

Achæans, and the Laconians, whom he recognizes among the nations mentioned in the Egyptian texts (Akuaivasa, Sakalusa, etc.). It is to these, it would seem, that was due the invention of the sword, which first appears in Cyprus in the form of a much enlarged Cyprian dagger, and is found associated with Mykenæ pottery. It is also at this time that defensive metal armor occurs. Many of the statues of gods, priests, and others exhumed by Dr. Richter are represented wearing the round helmet with a ball-crest, which is depicted upon the Egyptian monuments as especially belonging to the Mediterranean peoples; and their general aspect also agrees with that attributed to these races by the Egyptian artists.

It will be remembered that these round helmets are mentioned, along with coats of mail, in Homer; and that, in the great epic, Agamemnon is represented as having obtained his equipment from Cyprus. The Cyprians continued famous as metallurgists, and, even after iron was introduced, their swords remained celebrated—at least we may judge so from the fact that Alexander the Great is stated to have carried a Cyprian sword.

Dr. Richter is now engaged upon the publication of a large illustrated work which will give a full account of his discoveries, with his interpretation of the facts that he has had the good fortune to bring to light in the twelve years of his Cyprian explorations. It is sincerely to be desired that he may be induced to follow Mr. Petrie's example; and that, along with the exhaustive volume more particularly intended for specialists, he will also publish a *résumé* embodying his principal results.

CLIFF- AND CAVE-DWELLERS OF CENTRAL ARIZONA.

BY J. W. TOURNEY, TUCSON, ARIZONA.

THERE is no part of the United States that is of more interest to the archæologist than our great south-west. This region, which includes all of Arizona, has but little rain, and during the long summer lies scorching under an almost tropical sun. It is true that in the mountains of the Territory the heat is greatly lessened, but from our geographical position we are subject to prolonged droughts for weeks and months at a time.

It is a question whether our present meteorological conditions are the same as when the cave- and cliff-dwellers cultivated fields upon our now barren mesas. Throughout this vast territory are hundreds of ruined casas and vacant caves, whose silent walls and rough-hewn stones are the only history we have of this early people. Whither they have gone and who they were is shrouded in the grave; neither the fierce Apache nor the more gentle tribes of the south know who were the architects of these interesting and wonderful structures. The Zuni and Moqui have been questioned, but without result. They all shake their heads. Even the oldest of the Indians, with traditions extending back many generations, know nothing of the builders of these old stone and adobe walls which have withstood the elements for so many years. At some future time these silent walls may speak out through the mind of man and give to the world glimpses into the history of a people who are now lost in antiquity. Peculiar marks on rocks and pottery all mean something, and the world is waiting for someone to unlock these closets and let a ray of light upon their mysterious symbols.

In the valley of the Verde River, not far from the now abandoned fort, and on the surrounding cliffs and hills are many old ruins. Many of these are as interesting and as little-known as any to be found in the south-west. Far from railroad and in a wild and rugged region, it is not strange that they have been studied so little. The banks of the river and many of its tributaries are lined with ruins. The prominent cliffs are crowned with walls of great flat stones, many of them as erected ages ago.

The clear water of Beaver Creek reaches the Verde a few rods above the old fort. A ride of several miles along this creek brings one to high cliffs extending a hundred or more feet above the waters of the creek. In the perpendicular walls of one of these cliffs is a well-preserved ruin known as Montezuma's castle. It is midway between the rim of the cliff and the bed of the stream, and is neither house nor cave, but a combination of the two. Not accessible from the summit of the cliff, it can only be reached

from below, and even here not without the use of a ladder, which, if short, must be pulled up from one ledge to another in making the ascent. The entire front is of artificial walls built of large, flat pieces of limestone, with openings here and there for doors and windows. The rooms are small, only about five feet to ceiling. Generally a small opening two or three feet in diameter joins one room with another, and a similar orifice in the ceiling

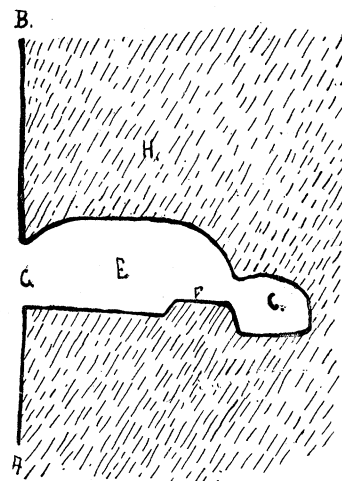


Diagram showing vertical section of cave at right-angles to cliff. The line *AB* represents face of cliff; *C*, a small cave at rear; *E*, main cave; *F*, rock bench; *G*, entrance; *H*, rock of cliff.

