

Stone Shadows:

Exploring
Arizona's Ancient
Dwellings



It seemed to me in making a plan for archeological field work in, that the prehistoric cliff houses, cave dwellings, and ruined pueblos of Arizona afforded valuable opportunities for research, and past experience induced me to turn my steps more especially to the northern and northeastern parts of the territory. The ruins of ancient habitations in these regions had been partially, and, I believe, unsatisfactorily explored, especially those in a limited area called Tusayan, now inhabited by the Moki or Hopi Indians. These agricultural people claim to be descendants of those who once lived in the now deserted villages of that province. I had some knowledge of the ethnology of the Hopi, derived from several summers' field work among them, and I believed this information could be successfully utilized in an attempt to solve certain archeological questions which presented themselves. I desired, among other things, to obtain new information on the former extension, in one direction, of the ancestral abodes of certain clans of the sedentary people of Tusayan which are now limited to six pueblos in the northeastern part of the territory. In carrying out this general plan I made an examination of cliff dwellings and other ruins in Verde valley, and undertook an exploration of two old pueblos near the Hopi villages. The reason which determined my choice of the former as a field for investigation was a wish to obtain archeological data bearing on certain Tusayan traditions. It is claimed by the traditionists of Walpi, especially those of the Patki or Water-house phratry, that their ancestors came from a land far to the south of Tusayan, to which they give the name Palatkwabi. The situation of this mythic place is a matter of considerable conjecture, but it was thought that an archeological examination of the country at or near the headwaters of the Rio Verde and its tributaries might shed light on this tradition. It is not claimed, however, that all the ancestors of the Tusayan people migrated from the south, nor do I believe that those who came from that direction necessarily passed through Verde valley. Some, no doubt, came from Tonto Basin, but I believe it can be shown that a continuous line of ruins, similar in details of architecture, extend along this river from its junction with Salt river to well-established prehistoric dwelling places of the Hopi people. Similar lines may likewise be traced along other northern tributaries of the Salt or the Gila, which may be found to indicate early migration stages. The ruins of Verde valley were discovered in by Antoine Leroux, a celebrated guide and trapper of his time, and were thus described by Whipple, Ewbank, and Turner in the following year: The river banks were covered with ruins of stone houses and regular fortifications; which, he [Leroux] says, appeared to have been the work of civilized men, but had not been occupied for centuries. They were built upon the most fertile tracts of the valley, where were signs of acequias and of cultivation. The walls were of solid masonry, of rectangular form, some twenty or thirty paces in length, and yet remaining ten or fifteen feet in height. The buildings were of two stories, with small apertures or loopholes for defence when besieged.... In other respects, however, Leroux says that they reminded him of the great pueblos of the Moquinos. A fragment of folklore, which is widely distributed among both the aboriginal peoples of Gila valley and the modern Tusayan Indians, recounts how the latter were at one time in communication with the people of the south, and traditions of both distinctly connect the sedentary people of Tusayan with those who formerly inhabited the great pueblos, now in ruins, dotting the plain in the delta between Gila and Salt rivers. That archeology might give valuable information on this question had long been my conviction, and was the main influence which led me to the studies recorded in the following pages. An examination of a map of Arizona will show that one of the pathways or feasible routes of travel possible to have been used in any connection between the pueblos of the Gila and those of northern Arizona would naturally be along Rio Verde valley. Its tributaries rise at the foot of San Francisco mountains, and the main river empties into the Salt, traversing from north to south a comparatively fertile valley, in the main advantageous for the subsistence of semisedentary bands in their migrations. Here was a natural highway leading from the Gila pueblos, now in ruins, to the former villages in the north. The study of the archeology of Verde valley had gone far enough to show that the banks of the river were formerly the sites of many and populous pueblos, while the neighboring mesas from one end to another are riddled with cavate dwellings or crowned with stone buildings. Northward from that famous craterlike depression in the Verde region, the so-called Montezuma Well on Beaver creek, one of the affluents of the Rio Verde, little archeological exploration had been attempted. There was, in other words, a break in the almost continuous series of ruins from Tusayan as far south as the Gila.

Ruined towns had been reported as existing not far southward from San Francisco mountains, and from there by easy stages the abodes of a former race had been detected at intervals all the way to the Tusayan pueblos. At either end the chain of ruins between the Tusayan towns and the Gila ruins was unbroken, but middle links were wanting. All conditions imply former habitations in this untrodden hiatus, the region between the Verde and the Tusayan series, ending near the present town of Flagstaff, Arizona; but southward from that town the country was broken and impassable, a land where the foot of the archeologist had not trodden. Remains of human habitations had, however, been reported by ranchmen, but these reports were vague and unsatisfactory. So far as they went they confirmed my suspicions, and there were other significant facts looking the same way. The color of the red cliffs fulfilled the Tusayan tradition of Palatkwabi, or their former home in the far south. Led by all these considerations, before I took to the field I had long been convinced that this must have been one of the homes of certain Hopi clans, and when the occasion presented itself I determined to follow the northward extension of the ancient people of the Verde into these rugged rocks. By my discoveries in this region of ruins indicative of dwellings of great size in ancient times I have supplied the missing links in the chain of ancient dwellings extending from the great towns of the Gila to the ruins west of the modern Tusayan towns. If this line of ruins, continuous from Gila valley to Tusayan and beyond, be taken in connection with legends ascribing Casa Grande to the Hopi and those of certain Tusayan clans which tell of the homes of their ancestors in the south, a plausible explanation is offered for the many similarities between two apparently widely different peoples, and the theory of a kinship between southern and northern sedentary tribes of Arizona does not seem as unlikely as it might otherwise appear. The reader will notice that I accept without question the belief that the so-called cliff dwellers were not a distinct people, but a specially adaptive condition of life of a race whose place of habitation was determined by its environment. We are considering a people who sometimes built dwellings in caverns and sometimes in the plains, but often in both places at the same epoch. Moreover, as long ago pointed out by other students, the existing Pueblo Indians are descendants of a people who at times lived in cliffs, and some of the Tusayan clans have inhabited true cliff houses in the historic period. By intermarriage with nomadic races and from other causes the character of Pueblo consanguinity is no doubt somewhat different from that of their ancient kin, but the character of the culture, as shown by a comparison of cliff-house and modern objects, has not greatly changed. While recognizing the kinship of the Pueblos and the Cliff villagers, this resemblance is not restricted to any one pueblo or group of modern pueblos to the exclusion of others. Of all modern differentiations of this ancient substratum of culture of which cliff villages are one adaptive expression, the Tusayan Indians are the nearest of all existing people of the Southwest to the ancient people of Arizona. The more southerly ruins of Tusayan, which I have been able satisfactorily to identify and to designate by a Hopi name, are those called Homolobi, situated not far from Winslow, Arizona, near where the railroad crosses the Little Colorado. These ruins are claimed by the Hopi as the former residences of their ancestors, and were halting places in the migration of certain clans from the south. They were examined by of the Bureau of American Ethnology, in but no report on them has yet been published. While, however, the Homolobi group of ruins is the most southerly to which I have been able to affix a Hopi name, others still more to the southward are claimed by certain of their traditions. The Hopi likewise regard as homes of their ancestors certain habitations, now in ruins, near San Francisco mountains. In a report on his exploration of Zuñi and Little Colorado rivers in. Sitgreaves called attention to several interesting ruins, one of which was not far from the "cascades" of the latter river. After ascending the plateau, which he found covered with volcanic detritus, he discovered that "all the prominent points" were "occupied by the ruins of stone houses, which were in some instances three stories in height. They are evidently," he says, "the remains of a large town, as they occurred at intervals for an extent of eight or nine miles, and the ground was thickly strewn with fragments of pottery in all directions." In a portion of Colonel expedition, under, examined the cliff houses in Walnut canyon, and in ruins north of San Francisco mountains having one, two, or three rooms, each "built of basaltic cinders and blocks of lava." These explorers likewise reported ruins of extensive dwellings in the same region made of sandstone and limestone.

