16. THE ARCHAEOLOGICAL DEPOSIT IN MOANING CAVE, CALAVERAS COUNTY.

The Site

Moaning Cave is a large limestone cavern in the western foothills of the Sierra Nevada Mountains about 2 miles south of Vallecito, Calaveras county, California.[1] The mouth of the cave is on a steep hillside about 100 feet above Coyote Creek, a small but permanent stream. The surrounding region is one of rugged red clay hills with bare outcroppings of bluish gray marble. Oaks, pines and chaparral cover the slopes of most of the hills.

The cavern is a vertical limestone fissure over 250 feet in depth. (Fig. 2). The natural entrance is a narrow almost perpendicular crevice descending about 30 feet to a narrow ledge of rock. From here there is another drop of about 150 feet to the irregular floor of the main chamber, a room about 50 by 80 feet. Below this a series of narrow passages leads down to a small underground lake.

The interior of the cave is dark, as only a small amount of daylight penetrates the upper reaches through the entrance shaft. Water constantly drips from the ceiling and sidewalls, the amount of moisture varying seasonally. A daily average of about 57° Fahrenheit prevails, being only slightly influenced by the rise and fall of temperature outside.

Moaning Cave is in an active stage of growth. The work of carving its walls and openings by water taking the lime in solution and carrying it away is still going on. Dripstone is being formed along the walls and on the floor.

The Discovery and Exploration of Moaning Cave

The date of discovery and early history of exploration, not only of Moaning Cave, but of many other caverns in the vicinity are obscure. The first effective penetration of the Sierra foothills occurred during the Gold Rush period, one hundred years ago. Gold seekers, swarming through the Mother Lode district, were the first Caucasians to see most of the caves, but either kept their finds secret or gave only vague verbal descriptions of their discoveries. Occasionally the finding of a unique grotto was announced in a local periodical or mentioned in the journal of a traveler.

An early account which seems to describe Moaning Cave appeared in the Sacramento Times of December 4, 1851.[2] On the following Sunday The Daily Alta California (v. 2, no. 300, p. 2) published a description based on the earlier article. The details seem to be somewhat confused.

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1. See "Notes" at end of article.