gives access to the room above. The ceilings are so low that steps are not necessary to pass from the first floor consecutively through the several stories of the structure. The openings in the ceilings never fall directly under each other. If the orifice is in the north-west corner in the first ceiling, it will be in the south-east corner in the next ceiling above, and so alternating back and forth to the top. This of course eliminates the possibility of falling more than five or six feet, or the height of one story. The

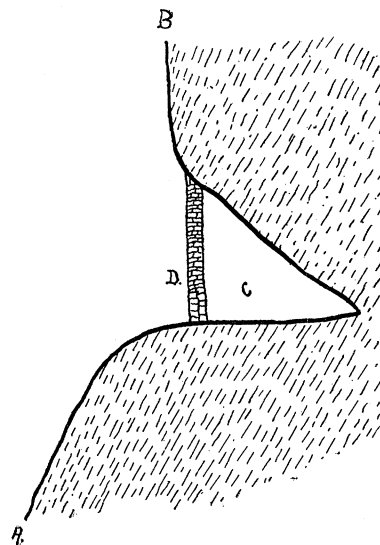


Diagram showing vertical section through large horizontal fissure; *AB*, line representing face of cliff; *C*, enclosed room; *D*, wall of masonry.

Type of pre-historic dwelling along the Grand Cañon of the Colorado River.

floors are mostly of flat stones supported on timber cut from the surrounding mountains.

Many of the timbers are perfectly sound, while others, where the rains have beaten against them, have decayed away and the floors fallen in. A few of the rooms facing the creek have cross-walls built of limestone, without mortar or cement of any kind. They all show considerable skill in their construction. The rooms at the rear are dark, dungeon-like caves hollowed from the solid

rock, and are now the abode of thousands of bats, which fly about in great numbers when disturbed by the sight-seeker.

A few miles above Montezuma's castle, on the opposite bank of the creek, a conspicuous cone-like mountain rises a few hundred feet above the surrounding country. On making the ascent, the summit was found to be a narrow rim enclosing a crater some three hundred feet in diameter and with nearly perpendicular walls. Standing on the rim, one can look down a hundred feet upon the dark-blue water of a small lake in the bosom of the mountain. The lake, a hundred yards in diameter and of unknown depth, is known as Montezuma's well. In the steep sides of the crater are a number of caves, which at one time were the abode of man. A few are natural, but the greater number are the result of human effort.

The rim is crowned with the fallen walls of an ancient ruin more than a hundred feet long. Far down the mountain-side, below the level of the water in the crater, the outlet of the well flows from between an opening in the rocks. This stream is large and constant, and at present is used to irrigate a ranch in the valley below. Ages ago the builders of caves and castles utilized this same stream to irrigate portions of the neighboring rich valley.

A short distance down the valley a stone and cement ditch of pre-historic make can be easily traced for many rods. Ranchmen in building ditches frequently follow the courses of ancient ones. In July, last year, in constructing an irrigating ditch near old

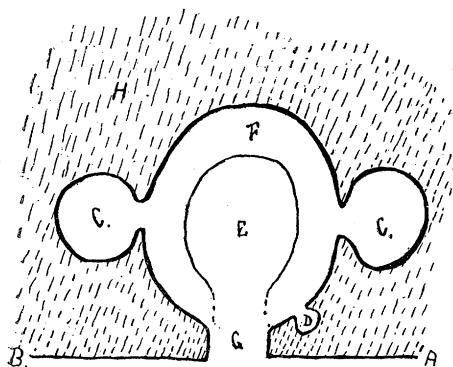


Diagram showing floor-plan of cave. The line *AB* represents face of cliff; *C*, lateral caves; *E*, main cave; *F*, rock bench surrounding main cave; *G*, entrance; *D*, small cavity hollowed in rock near entrance; *H*, rock of cliff.

Fort Verde, on the west side of the river, the workmen found evidences of an ancient ditch buried some twelve feet below the surface. Many of the old ditches have been found upon mesas where under present conditions it would be impossible to get water to fill them. Frequently they lead from what are now dry washes which only carry water a few days at a time and then only after heavy rains. This seems to indicate that there was a time when the now dry washes carried water much more constantly than at present.

