles in an airline from the salt mine, are of this ware, as were the few sherds I could find at the Walnut Cañon cliff ruins. At Winona, eighteen miles east of Flagstaff, is a ruin in the open which contains a great proportion of this sort of pottery.

Judging, then, from the limited evidence at hand, the salt mine at Camp Verde was worked at a time when Pueblo culture had reached its full development; when the Gila, the Mimbres, and the Little Colorado variants had attained their diagnostic features; thus rather late than early in the cycle of aboriginal occupation of the Southwest. There is, however, nothing to indicate that digging for salt at this particular point may not have been begun at a much earlier period.