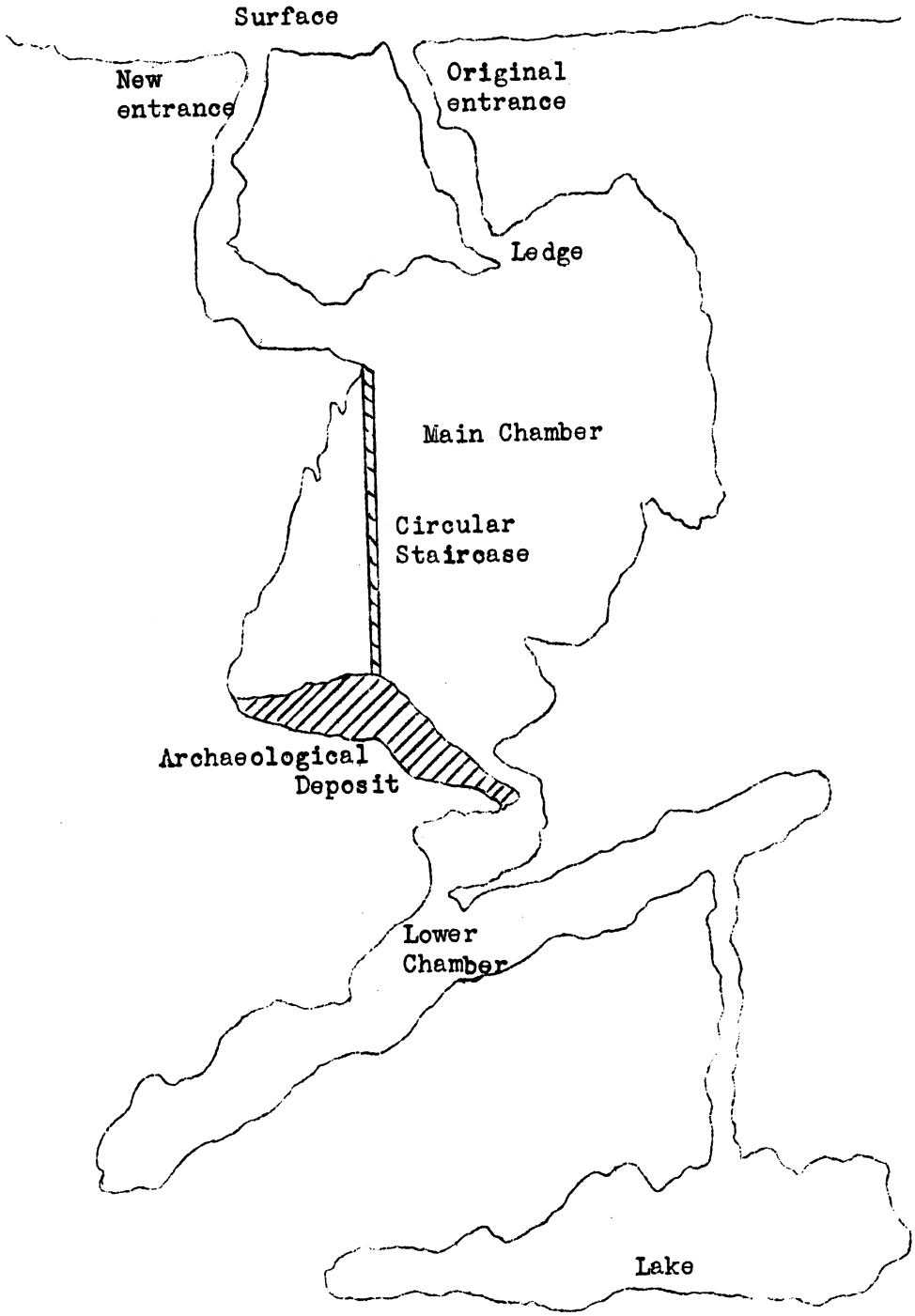

Figure 2. Cross section of Moaning Cave.

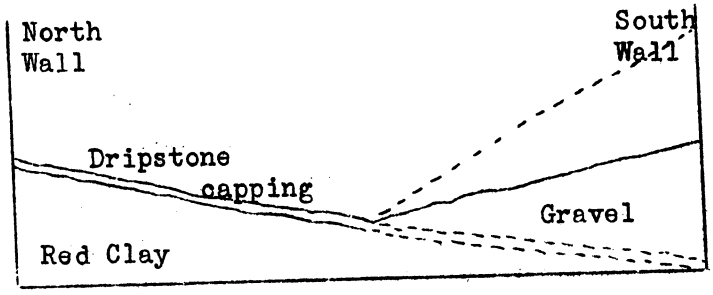

Figure 3. Cross section of archaeological deposit.

Daily Alta California, San Francisco
Sunday Morning, Dec. 7, 1851
Mammoth Cavern of Calaveras

In the County of Calaveras there exists an immense cavern under solid stone, which has been called by the miners of that district for some time, Solomon's Hole. A mining claim has been located at the spot, the cave having been explored to the depth of three or four hundred feet. This cavern is situated on Wadie's Creek, one of the tributaries of Cooti Creek, and is six miles distant from Carson's Hill. Mr. J. B. Trask, who is now engaged in a tour of scientific observations and geological survey of the State, thus writes of the locality. His correspondence appears in the Sacramento Times of Thursday.

The interest of this locality is much more than that of a mining point, from some circumstances associated with it. I will describe as nearly as I can, the general appearance of the cavern, more for the purpose of doing away an idea now prevalent of its formerly having been worked for gold some centuries since by Mexicans or Spaniards. It is situated in limestone, and the descent is from the side of the hill on the west side of the creek. The opening is about three feet in diameter, and the descent vertical for 30 feet; at this point a mass of limestone rock forms a platform some six or eight feet in length; the next descent is to the right of the plat [sic platform] some five feet, and eighteen feet vertical; at this place a smaller stage occurs sufficient only for one man to stand (the above two points cannot be shown in the plat from darkness and position.) From the second plat you descend in a space some fifteen feet diameter to that point, at which you notice the first and upper candle placed on the left; this line of descent is 70 feet. This point, from its form, is called the Liberty Cap; it is of stalactite formation and 15 feet high, being composed of four or five of these apparently cemented together, and resting as you see on a table jutting from the main ledge with circular stalactite hanging pendant from its sides; the other lights on the left were placed for a better view of the interior and sides. From the cap the descent is near 100 feet, and you gain your first footing some 30 feet in the dark space in front nearly opposite the two figures in the centre and on an inclined plane of 35 degrees.

The shape of the first chamber is that of a bishop's mitre; the space between fire on the right, to the narrowest point on the left, in a line of the two figures in the centre, is 50 feet and it expands to a width of 300 feet in diameter, covered with draped curtains of stalactites.