More numerous than the casa and cliff ruins are the many caves excavated from the sand and limestone cliffs along the east bank of Verde River for some miles below the old fort. At a distance the openings into the caves look like black spots on the white cliffs. They are arranged in long rows, tier above tier, and are nearly alike in structure. All are more or less inaccessible from the valley below. The entrance is an irregular arched opening about four feet high and from half to two-thirds as wide. The cave proper is about twelve feet in diameter and from four to six feet to ceiling. The room is more or less circular in outline. A rock bench from twelve to eighteen inches high occupies the cave on all sides except at the entrance. This bench is about three feet wide, and gently slopes toward the centre of the room. Charred embers, meates, grinders, broken pottery, and fragments of reed mats were scattered about or were under the heaps of *débris* which covered the floor. Opening into the main cave at either side and also frequently at the rear were smaller ones, which were three to five feet in diameter and about the same to ceiling. In nearly all the caves visited the floors of the smaller ones were

from one and one-half to two and one-half feet below the floor of the main room.

It is probable that the small caves were used for the storage of grains and other material. No light finds its way into the small lateral and rear caves but the little that comes in through the small openings leading to the central room. In two or three instances I found two large caves joined by a small passage-way uniting the lateral caves. Occasionally, hollowed from the wall, at one or both sides of the main entrance, some two feet above the floor, were small pocket-like cavities about twelve inches in diameter and nearly spherical in outline. The openings to them were four or five inches across, so large that one could easily reach with the hand any object that might be placed therein. Not only the floors of the caves, but in many instances the entire face of the cliffs, were covered with broken pottery, some of it of much better quality than that made by the Indians of Arizona to-day.

So far as I have had opportunity of examining, the caves of this region are much different from those in the cliffs along the Colorado River and elsewhere in the territory. Here it is evident they have been hollowed out by human effort. In other localities natural caves and large horizontal fissures in the cliffs were the homes of this early people.

PALÆOLITHIC MAN IN NORTH AMERICA.

BY DR. C. C. ABBOTT.

THE ghost of palæolithic man has arisen to plague the geologists at Washington; and those that look upon them as little gods are all shouting "Me, too." As the cause of all this mischief, it is fitting that I should speak in my own defence. The scientific men of Washington claim a monopoly of knowledge and so occupy a peculiar position, self-assumed, of course. That which is offered the world independently of them, must be stamped by their approval or condemned, and it is never the former. This condition of affairs really handicaps them at the outset, and not one can enter the field unbiassed. Indeed, they go out instructed to bring in such and such results, and none other. This is pre-eminently so in the question of the antiquity of man in North America. The recent appearance of Wright's book, "Man and the Glacial Period," has set their pens and tongues wagging, but palæolithic man is not to be downed even by such an array of notables marshalled to defeat him. Salisbury's cunning argumentation, McGee's shaggy front, Holmes's imperious "begone!" and Brinton's persuasive smile do not make him afraid. He returned to earth in his own good time and came to stay!

Of the alleged evidences brought forward by others I have nothing to say, but something to record concerning my own investigations, that may have a bearing on the question. We must admit that, at some given day in the past, man appeared on this continent; but just when, no one has ventured to assert. Certainly in no one communication to scientific or popular literature have I done more than claim the discovery of evidence of his comparatively primitive condition when he did arrive; and now after twenty years of careful, unremitted study of the valley of the Delaware River, I see no reason to change my opinion, but a great deal to substantiate it.

Were the evidences of man's occupancy of this region one associated and confused mass, an attempt made to dissociate its components into rude and more elaborate forms and to say of the former, *this is old*, and of the latter, *not so ancient*, then the scientific world might well be up in arms and cry down the apparent absurdity — but this is not the case.

Of course, if we claim, as, for instance, Mr. Holmes practically does, in spite of denial, that every so-called palæolithic implement is a "reject," whether the man who threw it aside lived in Europe or America, the whole subject falls to the ground; but accepting palæolithic man as a one-time feature of other continents, and believing no geological reasons have been brought forward why he might not have lived in North America also, it is justifiable to consider the archæological significance of such objects as the late Wyman said were not distinguishable from European forms, except by the material of which they were made.