At about north of the mountains mentioned they discovered a small volcanic cone of cinders and basalt, which was formerly the site of a village or pueblo built around a crater, and estimated that this little pueblo contained, with a plaza occupying one-third of an acre of surface. Twelve miles eastward from San Francisco mountains they found another cinder cone resembling a dome, and on its southern slope, in a coherent cinder mass, were many chambers, of which one hundred and fifty are said to have been excavated. They mention the existence on the summit of this cone of a plaza inclosed by a rude wall of volcanic cinders, with a carefully leveled floor. The former inhabitants of these rooms apparently lived in underground chambers hewn from the volcanic formation. Eighteen miles farther eastward was another ruined village built about the crater of a volcanic cone. Several villages were discovered in this locality and many natural caves which had been utilized as dwellings by inclosing them in front with walls of volcanic rocks and cinders. These cavate rooms were arranged tier above tier in a very irregular way. At this place three distinct kinds of ruins were found—cliff villages, cave dwellings, and pueblos. Eight miles southeastward from Flagstaff, in Oak creek canyon, a cliff house of several hundred rooms was discovered. It was concluded that all these ruins were abandoned at a comparatively recent date, or not more than three or four centuries ago, and the Havasupai Indians of Cataract canyon were regarded as descendants of the former inhabitants of these villages. The situation of some of these ruins and the published descriptions would indicate that some of them were similar to those described and figured by Sitgreaves, to which reference has already been made. In two amateur explorers, George Campbell and Everett Howell, of Flagstaff, reported that they had found, about eighteen miles from that place, several well-preserved cliff towns and a remarkable tunnel excavation. The whole region in the immediate neighborhood of San Francisco mountains appears, therefore, to have been populated in ancient times by an agricultural people, and legends ascribe some of these ruins to ancestors of the Hopi Indians. There are several ruins due south of Tusayan which have not been investigated, but which would furnish important contributions to a study of Hopi migrations. Near Saint Johns, Arizona, likewise, there are ruins of considerable size, possibly referable to the Cibolan series; and south of Holbrook, which lies about due south of Walpi, there are ruins, the pottery from which I have examined and found to be of the black-and-white ware typical of the Cliff people. Perhaps, however, no ruined pueblo presents more interesting problems than the magnificent Pueblo Grande or Kintiel, about north of Navaho Springs. This large ruin, lying between the Cibolan and Tusayan groups, has been referred to both of these provinces, and would, if properly excavated, shed much light on the archeology of the two provinces. Kinnazinde lies not far from Kintiel. The ruins reported from Tonto Basin, of which little is known, may later be found to be connected with early migrations of those Hopi clans which claim southern origin. From what I can judge by the present appearance of ruins just north of the Mogollon mountains, in a direct line between Tonto Basin and the present Tusayan towns, there is nothing to show the age of these ruined villages, and it is quite likely that they may have been inhabited in the middle of the sixteenth century. While it is commonly agreed that the province of "Totontec," which figures extensively in certain early Spanish narratives, was the same as Tusayan, the linguistic similarity of the word to "tonto" has been suggested by others. In the troublesome years between the Hopi, decimated by disease and harried by nomads, sent delegates to Prescott asking to be removed to Tonto Basin, and it is not improbable that in making this reasonable request they simply wished to return to a place which they associated with their ancestors, who had been driven out by the Apache. Totontec is ordinarily thought to be the same as Tusayan, but it may have included some of the southern pueblos now in ruins west of Zuñi. Having determined that the line of Verde ruins was continued into the Red-rock country, it was desirable to see how the latter compared with those nearer Tusayan. This necessitated reexamination of many ruins in Verde valley, which was my aim during the most of June. I followed this valley from the cavate dwellings near Squaw mountain past the great ruin in the neighborhood of Old Camp Verde, the unique Montezuma Well, to the base of the Red-rocks. Throughout this region I saw, as had been expected, no change in the character of the ruins great enough to indicate that they originally were inhabited by peoples racially different. Stopped from further advance by a barrier of rugged cliffs, I turned westward along their base until I found similar ruins, which were named Palatki and Honanki. Having satisfied myself that there was good evidence that the numbers of ancient people were as great here as at any point in the Verde valley and that their culture was similar.

I continued the work with an examination of the ruins north of the Red-rocks, where there is substantial evidence that these were likewise of the same general character. The last two months of the summer, July and August, were devoted to explorations of two Tusayan ruins, called. In this work, apparently unconnected with that already outlined, I still had in mind the light to be shed on the problem of Tusayan origin. The question which presented itself was: How are these ruins related to the modern pueblos? Awatobi was a historic ruin, destroyed in, and therefore somewhat influenced by the Spaniards. Many of the survivors became amalgamated with pueblos still inhabited. Its kinship with the surviving villagers was clear. Sikyatki, however, was overthrown in prehistoric times, and at its destruction part of its people went to Awatobi. Its culture was prehistoric. The discovery of what these two ruins teach, by bringing prehistoric Tusayan culture down to the present time and comparing them with the ruins of Verde valley and southern Arizona, is of great archeological interest. While engaged in preparing this report, having in fact written most of it, I received valuable article on the Verde ruins, in which special attention is given to the cavate lodges and villages of this interesting valley. This contribution anticipates many of my observations on these two groups of aboriginal habitations, and renders it unnecessary to describe them in the detailed manner I had planned. I shall therefore touch but briefly on these ruins, paying special attention to the cliff houses of Verde valley, situated in the Red-rock country. This variety of dwelling was overlooked in both Mearns' and Mindeleff's classifications, from the fact that it seems to be confined to the region of the valley characterized by the red-rock formation, which appears not to have been explored by them. The close resemblance of these cliff houses to those of the region north of Tusayan is instructive, in view of the ground, well taken, I believe, by that there is a close likeness between the Verde ruins and those farther north, especially in Tusayan. The ruined habitations in the valley of the Rio Verde may be considered under three divisions or types, differing in form, but essentially the same in character. In adopting this classification, which is by no means restricted to this single valley, I do not claim originality, but follow that used by the best writers on this subject. My limitation of the types and general definitions may, however, be found to differ somewhat from those of my predecessors. The three groups of ruins in our Southwest are the following: Dependent habitations. In the first group are placed those ancient or modern habitations which are isolated, on all sides, from cliffs. They may be situated in valleys or on elevations or mesas; they may be constructed of clay, adobe, or stone of various kinds, but are always isolated from cliffs. They are single or multiple chambered, circular or rectangular in shape, and may have been built either as permanent habitations or as temporary outlooks. Their main feature is freedom, on all sides except the foundation, from cliffs or walls of rock in place. The second group includes those not isolated from natural cliffs, but with some part of their lateral walls formed by natural rock in situ, and are built ordinarily in caverns with overhanging roofs, which the highest courses of their walls do not join. Generally erected in caves, their front walls never close the entrances to those caverns. This kind of aboriginal buildings may, like the former, vary in structural material; but, so far as I know, they are not, for obvious reasons, made of adobe alone. The third kind of pueblo dwellings are called cavate dwellings or lodges, a group which includes that peculiar kind of aboriginal dwelling where the rooms are excavated from the cliff wall, forming caves, where natural rock is a support or more often serves as the wall itself of the dwelling. The entrance may be partially closed by masonry, the floor laid with flat stones, and the sides plastered with clay; but never in this group is there a roof distinct from the top of the cave. Naturally cavate dwellings grade into cliff houses, but neither of these types can be confounded with the first group, which affords us no difficulty in identification. All these kinds of dwellings were made by people of the same culture, the character of the habitation depending on geological environment. In Verde valley, villages, cliff houses, and cavate dwellings exist together, and were, I believe, contemporaneously inhabited by a people of the same culture. These types of ancient habitations are not believed to stand in the relationship of sequence in development; nor is one simpler or less difficult of construction than the others. Cliff houses display no less skill and daring than do the villages in the plain, called pueblos. The cavate dwellings are likewise a form of habitation which shows considerable workmanship, and are far from caves like those inhabited by "cave men." These dwellings were laboriously excavated with rude implements; had floors, banquettes, windows, walled recesses, and the like.