A large mound occupies the centre of this room, 50 feet in height and 70 feet in diameter, composed of loose stones and earth, that has washed in from the top, and contains gold. Behind the figure, sitting by the fire, on the right, you will notice a triangular space, in distance 46 feet in the scale. This is the aperture to the next chamber, below and directly under the first; it cannot be shown in the plate. The vertical depth of this room is 100 feet, and is composed of fragments of the rock, forming the cavern; in this chamber the most interesting feature of the whole presents itself, which was the appearance of portions of a human skeleton. On a large flat rock, on one side of

this room, lay a portion of the skull. The skull was not entire - the entire base was wanting. All that remained was the os frontis, the parietal bones, and part of the occiput. One of the company, Mr. Philips, attempted to pick it up, in doing which it crumbled and fell to pieces. No other vestige is as yet found of these remains; the opening of the cave next season will probably develop them. I will not attempt to speculate on these remains, or the age in which they may have been deposited, but the situation or peculiarities attendant, to say the least, is strongly presumptive of high antiquity.

This cave is now explored to the depth of 450 feet, but as yet the bottom is not found. Two other apertures of great depth are still known to exist, below those named, and until more efficient means are used, they must remain unknown; but the company, who have now located it, are determined to find its bottom.

Almost two years later, the cavern was again described (as a new discovery) in print. The Daily Alta California of October 7, 1853 (v. 4, no. 282, p. 1) contained a short notice.

The Daily Alta California, San Francisco,
Monday Morning, Oct. 31, 1853.

Extraordinary, If True - The Calaveras Chronicle mentions the discovery of a very remarkable cave in Calaveras County, near the town of Vallecito.

It appears that a Frenchman was at work there at a considerable depth, and his pick displaced a rock, which laid bare an entrance to a large cave. A party afterwards descended and explored the subterranean apartments. Their report is most astonishing. They assert, that at the depth of about 300 feet, they came upon a collection of over 300 human bodies, perfectly petrified; that the hall contained an immense number of stalactytes, some of which rested on and were incorporated with the bodies. It is said that the skulls indicate a race distinct from the Indians.

A few weeks later on November 6, 1853 a more complete account was published in the same newspaper. (v. 4, no. 288 p. 1).

The Daily Alta California, San Francisco,
Sunday Morning, Nov. 6, 1853.

The Calaveras Cave

The Echo du Pacifique of Friday contains a communication from Mr. Alhino on the Calaveras Cave, which he, in company with several others, discovered a short time since. The grotto is situated among the mountains of the Stanislaus, near Columbia. The discoverers intend to exhibit the curiosities found. We condense and translate the communications.

There have been many discussions about this country and its inhabitants. We will exhibit for examination fifty-three broken and entire human heads, petrified to various degrees, from a simple deposit of calcareous matter to the hardest stone. To judge by the peculiar formation and great size of these heads, they must have belonged to a race which

exists no longer, for they have nothing in common with the heads of Indians found in other parts of America. The different deposits which cover the bones indicate that they existed anterior to the Deluge.

These objects were found a short time since in a grotto among mountains which by their aridity and abrupt character, appear to defy the curiosity of the most intrepid explorers. Nevertheless, the writer of this article, with several of his friends, resolved upon a trip over the rugged peaks and through the deep gullies. In recompense, they found a cave. At first, repelled by the unpromising appearance of the yawning gulf, the prospectors were about to retire, but their curiosity was excited, and soon after one of the party descended into the hole by means of a rope. The descent was perpendicular for about thirty feet; then there was an oblique descent of forty feet, and then another descent nearly perpendicular. At the bottom was a small opening sideways, after creeping through which, on his belly, the adventurer found himself in a large cave, completely invisible in the darkness at first, and filled with a thick air which appeared to forbid the sojourn of man. The first adventurer, after discovering this much, was followed by his companions. The deepest silence reigned in the cave: the only tenants were some bats, which were frightened from their resting places and fluttered around, and occasionally the wind would cause a dull sound among the rocks.

Having lit a couple of candles the party began to examine the cave. Before them was a large vault from which stalactites descended to the floor, in one place presenting the appearance of a large curtain, in another offering large clusters of crystals; and at one side was a large plane surface, and the roof over it was covered with little festoons. One of the explorers crept in between the table and the overhanging stalactites with a candle in his hand, and thus discovered an immense serpent lying coiled up. Frightened at the sight he drew back, and his companions went in likewise and satisfied themselves of the truth of his story.

After this they discovered nothing to interfere with their researches. At a little distance from the table they found a large number of human bones, and some bones of carnivorous animals lying pell mell; but these bones were in their natural condition, and we left to secure some heads which were more or less petrified. Some of these latter were so fixed in the stone that the discoverers could not get them unbroken. Others, however, they obtained entire besides a number of bones. The party filled several sacks with earth and made their way back to the open air.

