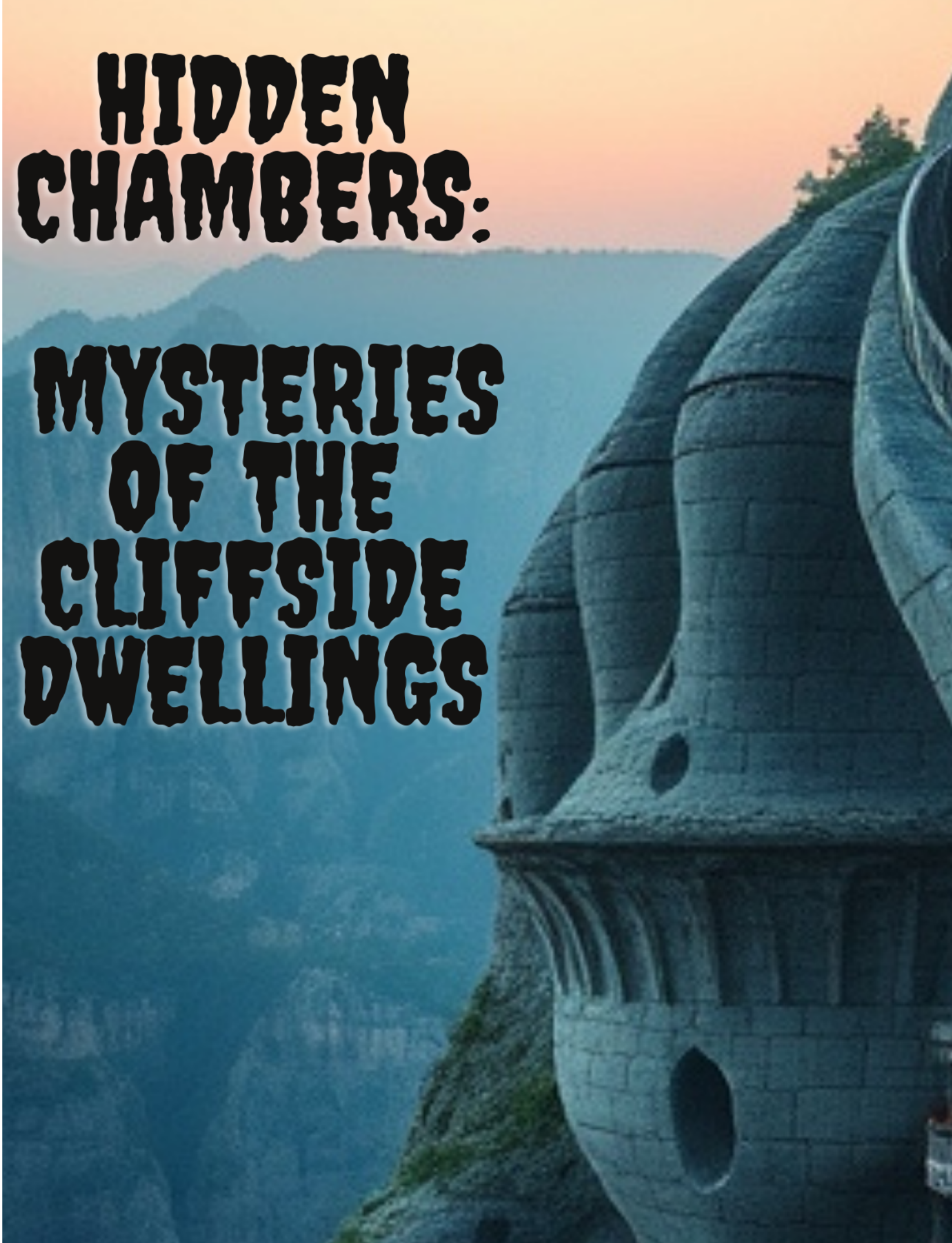
HIDDEN CHAMBERS:
MYSTERIES OF THE CLIFFSIDE DWELLINGS

In the same way the beam-holes of the upper story may also be easily seen on the top of the wall. Between the rear wall of this inclosure and the perpendicular cliff there was a recess which appears to have been a dark chamber, probably designed for use as a storage room or granary. The configuration of the cliff, which forms the major part of the inclosing wall of this chamber, imparts to it an irregular or roughly triangular form. The entire central portion of the ruin is very much broken down, and the floor is strewn to a considerable depth with the débris of fallen walls. On both sides there are nicely aligned, smoothly finished walls, with traces of beams on the level of former floors. Some of these bounding walls are curved; others are straight, and in places they rise. Marks of fire are visible everywhere; most of the beams have been wrenched from their places, as a result of which the walls have been much mutilated, badly cracked, or thrown down. There are no pictographs near this ruin, and no signs of former visits by white men. Midway between Honanki and the second Palatki ruin a small ancient house of the same character as the latter was discovered. This ruin is very much exposed, and therefore the walls are considerably worn, but six well-marked inclosures, indicative of former rooms, were readily made out. No overarching rock shielded this ruin from the elements, and rubble from fallen walls covers the talus upon which it stands. The adobe mortar between the stones is much worn, and no fragment of plastering is traceable within or without. This evidence of the great weathering of the walls of the ruin is not considered indicative of greater age than the better preserved ruins in the neighborhood, but rather of exposure to the action of the elements. Not only are the walls in a very poor condition, but also the floors show, from the absence of dry soil upon them, that the whole ruin has suffered greatly from the same denudation. There are no fragments of pottery about it, and small objects indicating former habitation are also wanting. A cedar had taken root where the floor once was, and its present great size shows considerable age. If any pictographs formerly existed in the adjacent cliff they have disappeared. There is likewise no evidence that the Apache had ever sought it for shelter, or if they had, their occupancy occurred so long ago that time has effaced all evidence of their presence. HONANKI The largest ruin visited in the Red-rock country was called, following Hopi etymology, Honanki; but the nomenclature was adopted not because it was so called by the Hopi, but following the rule elsewhere suggested. This ruin lies under a lofty buttress of rock westward from Lloyd's canyon, which presented the only available camping place in its neighborhood. At the time of my visit there was but scanty water in the canyon and that not potable except for stock. We carried with us all the water we used, and when this was exhausted were obliged to retrace our steps to Oak creek. There are groves of trees in the canyon and evidences that at some seasons there is an abundant water supply. A corral had been made and a well dug near its mouth, but with these exceptions there were no evidences of previous occupancy by white men. We had hardly pitched our camp before tracks of large game were noticed, and before we left we sighted a bear which had come down to the water to drink, but which beat a hasty retreat at our approach. As previously stated, the knowledge of this ruin was communicated to me by Ground plan of Honanki Ground plan of Honanki The Honanki ruin extends along the base of the cliff for a considerable distance, and may for convenience of description be divided into two sections, which, although generally similar, differ somewhat in structural features. The former is lineal in its arrangement, and consists of a fringe of houses extending along the base of the cliff at a somewhat lower level than the other. The walls of this section were for the greater part broken, and at no place could anything more than the foundation of the front wall be detected, although fragments of masonry strewed the sides of the declivity near its base. The house walls which remain are well-built parallel spurs constructed at right angles to the cliff, which served as the rear of all the chambers. At the extreme right end of this row of rooms, situated deep in a large cavern with overhanging roof, portions of a rear wall of masonry are well preserved, and the lateral walls of one or two chambers in this portion of the ruin are still intact. Straggling along from that point, following the contour of the base of the cliff under which it lies, there extends a long row of rooms, all destitute of a front wall. The first division, beginning with the most easterly of the series, is quite hidden at one end in a deep cavern.