It is hardly proper to regard them, as less difficult to construct than pueblos or cliff houses. Cavate dwellings, like villages or cliff houses, may be single or multiple, single or many chambered, and a cluster of these troglodytic dwellings was, in fact, as truly a village as a pueblo or cliff house. The same principle of seeking safety by crowding together held in all three instances; and this very naturally, for the culture of the inhabitants was identical. I shall consider only two of the three types of dwellings in Verde valley, namely, the second and third groups. It has, I think, been conclusively shown by so far as types of the first group of ruins on the Verde are concerned, that they practically do not differ from the modern Tusayan pueblos. The remaining types, when rightly interpreted, furnish evidence of no less important character. Notwithstanding Mindeleff's excellent descriptions of the cavate dwellings of this region, already cited, I have thought it well to bring into prominence certain features which seem to me to indicate that this form of aboriginal dwelling was high in its development, showing considerable skill in its construction, and was fashioned on the same general plan as the others. For this demonstration I have chosen one of the most striking clusters in Verde valley. CAVATE DWELLINGS The most accessible cavate dwellings in Verde valley are situated on the left bank of the river, about eight miles southward from Camp Verde and three miles from the mouth of Clear creek. The general characteristics of this group have been well described by in the Thirteenth Annual Report of the Bureau, so that I need but refer to a few additional observations made on these interesting habitations. These cavate lodges afford a fair idea of the best known of these prehistoric dwellings in this part of Arizona. Although Verde valley has many fine ranches, the land in immediate proximity to these ruins is uncultivated. The nearest habitation, however, is not far away, and it is not difficult to find guides to these caves, so well known are they to the inhabitants of this part of the valley. It did not take long to learn that any investigations which I might attempt there had been anticipated by other archeologists and laymen, for many of the rooms had been rifled of their contents and their walls thrown down, while it was also evident that some careful excavations had been made. There is, however, abundant opportunity for more detailed scientific work than has yet been attempted on these ruins, and what has thus far been accomplished has been more in the nature of reconnoissance. The cemeteries and burial places of the prehistoric people of the cavate dwellings are yet to be discovered, and it is probable, judging from experience gained at other ruins, that when they are found and carefully investigated much light will be thrown on the character of ancient cave life. The entrances to the cavate dwellings opposite Squaw mountain are visible from the road for quite a distance, appearing as rows of holes in the steep walls of the cliff on the opposite or left bank of the Rio Verde. Owing to their proximity to the river, from which the precipice in which they are situated rises almost vertically, we were unable to camp under them, but remained on the right bank of the river, where a level plain extends for some distance, bordering the river and stretching back to the distant cliffs. We pitched our camp on a bluff, about above the river, in full sight of the cave entrances, near a small stone inclosure which bears quite a close resemblance to a Tusayan shrine. Aboriginal people had evidently cultivated the plain where we camped, for there are many evidences of irrigating ditches and even walls of former houses. At present, however, this once highly cultivated field lies unused, and is destitute of any valuable plants save the scanty grass which served to eke out the fodder of our horses. At the time of my visit the water of Rio Verde at this point was confined to a very narrow channel under the bluff near its right bank, but the appearance of its bed showed that in heavy freshets during the rainy season the water filled the interval between the base of the cliffs in which the cavate dwellings are situated and the bluffs which form the right bank. In visits to the caves it was necessary, on account of the site of the camp, to ford the stream each time and to climb to their level over fallen stones, a task of no slight difficulty. The water in places was shallow and the current only moderately rapid. Considering the fact that it furnished potable liquid for ourselves and horses, and that the line of trees which skirted the bluff was available for firewood, our camp compared well with many which we subsequently made in our summer's explorations. The section of the cliff which was examined embraced the northern series of these caves, extending from a promontory forming one side of a blind or box canyon to nearly opposite our camp.