The writer desires to be excused for not giving further details, for it is their intention to publish a pamphlet descriptive of their adventure with accurate engravings of what they saw. They name their discovery the "cave of the sepulchre" "Le puits de tombeaux."

The skulls retrieved from the cave apparently were brought to San Francisco for exhibition, because in the same issue of The Daily Alta California (p. 2), the editor writes of his personal examination of the crania.

Petrified Human Skulls - We went yesterday to satisfy our curiosity and scientific doubts by an examination of the "petrified" human bones, the history of whose discovery is related in another column. The specimens are kept in a house on the north side of Jackson street, above Kearny. The most remarkable specimens are five skulls; one of which is an ordinary skull in appearance, and the others are covered more or less with sulphate of lime, the calcareous matter which forms stalagmites and stalactites in caves. One skull is covered completely with this stoney coat, about a quarter of an inch in thickness; another skull is covered with it in places; and a third has only a slight shell scarcely thicker than coarse paper. There is no petrifaction; there is a simple deposit of sulphate of lime, which would have been deposited on any substance lying in the same place, there being a continual drip from the roof above. There are about sixty-five skulls in all, many of which were so deep in the deposit that they could not be obtained without being broken to pieces. Besides the skulls, there are a number of other bones, covered in like manner. One of the skuls [sic] is covered by eight visibly distinct layers; and the cicerone informed us that probably a century was required to form each layer. That calculation would make the relics quite venerable. The skulls are undoubtedly of Indians who lived long since. The cranial developments are very similar to those of the present Indians, though one of the skulls appear to have a very intellectual character."

After the initial excitement of discovery the cave attracted only local attention until 1922 when the construction of a new entrance passage and a circular steel staircase made it accessible to tourists.[3]

The Archaeological Deposit

The cave floor is covered with a deep deposit containing quantities of human bones, artifacts, charcoal, and a few faunal remains. This does not represent camp or habitation refuse but seems rather to be material thrown and washed into the cave. There is no indication that the aborigines ever resorted to making their homes in the inner depths of the cavern and actually this would have been impossible if present-day conditions prevailed.

The archaeological deposit consists of two distinct strata (Fig. 3). The first, capped by an unbroken dripstone layer 2-4 inches thick, is a formation of wet sticky red clay and angular stone slabs of limestone. The clay is probably the red surface soil of the surrounding hills, washed in through the entrance passage and through inlets in the limestone large enough to permit the passage of solid matter or blown in during the dry season. The walls of the cave are streaked with red in several places. Another possible source of the cave mud is from the limestone itself. Practically no limestone is pure calcium carbonate but contains impurities which weather out. The stones, which increase in size and number in the deeper levels of the deposit, represent fall from the ceiling and walls. Additional dripstone layers, are interspersed with the clay and stone. Two were encountered during excavation and others probably occur in deeper levels. The deposit, which has a known depth of at least 11 feet, begins at the north wall and terminates at the south. It slopes downward to the south and east.

The second stratum is made up of unconsolidated gray gravel liberally sprinkled with larger rocks. It appears to be redeposited river detritus washed into the cave, perhaps by recent mining operations, through a fissure in the south wall. The fissure still retains ample evidence of the passage of the gravel.

The deposit originally sloped upward to the south wall but was leveled some years ago. It covers a wide area on the west side and meets and partially overlies the red clay layer.

The Excavation

A limited, exploratory excavation was carried on in the red clay.[4] A 5 by 10 foot trench encompassing a pit previously dug by Addison Carley, owner of the cave, while in search of hidden galleries, was staked out along the north wall. The northwest section of this area was then excavated to a depth of 72 inches. Progress was necessarily slow because the calcareous layers had to be chipped away and, as excavation proceeded, increasingly larger rocks were encountered. The frequent occurrence of human bones which had to be cleared and removed also slowed down the work. A small section of the gravel deposit was dug out and screened.

Human Skeletal Remains

A heterogeneous mixture of dissociated human bones was encountered in the red clay deposit. There were no complete skulls or skeletons and only occasionally a few parts of skeleton was found directly articulated. Limb bones, jaw and skull fragments were most numerous with pelves, vertebrae and ribs noticeably scarce. This is probably the result of differential disintegration; the more porous bones, in the presence of a supply of air, decayed more rapidly because the larger cells and more open structure permitted freer access of oxygen. Many of the bones were broken; some were crushed by the weight of the deposit above.

The osseous material was found embedded in the calcareous capping and in the red clay below. Many bones were encrusted with stalagmite and some seem to have lost part of their organic material, being thoroughly impregnated with lime carbonate. The remains of eleven individuals (nine adults, and two children) were found. Each consisted of only a few bones and the remains of several persons were often mixed. A large number of isolated bones and fragments were also noted. The adult bones were large and robust. The quantity of human remains decreased strikingly below 24 inches so that in the deeper levels only a few single bones wedged between large stones were recovered. A femur was observed protruding from the side wall of the earlier excavation at a depth of 11 feet. Hundreds of complete bones and fragments removed in the course of previous digging were scattered about.

It is doubtful that the individuals found in the red clay were actually interred. There is no evidence of graves having been dug into the sticky soil and the osseous material embedded in the limestone must have originally been lying on the surface because this type of dripstone can form only on the surface. Interment below 24 inches would have been difficult because of the size and number of fallen rocks to be removed in preparing a grave. The depth of the cave itself argues against actual burial because it would have been almost impossible for a man, perhaps burdened with a corpse, to have been lowered 150 feet into the darkness of the cave floor from the ledge above to dig a grave for a fellow tribesman.

The corpses were either lowered, or more probably, thrown into the cave from the ledge above. It would have been relatively easy to lower or perhaps even carry a dead body down the entrance passage to the ledge and from here to throw it

into the chamber below. The wide scattering of human remains may indicate that the ledge was larger in prehistoric times than at present. In the process of decay the remains were scattered for a considerable distance over the slanting floor. It is conceivable that Moaning Cave was not a place of first entombment but was used instead for secondary disposal. There is no evidence of disturbance by carnivores or rodents as none of the bones bears the marks of strong teeth. Moaning Cave was certainly not an animal's den where human victims were dragged to be eaten.

Human bones have been found in other Calaveras county limestone caverns, indicating that Moaning Cave was not unique in being used as a mortuary chamber. In Mercer Cave, a large cavern of many rooms and passages, 1.1 miles north Murphys, were found a number of human bones bearing a thin calcareous encrustation.[5] The skeletal remains were in such position as to indicate that the corpses had been thrown into the first chamber of the cave through the small entrance opening. No artifacts were reported found. A number of skulls were removed from The Cave of Skulls near the Stanislaus river about two miles from Abbot's Ferry over eighty years ago.[6] These crania, like the osseous material from Mercer and Moaning caves, were coated with stalagmite. The skulls were described as lying on the surface and not buried in the deposit. Remains of bows and arrows and charcoal were also found in the cavern. O'Neal (Skull) Cave, located at the site of an abandoned placer mining camp between Sheep Ranch and Cave City, is another limestone grotto known to contain quantities of human bones.[7] The cave has a vertical shaft over 50 feet deep with other passages and rooms leading off in several directions. The bottom of the shaft and the other parts of the cave have been described as being "choked" with human and animal bones. Some artifacts and pieces of charcoal were also found. Miller Cave, situated in a canyon between Adobe and Dry Gulches, was found to contain numerous human bones, some badly broken, others complete. The bones littered the floors of several galleries and some were observed in a pool of water at the bottom of the cave. No artifacts were recovered.

Human remains have been reported from several other caves in the foothills of Calaveras county but their location is vague or the data are not complete.[8] Not all available grottoes were so utilized, however. Crystal Cave, near Cave City, first discovered by miners in 1851, so far as is known, has yielded no human skeletons. Caverns with more or less vertical shafts seem to have been preferred as tombs, perhaps because corpses thrown into them were not likely to be disturbed. Crystal Cave, easily entered by a gently sloping passage, was probably not considered suitable for disposal of the deceased.

Neither Moaning Cave nor any of the other nearby limestone grottoes seem to have been employed in recent times for entombing the dead. The Sierra Miwok, historic inhabitants of the region, either cremated or interred deceased tribesmen in rock-covered graves. The caverns, according to Miwok tradition, were frequented by a stone giant, who sallied forth at night in search of human victims to be carried to the depths to be devoured.[9] The thought of tossing corpses of fellow tribal members into caves to be eaten by this monster was abhorrent to the recent Indians.

Scattered human skeletal remains - bits of skull, isolated teeth, and fragmentary limb bones - were recovered from the gravel formation in Moaning Cave. Many of these seemed to be water-worn. Less fragmentary bones were observed in the passage leading to the underground lake.

Cultural Material

Artifacts were found in both strata.[10] Those from the red clay are all ornament types located in close proximity to human skeletal material. A greater variety of cultural objects was recovered in the gravel.

A total of 13 more or less complete abalone ornaments and 6 fragmentary ones were taken from the red clay. These exhibit a great diversity in form and also vary in such details as size, position and number of perforations, edge decoration and finish. The following forms occur:

1. Circular; 70 mm. diameter; one central and one peripheral hole; serrated edge; ground on both sides; 1 specimen (Fig. 3a).