Adjacent to this series of rooms, but farther down the river, on the same side, there are two narrow side canyons, in both of which are also numerous caves, in all respects similar to the series we chose for examination. At several points on the summit of the cliffs, above the caves, large rectangular ruins, with fallen walls, were discovered; these ruins are, however, in no respect peculiar, but closely resemble those ordinarily found in a similar position throughout this region and elsewhere in Arizona and New Mexico. From their proximity to the caves it would seem that the cavate dwellings, and the pueblos on the summits of the mesas in which they are found, had been inhabited by one people; but better evidence that such is true is drawn from the character of the architecture and the nature of the art remains common to both. Let us first consider the series of caves from a point opposite our camp to the promontory which forms a pinnacle at the mouth of the first of the two side caverns—a row of caves the entrances to which are shown in the accompanying illustration. I have lettered these rooms, as indicated by their entrances, a to l, beginning with the opening on the left. The rock in which these caves have been hewn is very soft, and almost white in color, save for a slightly reddish brown stratum just below the line of entrances to the cavate chambers. Although, as a general thing, the wall of the cliff is almost perpendicular, and the caves at points inaccessible, entrance to the majority of them can be effected by mounting the heaps of small stones forming the débris, which has fallen even to the bed of the river at various places, and by following a ledge which connects the line of entrances. The easiest approach mounts a steep decline, not far from the promontory at the lower level of the line, which conducts to a ledge running along in front of the caves about above the bed of the stream. Roughly speaking, this ledge is about below the summit of the cliff. It was impossible to reach several of the rooms, and it is probable that when the caves were inhabited access to any one of them was even more difficult than at present. Judging from the number of rooms, the cliffs on the left bank of the Verde must have had a considerable population when inhabited. These caverns, no doubt, swarmed with human beings, and their inaccessible position furnished the inhabitants with a safe refuge from enemies, or an advantageous outlook or observation shelter for their fields on the opposite side of the stream. The soft rock of which the mesa is formed is easily worked, and there are abundant evidences, from the marks of tools employed, that the greater part of each cave was pecked out by hand. Fragments of wood were very rarely seen in these cliff dugouts; and although there is much adobe plastering, only in a few instances were the mouths of the caves walled or a doorway of usual shape present. The last room at the southern end, near the promontory at the right of the entrance to a side canyon, has walls in front resembling those of true cliff houses and pueblos in the Red-rock country farther northward, as will be shown in subsequent pages. This group of cavate dwellings, while a good example of the cavern type of ruins, is so closely associated, both in geographical position and in archeological remains, with other types in Verde valley, that we are justified in referring them to one and the same people. The number of these troglodytic dwelling places on the Verde is very large; indeed the mesas may be said to be fairly honeycombed with subterranean habitations. Confined as a general thing to the softer strata of rock, which from its character was readily excavated, they lie side by side at the same general level, and are entered from a projecting ledge, formed by the top of the talus which follows the level of their entrances. Plan of cavate dwelling on Rio Verde Plan of cavate dwelling on Rio Verde This ledge is easily accessible in certain places from the river bed, where stones have fallen to the base of the cliff; but at most points no approach is possible, and in their impregnable position the inhabitants could easily defend themselves from hostile peoples. Whether the rock had recesses in it before the caves were enlarged would seem to be answered in the affirmative, for similar caves without evidences of habitations were observed. These, however, are as a rule small, and wherever available the larger caverns have been appropriated and enlarged by stone implements, as shown by the pecking on the walls. The enlargement of these caverns, however, would not be a difficult task, for the rock is very soft and easily worked. Entering one of these cavate rooms the visitor finds himself in a dark chamber, as a rule with side openings or passageways into adjoining rooms.

Broad lateral banquettes are prominent features in the most complicated caves, and there are many recesses and small closets or cists. The ramifications formed by lateral rooms are often extensive, and the chambers communicate with others so dark that we can hardly regard them as once inhabited. In these dimly lighted rooms the walls were blackened with smoke, as if from former fires, and in many of the largest the position of fireplaces could plainly be discovered. As a type of one of the more complicated I have chosen that figured to illustrate the arrangement of these cavate dwellings. Many are smaller, others have more lateral chambers, but one type is characteristic of all. A main room, or that first entered from outside, is roughly rectangular in shape, long by wide, and about high. The floor, however, was covered with very dry débris which had blown in from the exterior or, in some instances, fallen from the roof. That part of the floor which was exposed shows that it was roughly plastered, sometimes paved or formed of solid rock. On three sides of this room there is a step high, to platforms, three in number, one in the rear and one on each side. These platforms are wide, respectively, and of the same length as the corresponding sides of the central room. It would appear that these platforms are characteristic architectural features of these habitations, and we find them reproduced in some of the rooms of the cliff houses of the Red-rocks, while Nordenskiöld has described a kindred feature in the kivas of the Mesa Verde ruins. A somewhat similar elevation of the floor in modern Tusayan kivas forms what may be called the spectator's part, in front of the ladder as one descends, and the same feature is common to many older Hopi dwellings. Beginning with the lateral platforms we first note, as we step upon it at c, about midway of its length, a small circular depression in the floor of the central room extending slightly beneath the platform, as indicated by the dotted line. It is possible that this niche was a receptacle for important household objects, although it may have been a fireplace. In a corner of the right platform a round cist, partially hewn out of the rock, was found, but its walls badly broken down by some former explorer. The floor of this recess lies below that of the platform, while the cist itself reminds one of the closed or walled structures, so commonly found in the Verde, attached to the side of the cliff. On the lateral wall of this chamber, at about the height of the head, a row of small holes had been drilled into the solid wall. These holes are almost too small for the insertion of roof beams, and were probably made for pegs on which to rest a beam for hanging blankets and other textile fabrics when not in use. The roof of the cave was the natural rock, and showed over its whole surface marks of a pecking implement. The left chamber is broad, and from one corner, opposite the doorway, a low passageway leads into a circular chamber, in diameter, with its floor below the platform of the lateral room. Between the chamber, on the left of the entrance, and the open air, the wall of solid rock is broken by a slit-like crevice, which allows the light to enter, and no doubt served as a window. A recess, the floor of which is elevated, on a platform opposite the doorway, is broad, and has a small circular depression in one corner. The floor and upraise of this recess is plastered with adobe, which in several places is smooth and well made. In comparing the remaining cavate dwellings of this series with that described, we find every degree of complication in the arrangement of rooms, from a simple cave, or irregular hole in the side of the cliff, to squared chambers with lateral rooms. The room I, for instance, is rectangular, long by wide, with an entrance the same width as that of the room itself. In room, however, the external opening is very small, and there is a low, narrow ledge, or platform, opposite the doorway. There is likewise in this room a small shelf in the left-hand wall. In there is a raised platform on two adjacent sides of the square room, and the doorway is an irregular orifice broken through the wall to the open air. Room is a subterranean chamber, most of the floor of which is littered with large fragments of rock which have fallen from the roof. It has numerous small recesses in the wall resembling cubby-holes where household utensils of various kinds were undoubtedly formerly kept. This room is instructive, in that the entrance is partially closed by two walls of masonry, which do not join. The stones are laid in adobe in which fragments of pottery were detected. These unjoined walls leave a doorway which is thus flanked on each side by stone masonry, recalling in every particular the well-known walls of cliff houses.