2. Circular; 60-70 mm. diameter; 1 central perforation; some of these may originally have had a peripheral perforation as well but the edges are broken away so that this could not be definitely determined; serrated edge (one partially incised); rough outer layer of shell visible on back; 4 specimens (Fig. 3b)[2]

3. Circular; 25 mm. diameter; 2 peripheral holes (third hole started on back); radially incised edge; rough outer layer of shell on back; 1 specimen. (Figure 3c).

4. Rectangular; 22 x 29 mm.; single peripheral perforation; unmodified edge; rough outer layer of shell on back; 1 specimen. (Fig. 3d).

5. Rectangular; 24 x 40 mm.; 2 peripheral holes; unmodified edge; ground on both sides (?); 1 specimen (Fig. 3e).

6. Rectangular; 12 x 20 mm.; 2 peripheral holes at opposite ends of the ornament; unmodified edge; rough outer layer of shell on back; 1 specimen (Fig. 3f.).

7. Rectangular; 20 x 40 mm.; 1 peripheral hole, 1 central or below; serrated edge; rough outer layer of shell on back; 1 specimen (Fig. 3g).

8. Triangular, elongate; 8 x 42 mm.; 1 peripheral hole; unmodified edge; rough outer layer of shell on back; 1 specimen (Fig. 3h).

9. Triangular, isoceles; 15 x 15 x 20 mm.; 2 central perforations; unmodified edge; rough outer layer of shell on back; 2 specimens (Fig. 3i).

There was a definite preference for shells of the green-backed or black abalone (Haliotis cracherodii) and where identification is possible, this proves to be the species utilized. The surface of some of the ornaments is badly eroded.

Beads manufactured from the body whorl of olive (Olivella biplicata) shells were numerous in the red clay. Three types are recognizable:

1. Crude "half" shells which retain a trace of the inner whorl at one end; 15-20 mm.; central perforation; 115 specimens (Fig. 3j).

2. Elongate-saucers ("saddle") which have no vestige of the whorl; central perforation; 10-12 mm.; 25 specimens; 14 of these were found together in

one necklace and 11 in another; true "saddles" were not mixed with the "half" shells, though some of the eroded "half" shells closely resemble this type. (Fig. 3k)

3. Small, round, slightly cupped disks; 4 mm.; 1 central perforation; 25 specimens. (Fig. 3 l)

The small disk olivellas occurred in association with the larger beads and seem to have been strung in groups of five or more between clusters of larger ones. A small (3 x 10 mm.) fragment of a mammal bone cut at both ends, possibly a bead, was also removed from the red clay. (Fig. 3m)

The abundance of shell artifacts indicates extensive trade, either directly or through intermediary tribes, with the coastal peoples. The recent Sierra Miwok made journeys to the shores of Monterey Bay to procure shells which were carried home to be made into beads and pendants and it is possible that similar trading expeditions were carried on in prehistoric times as well.[11]

Artifacts of several types were found in the gravel:

1. Triangular obsidian point; 30 mm. long; 20 mm. wide, stemmed and barbed; serrated edge; 1 specimen (Fig. 3p).

2. Smooth, river cobble pestles; 15 cm. long, 7 cm. wide; 2 specimens.

3. Chipped quartz fragment, possibly a crude scraper; 30 mm. long; 1 specimen.

4. Cup-shaped pipe bowl or pipe inset of polished white stone; 33 mm. long, 25 mm. diameter; 1 specimen (Fig. 3n).

5. Ornament (?) of ground stalagmite; 50 mm. diameter; 1 specimen (Fig. 3 o).

6. Crude, "half" shell Olivella bead; 17 mm.; 1 large (punched?) central perforation; 1 specimen (Fig. 3q).

7. Small, round, slightly cupped Olivella disk beads; 4 mm. diameter; 1 central perforation; 97 specimens (Fig. 3r).

No abalone ornaments were found in the gravel formation.

Charcoal and Faunal Remains

Carbonized vegetal material was observed in both strata. Isolated fragments and thin bands resembling burnt sticks were contained in the red clay. These may represent the residue of torches carried by corpse bearers to light their way in the upper passage which, when charred or extinguished, were thrown into the cave. It is also possible that fires were lighted on the ledge and the embers pushed off into the darkness of the cave below. Charred fragments of wood occurred scatteringly in the gravel. No extensive charcoal or ash lenses or blackened stones such as would indicate the presence of a campfire or hearth were located.