Here, in fact, we have so close a resemblance to the masonry of true cliff houses that we can hardly doubt that the excavators of the cavate dwellings were, in reality, people similar to those who built the cliff houses of Verde valley. Room is a simple cave hewn out of the rock, with a chamber behind it, entered by a passageway made of masonry, which partially fills a larger opening. The doorway through this masonry is small below, but broadens above in much the same manner as some of the doorways in Tusayan of today. Continuing along the left bank of the river, from the row of cavate rooms, just described, on the first mesa, we round a promontory and enter a small canyon, which is perforated on each side with numerous other cavate dwellings, large and small, all of the same general character as the type described. Here, likewise, are small external openings which evidently communicated with subterranean chambers, but many of them are so elevated that access to them from the floor of the canyon or from the cliff above is not possible. A marked feature of the whole series is the existence here and there of small, often inaccessible, stone cists of masonry plastered to the side of the rocky cliff like swallows' nests. All of these cists which are accessible had been opened and plundered before my visit, but there yet remain a few which are still intact and would repay examination and study. Similar walled-up cists are likewise found, as we shall see later, in the cliff-houses of the Red-rock country, hence are not confined to the Verde system of ruins. Cavate dwellings similar to those here described are reported to exist in the canyons of upper Salado, Gala, and Zuñi rivers, and we may with reason suspect that the distribution of cavate dwellings is as wide as that of the pueblos themselves, the sole requisite being a soft tufaceous rock, capable of being easily worked by people with stone implements. In none of the different regions in which they exist is there any probability that these caves were made by people different in culture from pueblo or cliff dwellers. They are much more likely to have been permanent than temporary habitations of the same culture stock of Indians who availed themselves of rock shelters wherever the nature of the cliff permitted excavation in its walls. That the cavate lodges are simple "horticultural outlooks" is an important suggestion, but one might question whether they were conveniently placed for that purpose. So far as overlooking the opposite plain (which had undoubtedly been cultivated in ancient times) is concerned, the position of some of them may be regarded good for that purpose, but certainly not so commanding as that of the hill or mesa above, where well-marked ruins still exist. The position of the cavate dwellings is a disadvantageous one to reach any cultivated fields if defenders were necessary. When the Tusayan Indian today moves to his kisi or summer brush house shelter he practically camps in his corn or near it, in easy reach to drive away crows, or build wind-breaks to shelter the tender sprouts; but to go to their cornfields the inhabitants of the cavate dwellings I have described were forced to cross a river before the farm was reached. That these cavate dwellings were lookouts none can deny, but I incline to a belief that this does not tell the whole story if we limit them to such use. It is not wholly clear to me that they were not likewise an asylum for refuge, possibly not inhabited continuously, but a very welcome retreat when the agriculturist was sorely pressed by enemies. Following the analogy of a Hopi custom of building temporary booths near their fields, may we not suppose that the former inhabitants of Verde valley may have erected similar shelters in their cornfields during summer months, retiring to the cavate dwellings and the mesa tops in winter? All available evidence would indicate that the cavate dwellings were permanent habitations. There are several square ruins on top of the mesa above the cavate dwellings. The walls of these were massive, but they are now very much broken down, and the adobe plastering is so eroded from the masonry that I regard them of considerable antiquity. They do not differ from other similar ruins, so common elsewhere in New Mexico and Arizona, and are identical with others in the Verde region. I visited several of these ruins, but made no excavations in them, nor added any new data to our knowledge of this type of aboriginal buildings. The pottery picked up on the surface resembles that of the ruins of the Little Colorado and Gila. The dwellings which I have mentioned above are said to be duplicated at many other points in the watershed of the Verde, and many undescribed ruins of this nature were reported to me by ranchmen. I do not regard them as older than the adjacent ruins on the mesa above or the plains below them, much less as productions of people of different stages of culture, for everything about them suggests contemporaneous occupancy.

From what little I saw of the village sites on the Verde I believe that Mindeleff is correct in considering that these ruins represent a comparatively late period of pueblo architecture. The character of the cliff houses of the Red-rocks shows no very great antiquity of occupancy. While it is not possible to give any approximate date when they were inhabited, their general appearance indicates that they are not more than two centuries old. There is, however, no reference to them in the early Spanish history of the Southwest. Few pictographs were found in the immediate neighborhood of the cavate dwellings; indeed the rock in their vicinity is too soft to preserve for any considerable time any great number of these rock etchings. Examples of ancient paleography were, however, discovered a short distance higher up the river on malpais rock, which is harder and less rapidly eroded. A half-buried boulder near Wood's ranch was found to be covered with the well-known spirals with zigzag attachments, horned animals resembling antelopes, growing corn, rain clouds, and similar figures. These pictographs occur on a black, superficial layer of lava rock, or upon lighter stone with a malpais layer, which had been pecked through, showing a lighter color beneath. There is little doubt that many examples of aboriginal pictography exist in this neighborhood, which would reward exploration with interesting data. The Verde pictographs can not be distinguished, so far as designs are concerned, from many found elsewhere in Colorado, Utah, New Mexico, and Arizona. An instructive pictograph, different from any which I have elsewhere seen, was discovered on the upturned side of a boulder not far from Hance's ranch, near the road from Camp Verde to the cavate dwellings. The boulder upon which they occur lies on top of a low hill, to the left of the road, near the river. It consists of a rectangular network of lines, with attached key extensions, crooks, and triangles, all pecked in the surface. This dædalus of lines arises from grooves, which originate in two small, rounded depressions in the rock, near which is depicted the figure of a mountain lion. The whole pictograph is square, and legible in all its parts. The intent of the ancient scribe is not wholly clear, but it has been suggested that he sought to represent the nexus of irrigating ditches in the plain below. It might have been intended as a chart of the neighboring fields of corn, and it is highly suggestive, if we adopt either of these explanations or interpretations, that a figure of the mountain lion is found near the depressions, which may provisionally be regarded as representing ancient reservoirs. Among the Tusayan Indians the mountain lion is looked on as a guardian of cultivated fields, which he is said to protect, and his stone image is sometimes placed there for the same purpose. In the vicinity of the pictograph last described other boulders, of which there are many, were found to be covered with smaller rock etchings in no respect characteristic, and there is a remnant of an ancient shrine a few yards away from the boulder upon which they occur. One of the most interesting sites of ancient habitation in Verde valley is known as Montezuma Well, and it is remarkable how little attention has been paid to it by archeologists. In his article on the ancient dwellings of Verde valley, does not mention the well, and Mindeleff simply refers to the brief description by. These ruins are worthy of more study than I was able to give them, for like many other travelers I remained but a short time in the neighborhood. It is possible, however, that some of my hurried observations at this point may be worthy of record. Montezuma Well is an irregular, circular depression, closely resembling a volcanic crater, but evidently, as well points out, due to erosion rather than to volcanic agencies. As one approaches it from a neighboring ranch the road ascends a low elevation, and when on top the visitor finds that the crater occupies the whole interior of the hill. The exact dimensions I did not accurately determine, but the longest diameter of the excavation is estimated at about; its depth possibly. On the eastern side this depression is separated from Beaver creek by a precipitous wall which can not be scaled from that side. At the time of my visit there was considerable water in the "well," which was reported to be very deep, but did not cover the whole bottom. It is possible to descend to the water at one point on the eastern side, where a trail leads to the water's edge. There appears to be a subterranean waterway under the eastern rim of the well, and the water from the spring rushes through this passage into Beaver creek. At the time of my visit this outflow was very considerable, and in the rainy season it must be much greater. The well is never dry, and is supplied by perennial subterranean springs rather than by surface drainage. The geological agency which has been potent in giving the remarkable craterlike form to Montezuma Well was correctly recognized by and others as the solvent or erosive power of the spring.

There is no evidence of volcanic formation in the neighborhood, and the surrounding rocks are limestones and sandstones. Not far from Navaho springs there is a similar circular depression, called Jacob's Well, but which was dry when visited by me. This may later be found to have been formed in a similar way. At several places in Arizona there are formations of like geological character. The walls of Montezuma Well are so nearly perpendicular that descent to the edge of the water is difficult save by a single trail which follows the detritus to a cave on one side. In this cave, the roof of which is not much higher than the water level, there are fragments of masonry, as if structures of some kind had formerly been erected in it. I have regarded this cave rather as a place of religious rites than of former habitation, possibly a place of retreat for ancient priests when praying for rain or moisture, or a shrine for the deposit of prayer offerings to rain or water gods. Several isolated cliff dwellings are built at different levels in the sides of the cliffs. One of the best of these is diametrically opposite the cave mentioned above, a few feet below the rim of the depression. While this house was entered with little difficulty, there were others which I did not venture to visit. The accompanying illustration gives an idea of the general appearance of one of these cliff houses of Montezuma Well. It is built under an overhanging archway of rock in a deep recess, with masonry on three sides. The openings are shown, one of which overlooks the spring; the other is an entrance at one side. The face of masonry on the front is not plastered, and if it was formerly rough cast the mud has been worn away, leaving the stones exposed. The side wall, which has been less exposed to the elements, still retains the plastering, which is likewise found on the inner walls where it is quite smooth in places. The number of cliff rooms in the walls of the well is small and their capacity, if used as dwellings, very limited. There are, however, ruins of pueblos of some size on the edge of the well. One of the largest of these, shown in the accompanying illustration, is situated on the neck of land separating the well from the valley of Beaver creek. This pueblo was rectangular in form, of considerable size, built of stones, and although at present almost demolished, shows perfectly the walls of former rooms. Fragments of ancient pottery would seem to indicate that the people who once inhabited this pueblo were in no respect different from other sedentary occupants of Verde valley. From their housetops they had a wide view over the creek on one side and the spring on the other, defending, by the site of their village, the one trail by which descent to the well was possible. The remarkable geological character of Montezuma Well, and the spring within it, would have profoundly impressed itself on the folklore of any people of agricultural bent who lived in its neighborhood after emigrating to more arid lands. About a month after my visit to this remarkable spring I described the place to some of the old priests at Walpi and showed them sketches of the ruins. These priests seemed to have legendary knowledge of a place somewhat like it where they said the Great Plumed Snake had one of his numerous houses. They reminded me of a legend they had formerly related to me of how the Snake arose from a great cavity or depression in the ground, and how, they had heard, water boiled out of that hole into a neighboring river. The Hopi have personal knowledge of Montezuma Well, for many of their number have visited Verde valley, and they claim the ruins there as the homes of their ancestors. It would not be strange, therefore, if this marvelous crater was regarded by them as a house of Palölükoñ, their mythic Plumed Serpent. Practically little is known of the pictography of this part of the Verde valley people, although it has an important bearing on the distribution of the cliff dwellers of the Southwest. There is evidence of at least two kinds of petroglyphs, indicative of two distinct peoples. One of these was of the Apache Mohave; the other, the agriculturists who built the cliff homes and villages of the plain. Those of the latter are almost identical with the work of the Pueblo peoples in the cliff dweller stage, from southern Utah and Colorado to the Mexican boundary. It is not a difficult task to distinguish the pictography of these two peoples, wherever found. The pictographs of the latter are generally pecked into the rock with a sharpened implement, probably of stone, while those of the former are usually scratched or painted on the surface of the rocks. Their main differences, however, are found in the character of the designs and the objects represented. This difference can be described only by considering individual rock drawings, but the practiced eye may readily distinguish the two kinds at a glance.

The pictographs which are pecked in the cliff are, as a rule, older than those which are drawn or scratched, and resemble more closely those widely spread in the Pueblo area, for if the cliff-house people ever made painted pictographs, as there is every reason to believe they did, time has long ago obliterated them. The pictured rocks near Cliff's ranch, on Beaver creek, four miles from Montezuma Well, have a great variety of objects depicted upon them. These rocks, which rise from the left bank of the creek opposite Cliff's ranch, bear over a hundred different rock pictures, figures of which are seen in the accompanying illustration. The rock surface is a layer of black malpais, through which the totem signatures have been pecked, showing the light stone beneath, and thus rendering them very conspicuous. Among these pictographs many familiar forms are recognizable, among them being the crane or blue heron, bears' and badgers' paws, turtles, snakes, antelopes, earth symbols, spirals, and meanders. Among these many totems there was an unusual pictograph in the form of the, above which was a bear's paw accompanied by a human figure so common in southwestern rock etchings. A square figure with interior parallel squares extending to the center is also found, as elsewhere, in cliff-dweller pictography. After the road from old Camp Verde to Flagstaff passes a deserted cabin at Beaver Head, it winds up a steep hill of lava or malpais to the top of the Mogollones. If, instead of ascending this hill, one turns to the left, taking an obscure road across the river bed, which is full of rough lava blocks, and in June, when I traveled its course, was without water, he soon finds himself penetrating a rugged country with bright-red cliffs on his right. Continuing through great parks and plains he finally descends to the well-wooded valley of Oak creek, an affluent of Rio Verde. Here he finds evidences of aboriginal occupancy on all sides—ruins of buildings, fortified hilltops, pictographs, and irrigating ditches—testifying that there was at one time a considerable population in this valley. The fields of the ancient inhabitants have now given place to many excellent ranches, one of the most flourishing of which is not far from a lofty butte of red rock called the Court-house, which from its great size is a conspicuous object for miles around. In many of these canyons there are evidences of a former population, but the country is as yet almost unexplored; there are many difficult places to pass, yet once near the base of the rocks a way can be picked from the mouth of one canyon to another. It does not take long to discover that this now uninhabited region contains, like that along the Verde and its tributaries, many ancient dwellings, for there is scarcely a single canyon leading into these red cliffs in which evidences of former human habitations are not found in the form of ruins. There is little doubt that these unfrequented canyons have many and extensive cliff houses, the existence of which has thus far escaped the explorer. The sandstone of which they are composed is much eroded into caves with overhanging roofs, forming admirable sites for cliff houses as distinguished from cavate dwellings like those we have described. They are the only described ruins of a type hitherto thought to be unrepresented in the valley of the Verde. In our excursion into the Red-rock country we were obliged to make our own wagon road, as no vehicle had ever penetrated the rugged canyons visited by us. It was necessary to carry our drinking water with us from Oak creek, which fact impeded our progress and limited the time available in our reconnoissance. There was, however, in the pool near the ruins of Honanki enough water for our horses, and at the time we were there a limited amount of grass for fodder was found. I was told that later in the season both forage and water are abundant, so that these prime necessities being met, there is no reason why successful archeological investigations may not be successfully conducted in this part of the Verde region. The limited population of this portion of the country rendered it difficult to get laborers at the time I made my reconnoissance, so that it would be advisable for one who expects to excavate the ruins in this region to take with him workmen from the settled portions of the valley. The valley of Oak creek, near Court-house butte, especially in the vicinity of Schürmann's ranch, is dotted with fortifications, mounds indicative of ruins, and like evidences of aboriginal occupancy. There is undoubted proof that the former occupants of this plain constructed elaborate irrigating ditches, and that the waters of Oak creek were diverted from the stream and conducted over the adjoining valleys. There are several fortified hills in this locality. One of the best of these defensive works crowned a symmetrical mountain near Schürmann's house. The top of this mesa is practically inaccessible from any but the southern side, and was found to have a flat surface covered with scattered cacti and scrub cedar, among which were walls of houses nowhere rising more than.