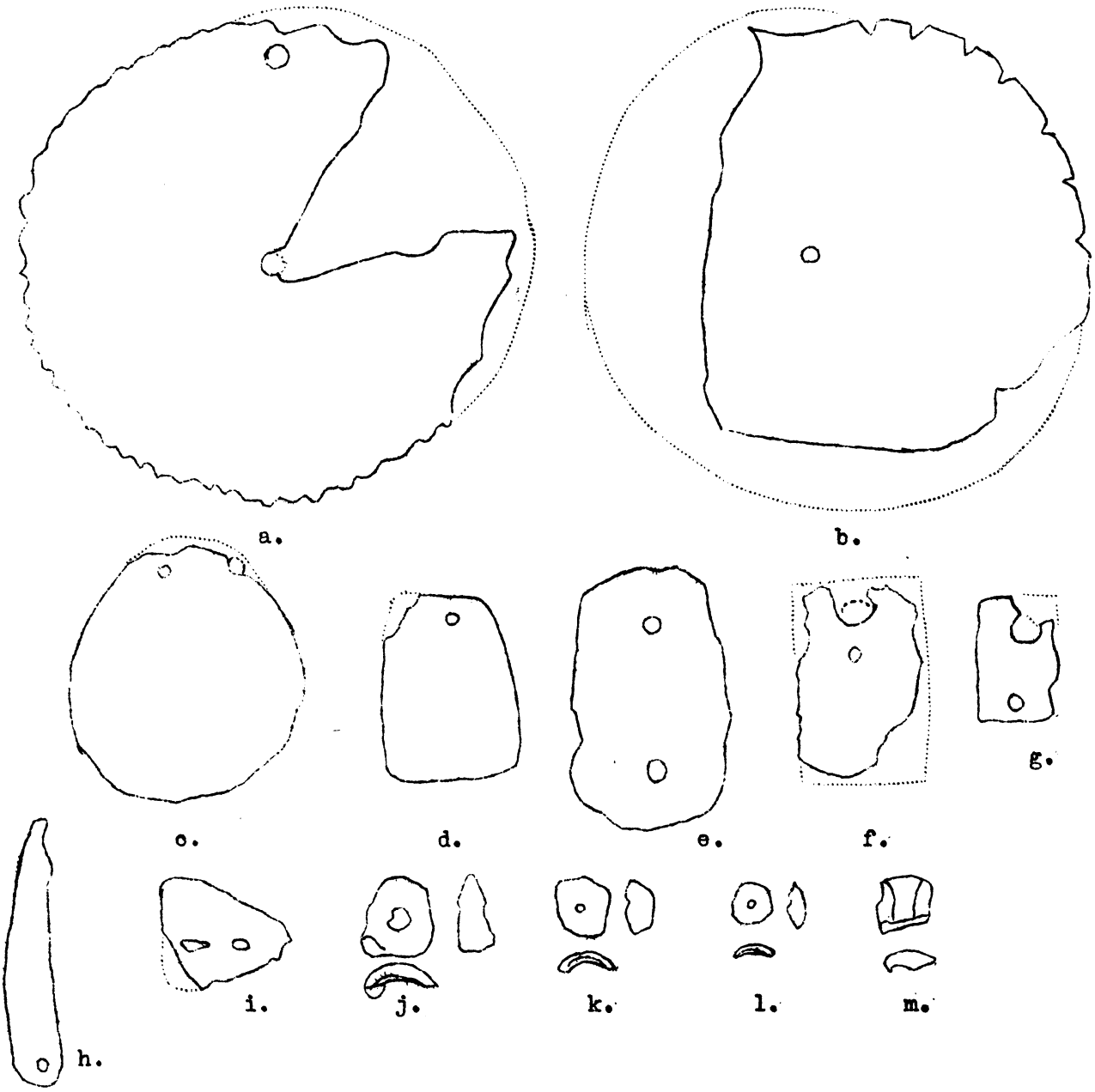

Figure 4.
a-m: Shell ornaments and beads from red clay deposit.
n-r: Artifacts from gravel deposit.

A few mammal bones, all of extant or recently present species, were recovered. The animals represented were:[12]

In red clay stratum: Coyote (Canis latrans): incisor tooth, 1; humerus fragments, 2; skull, 1 (removed from cave some years ago and described as being coated with stalagmite); unidentified, 3 (perhaps coyote).

In gravel stratum: Elk (Cervus sp.), all specimens of immature, possibly the same individual; mandible, right, 1; metapodial, 1; scapula, 1. Rabbit (Sylvilagus sp.): femur, fragments, 2; humerus, fragment, 1; ulna, fragment 1.
Gopher (Thomomys sp.): humerus, fragments, 2. Unidentified - 3 (probably small rodent).