The summit is perhaps above the valley, and the ground plan of the former habitations extends over an area in length, practically occupying the whole of the summit. Although fragments of pottery are scarce, and other evidences of long habitation difficult to find, the house walls give every evidence of being extremely ancient, and most of the rooms are filled with red soil out of which grow trees of considerable age. Descending from this ruin-capped mesa, I noticed on the first terrace the remains of a roundhouse, or lookout, in the middle of which a cedar tree had taken root and was growing vigorously. Although the walls of this structure do not rise above the level of the ground, there is no doubt that they are the remains of either a lookout or circular tower formerly situated at this point. Many similar ruins are found throughout this vicinity, yet but little more is known of them than that they antedate the advent of white men. The majority of them were defensive works, built by the house dwellers, and their frequency would indicate either considerable population or long occupancy. Although many of those on the hilltops differ somewhat from the habitations in the valleys, I think there is little doubt that both were built by the same people. There are likewise many caves in this region, which seem to have been camping places, for their walls are covered with soot and their floors strewn with charred mescal, evidences, probably, of Apache occupancy. This whole section of country was a stronghold of this ferocious tribe within the last few decades, which may account for the modern appearance of many of the evidences of aboriginal habitation. There are some good pictographs on the foundation rocks of that great pinnacle of red rock, called the Court-house, not far from Schürmann's ranch. Some of these are Apache productions, and the neighboring caves evidently formed shelters for these nomads, as ash pit and half-burnt logs would seem to show. This whole land was a stronghold of the Apache up to a recent date, and from it they were dislodged, many of the Indians being killed or removed by authority of the Government. From the geological character of the Red-rocks I was led to suspect that cavate dwellings were not to be expected. The stone is hard and not readily excavated by the rude implements with which the aborigines of the region were supplied. But the remarkable erosion shown in this rock elsewhere had formed many deep caverns or caves, with overreaching roofs, very favorable for the sites of cliff houses. My hurried examination confirmed my surmises, for we here found dwellings of this kind, so similar to the type best illustrated in Mancos canyon of southern Colorado. There were several smoke-blackened caves without walls of masonry, but with floors strewn with charred wood, showing Apache occupancy. No cavate dwellings were found in the section of the Red-rocks visited by our party. The two largest of the Red-rock cliff houses to which I shall refer were named Honanki or Bear-house and Palatki or Red-house. The former of these, as I learned from the names scribbled on its walls, had previously been visited by white men, but so far as I know it has never been mentioned in archeological literature. My attention was called to it by, at whose hospitable ranch I outfitted for my reconnoissance into the Red-rock country. The smaller ruin, Palatki, we discovered by chance during our visit, and while it is possible that some vaquero in search of a wild steer may have visited the neighborhood before us, there is every reason to believe that the ruin had escaped even the notice of these persons, and, like Honanki, was unknown to the archeologist. The two ruins, Honanki and Palatki, are not the only ones in the lone canyon where we encamped. Following the canyon a short distance from its entrance, there was found to open into it from the left a tributary, or so-called box canyon, the walls of which are very precipitous. Perched on ledges of the cliffs there are several rows of fortifications or walls of masonry extending for many yards. It was impossible for us to enter these works, even after we had clambered up the side of the precipice to their level, so inaccessible were they to our approach. These "forts" were probably for refuge, but they are ill adapted as points of observation on account of the configuration of the canyon. Their masonry, as examined at a distance with a field glass, resembles that of Palatki and Honanki. I was impressed by the close resemblance between the large cliff houses of the Red-rocks, with their overhanging roof of rock, and those of the San Juan and its tributaries in northern New Mexico. While it is recognized that cliff houses have been reported from Verde valley, I find them nowhere described, and our lack of information about them, so far as they are concerned, may have justified Nordenskiöld's belief that "the basin of the Colorado actually contains almost all the cliff dwellings of the United States."

As the Gila flows into the Colorado near its mouth, the Red-rock ruins may in a sense be included in the Colorado basin, but there are many and beautiful cliff houses higher up near the sources of the Gila and its tributary, the Salt. In calling attention to the characteristic cliff dwellings of the Red-rocks I am making known a new region of ruins closely related to those of Canyon de Tségi, or Chelly, the San Juan and its tributaries. Although the cliff houses of Verde valley had been known for many years, and the ruins here described are of the same general character, anyone who examines Casa Montezuma, on Beaver creek, and compares it with Honanki, will note differences of an adaptive nature. The one feature common to Honanki and the "Cliff Palace" of Mancos canyon is the great overhanging roof of the cavern, which, in that form, we miss in Casa Montezuma, Casa Montezuma on Beaver creek Casa Montezuma on Beaver creek We made two camps in the Red-rock country, one at the mouth of a wild canyon near an older camp where a well had been dug and the cellar of an American house was visible. This camp was fully six miles from Schürmann's ranch and was surrounded by some of the wildest scenery that I had ever witnessed. The accompanying view was taken from a small elevation near by, and gives a faint idea of the magnificent mountains by which we were surrounded. The colors of the rocks are variegated, so that the gorgeous cliffs appear to be banded, rising from sheer on all sides. These rocks had weathered into fantastic shapes suggestive of cathedrals, Greek temples, and sharp steeples of churches extending like giant needles into the sky. The scenery compares very favorably with that of the Garden of the Gods, and is much more extended. This place, I have no doubt, will sooner or later become popular with the sightseer, and I regard the discovery of these cliffs one of the most interesting of my summer's field work. On the sides of these inaccessible cliffs we noticed several cliff houses, but so high were they perched above us that they were almost invisible. To reach them at their dizzy altitude was impossible, but we were able to enter some caves a few hundred feet above our camp, finding in them nothing but charred mescal and other evidences of Apache camps. Their walls and entrances are blackened with smoke, but no sign of masonry was detected. We moved our camp westward from this canyon (which, from a great cliff resembling the Parthenon, I called Temple canyon), following the base of the precipitous mountains to a second canyon, equally beautiful but not so grand, and built our fire in a small grove of scrub oak and cottonwood. In this lonely place Lloyd had lived over a winter, watching his stock, and had dug a well and erected a corral. We adopted his name for this camp and called it Lloyd canyon. There was no water in the well, but a few rods beyond it there was a pool, from which we watered our horses. On the first evening at this camp we sighted a bear, which gave the name Honanki, "Bear-house," to the adjacent ruined dwellings. The enormous precipice of red rock west of our camp at Lloyd's corral hid Honanki from view at first, but we soon found a trail leading directly to it, and during our short stay in this neighborhood we remained camped near the cottonwoods at the entrance to the canyon, not far from the abandoned corral. Our studies of Honanki led to the discovery of Palatki which we investigated on our return to Temple canyon. I will, therefore, begin my description of the Red-rock cliff houses with those last discovered, which, up to the visit which I made, had never been studied by archeologists. PALATKI There are two neighboring ruins which I shall include in my consideration of Palatki, and these for convenience may be known as Ruin I and Ruin II, the former situated a little eastward from the latter. They are but a short distance apart, and are in the same box canyon. Ruin I is the better preserved, and is a fine type of the compact form of cliff dwellings in the Red-rock country. This ruin is perched on the top of a talus which has fallen from the cliff above, and is visible for some distance above the trees, as one penetrates the canyon. It is built to the side of a perpendicular wall of rock which, high above its tallest walls, arches over it, sheltering the walls from rain or eroding influences. From the dry character of the earth on the floors I suspect that for years not a drop of water has penetrated the inclosures, although they are now roofless. A highly characteristic feature of Ruin I is the repetition of rounded or bowshape front walls, occurring several times in their length, and arranged in such a way as to correspond roughly to the inclosures behind them.