Antiquity of the Deposit

The determination of the more or less precise age of a perhistoric cultural deposit usually offers considerable difficulty and the one in Moaning Cave is no exception. The red clay stratum with its unbroken sheet of stalagmite covering and the vast quantity of human bones contained in it, gives an initial impression of appreciable antiquity. The cultural material, when fitted into the known framework of Californian archaeology, does not, however, indicate any great age. The ornament and bead types are predominantly those of the Middle Horizon of the Sacramento Valley, a cultural period estimated as beginning about 1500 B.C. and terminating about 500 A.D.[13] The exclusive use of green-backed abalone shell, the circular and serrated ornament type with two perforations, one central and one edge, and the "saddle" olivella beads, are all Middle period forms. The small round Olivella cupped disk bead is most characteristic of Middle Horizon sites, but also occurs in the Late culture period. The "half" shell olive bead is either Middle or Late in time. The cultural inventory thus strongly indicates contemporaneity with the Valley Middle Horizon. In view of well-established trade routes and relations, there is no reason to suspect cultural lag of these types in the Sierra foothills. No depth differences in artifacts were noted.

The gravel stratum is presumably of more recent origin than the red clay. Its unconsolidated condition and its stratigraphic position overlying part of the red clay indicates that it was deposited later. The artifacts are too few in number and not sufficiently distinctive to permit anything more than a guess as to their cultural affiliation. It is difficult to see how these cultural remains became incorporated in the gravel, unless trash from a village site above the cave was washed in by a flood or by placer mining.

Summary and Conclusions

The excavation was not extensive enough to reconstruct the entire history of human utilization of Moaning Cave. Only a few general conclusions can be made: (a) there are two distinct archaeological strata which differ in age; (b) the cave was not a human residence but was used solely for burial purposes. A more exhaustive investigation, not only of Moaning Cave but of nearby caves and surface sites is needed before any definitive conclusions can be drawn. The archaeology of the Sierra foothills is unknown, making it impossible to fit the Moaning Cave material into any local cultural sequence. The temporal position of the archaeological deposit is uncertain. It seems to be entirely prehistoric,

though of no great antiquity. The cultural evidence suggests that the cave was extensively used in Middle Horizon times, but not during the immediate proto-historic or historic period.

A geological study of the cavern and particularly of the stalagmite layers in the floor may give some clue as to the exact age of the red clay layer. Certain favorably situated, slow-growing stalagmites record major seasonal climatic fluctuations occurring during their lifetime.[14] The rate of dripstone growth or the development of annual growth rings which can be correlated with tree rings perhaps can be utilized to age the deposit. Dating by radioactive carbon (C-14) may be possible and samples of charcoal were collected for this purpose.

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NOTES

1. The cave received its present name from the low moaning sound it formerly emitted. This was caused either by slight changes in temperature or by wind blowing into the cave mouth. Since the construction of a steel staircase in 1922, the cave has ceased to "moan."

2. The Sacramento Times article could not be located. The plate referred to was not reproduced in The Daily Alta California.

3. A general descriptive article of the cave and the details of the construction of the passageway and staircase appeared on page 4 of the special Mother Lode Highway Edition of the Calaveras Prospect published on November 24, 1923.

4. The cavern was visited and its archaeological possibilities estimated in June, 1950 by R. F. Heizer, Director of the University of California Archaeological Survey and A. E. Treganza of San Francisco State College. At Heizer's suggestion, William J. Wallace, Archaeologist, University of California Archaeological Survey, and Donald W. Lathrap, Assistant Archaeologist, worked in the cave September 17-23, 1950.

5. Merriam, J. C., 1906, 1907.

6. Whitney, 1867. See also Speleological Society Report cited in note 8.

7. Cliff, 1929.

8. Human remains have also been found in limestone caverns in other parts of California. Hawver Cave, near Cool in El Dorado County yielded human bones and those of extinct animals. In Stone Man Cave, near Baird in Shasta county, was found a portion of a human skeleton embedded in stalagmite. References to these finds are listed in Heizer, 1948, pp. 10-12. Additional published information on Sierran limestone caves of this region is cited in the Monthly Report of the Stanford Grotto, National Speleological Society, Vol. 1, Nos. 5, 7, 1951.

9. Merriam, 1909, pp. 805-806.

10. Artifacts from the excavation and those in the collection of Addison Carley, owner of the Cave, are included in the description.

11. Barrett and Gifford, 1933, pp. 251-256.

12. The animal bones were identified by J. Arthur Freed.

13. Heizer, 1949, p. 39.

14. This method of dating by stalagmite growth is described in detail in Allison, 1926.

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