By this arrangement the size of the rooms was increased and possibly additional solidity given to the wall itself. This departure from a straight wall implies a degree of architectural skill, which, while not peculiar to the cliff dwellings of the Red-rocks, is rarely found in southern cliff houses. The total length of the front wall of the ruin, including the part which has fallen, is approximately, and the altitude of the highest wall is not far from. Ground plan of Palatki Ground plan of Palatki From the arrangement of openings in the front wall at the highest part there is good evidence of the former existence of two stories. At several points the foundation of the wall is laid on massive boulders, which contribute to the height of the wall itself. The masonry is made up of irregular or roughly squared blocks of red stone laid in red clay, both evidently gathered in the immediate neighborhood of the ruin. The building stones vary in size, but are as a rule flat, and show well directed fractures as if dressed by hammering. In several places there still remains a superficial plastering, which almost conceals the masonry. The blocks of stone in the lower courses are generally more massive than those higher up; this feature, however, whether considered as occurring here or in the cliff houses of Mesa Verde, as pointed out by Nordenskiöld, seems to me not to indicate different builders, but is due simply to convenience. There appears to be no regularity in the courses of component blocks of stone, and when necessity compelled, as in the courses laid on boulders, which serve as a foundation, thin wedges of stone, or spalls, were inserted in the crevices. The walls are vertical, but the corners are sometimes far from perpendicular. The interior of the ruin is divided into a number of inclosures by partitions at right angles to the front wall, fastening it to the face of the cliff. This I have lettered, beginning at the extreme right inclosure with A. The inclosure has bounding walls, built on a boulder somewhat more than six feet high. It has no external passageway, and probably the entrance was from the roof. This inclosure communicates by a doorway directly with the adjoining chamber, B. The corner of this room, or the angle made by the lateral with the front walls, is rounded, a constant feature in well-built cliff houses. No windows exist, and the upper edge of both front and lateral walls is but slightly broken. The front wall of inclosure B bulges into bow-shape form, and was evidently at least two stories high. This wall is a finely laid section of masonry, composed of large, rough stones in the lower courses, upon which smaller, roughly hewn stones are built. It is probable, from the large amount of débris in the neighborhood, that formerly there were rows of single-story rooms in front of what are now the standing walls, but the character of their architecture is difficult to determine with certainty. Their foundations, although partially covered, are not wholly concealed. The front wall of inclosure B is pierced by three openings, the largest of which is a square passageway into the adjoining room, and is situated in the middle of the curved wall. A wooden lintel, which had been well hewn with stone implements, still remains in place above this passageway, and under it the visitor passes through a low opening which has the appearance of having been once a doorway. Above this entrance, on each side, in the wall, is a square hole, which originally may have been the points of support of floor beams. Formerly, likewise, there was a large square opening above the middle passageway, but this has been closed with masonry, leaving in place the wooden beam which once supported the wall above. The upper edge of the front wall of inclosure B is level, and is but little broken except in two places, where there are notches, one above each of the square holes already mentioned. It is probable that these depressions were intended for the ends of the beams which once supported a combined roof and floor. On the perpendicular wall which forms the rear of inclosure B, many feet above the top of the standing front walls, there are several pictographs of Apache origin. The height of these above the level of the former roof would appear to indicate the existence of a third story, for the hands which drew them must have been at least above the present top of the standing wall. The front of C is curved like that of inclosure B, and is much broken near the foundations, where there is a passageway. There is a small hole on each side of a middle line, as in B, situated at about the same level as the floor, indicating the former position of a beam. Within the ruin there is a well-made partition separating inclosures B and C. The size of room D is much less than that of B or C, but, with the exception of a section at the left, the front wall has fallen.

The part which remains upright, however, stands like a pinnacle, unconnected with the face of the cliff or with the second-story wall of inclosure C. It is about in height, and possibly its altitude appears greater than it really is from the fact that its foundations rest upon a boulder nearly six feet high. The foundations of rooms E and F are built on a lower level than those of B and C or D, and their front walls, which are really low, are helped out by similar boulders, which serve as foundations. The indications are that both these inclosures were originally one story in height, forming a wing to the central section of the ruin, which had an additional tier of rooms. There is an entrance to F at the extreme left, and the whole room was lower than the floor of the lower stories of B, C, and D. The most conspicuous pictograph on the cliff above Ruin I of Palatki, is a circular white figure, seen in the accompanying illustration. This pictograph is situated directly above the first room on the right, A, and was apparently made with chalk, so elevated that at present it is far above the reach of a person standing on any of the walls. From its general character I am led to believe that it was made by the Apache and not by the builders of the pueblo. There were no names of white visitors anywhere on the walls of Palatki, which, so far as it goes, affords substantial support of my belief that we were the first white men to visit this ruin. While it can not be positively asserted that we were the original discoverers of this interesting building, there is no doubt that I was the first to describe it and to call attention to its highly characteristic architectural plan. The walls of Palatki are not so massive as those of the neighboring Honanki, and the number of rooms in both ruins which form Palatki is much smaller. Each of these components probably housed not more than a few families, while several phratries could readily be accommodated in Honanki. The second Palatki ruin is well preserved, and as a rule the rooms, especially those in front, have suffered more from vandalism and from the elements than have those of Ruin I. The arrangement of the rooms is somewhat different from that of the more exposed eastern ruin, to which it undoubtedly formerly belonged. Ruin II lies in a deep recess or cave, the roof of which forms a perfect arch above the walls. It is situated a few hundred feet to the west, and is easily approached by following the fallen débris at the foot of a perpendicular cliff. The front walls have all fallen, exposing the rear wall of what was formerly a row of rooms, as shown in the accompanying illustration. There are evidences that this row of rooms was but a single story in height, while those behind it have indications of three stories. Ruin II is more hidden by the trees and by its obscure position in a cavern than the former, but the masonry in both is of the same general character. On approaching Ruin II from Ruin I there is first observed a well-made though rough wall, as a rule intact, along which the line of roof and flooring can readily be traced. In front of this upright wall are fragments of other walls, some standing in unconnected sections, others fallen, their fragments extending down the sides of the talus among the bushes. It was observed that this wall is broken by an entrance which passes into a chamber, which may be called A, and two square holes are visible, one on each side, above it. These holes were formerly filled by two logs, which once supported the floor of a second chamber, the line of which still remains on the upright wall. The small square orifice directly above the entrance is a peephole. In examining the character of the wall it will be noticed that its masonry is in places rough cast, and that there was little attempt at regularity in the courses of the component stones, which are neither dressed nor aligned, although the wall is practically vertical. At one point, in full view of the observer, a log is apparently inserted in the wall, and if the surrounding masonry be examined it will be found that an opening below it had been filled in after the wall was erected. It is evident, from its position relatively to the line indicating the roof, that this opening was originally a passageway from one room to another. Passing back of the standing wall an inclosure is entered, one side of which is the rock of the cliff, while the other three bounding walls are built of masonry, high. This inclosure was formerly divided into an upper and a lower room by a partition, which served as the roof of the lower and the floor of the upper chambers. Two beams stretched across this inclosure about six feet above the débris of the present floor, and the openings in the walls, where these beams formerly rested, are readily observed.