At this point the builders, in order to obtain a good rear wall to their rooms, constructed a line of masonry parallel with the face of the cliff. At right angles to this construction, at the eastern extremity, there are remnants of a lateral wall, but the remainder had tumbled to the ground. The standing wall of z is not continuous with that of the next room, y, and apparently was simply the rear of a large room with the remains of a lateral wall at right angles to it. The other walls of this chamber had tumbled into a deep gorge, overgrown with bushes which conceal the fragments. This building is set back deeply in the cave, and is isolated from the remaining parts of the ruin, although at the level which may have been its roof there runs a kind of gallery formed by a ledge of rock, plastered with adobe, which formerly connected the roof with the rest of the pueblo. This ledge was a means of intercommunication, and a continuation of the same ledge, in rooms s, t, and u, supported the rafters of these chambers. At u there are evidences of two stories or two tiers of rooms, but those in front have fallen to the ground. The standing wall at u is about five feet high, connected with the face of the cliff by masonry. The space between it and the cliff was not large enough for a habitable chamber, and was used probably as a storage place. In front of the standing wall of room u there was another chamber, the walls of which now strew the talus of the cliff. The highest and best preserved room of the second series of chambers at Honanki is that designated p, at a point where the ruin reached an elevation of. Here we have good evidence of rooms of two stories, as indicated by the points of insertion of the beams of a floor, at the usual levels above the ground. In fact, it is probable that the whole section of the ruin was two stories high throughout, the front walls having fallen along the entire length. From the last room on the left to the eastern extremity of the line of houses which leads to the main ruin of Honanki, no ground plans were detected at the base of the cliffs, but fallen rocks and scattered débris are strewn over the whole interval. The eastern part of the main ruin of Honanki, however, lies but a short distance west of that described, and consists of many similar chambers, arranged side by side. These are lettered in the diagram h to u, beginning with h, which is irregularly circular in form, and ends with a high wall, the first to be seen as one approaches the ruin from Lloyd canyon. This range of houses is situated on a lower foundation and at a lower level than that of the main quarter of Honanki, and a trail runs along so close to the rooms that the whole series is easily visited without much climbing. No woodwork remains in any of these rooms, and the masonry is badly broken in places either by natural agencies or through vandalism. Beginning with h, the round room, which adjoins the main quarter of Honanki, we find much in its shape to remind us of a kiva. The walls are in part built on foundations of large bowlders, one of which formed the greater part of the front wall. This circular room was found to be full of fallen débris, and could not be examined without considerable excavation. If it were a kiva, which I very much doubt, it is an exception among the Verde valley ruins, where no true kiva has yet been detected. Following h there is an inclosure which originally may have been a habitable room, as indicated by the well-constructed front wall, but it is so filled with large stones that it is difficult to examine its interior. On one side the wall, which is at right angles to the face of the cliff, is high, and the front wall follows the surface of a huge bowlder which serves as its foundation. Room i is clearly defined, and is in part inclosed by a large rock, on top of which there still remains a fragment of a portion of the front wall. A spur of masonry connects this bowlder with the face of the cliff, indicating all that remains of the former division between rooms i and j. An offshoot from this bowlder, in the form of a wall high, formerly inclosed one side of a room. In the rear of chamber j there are found two receptacles or spaces left between the rear wall and the face of the cliff, while the remaining wall, which is high, is a good specimen of pueblo masonry. The two side walls of room k are well preserved, but the chamber resembles the others of the series in the absence of a front wall.In this room, however, there remains what may have been the fragment of a rear wall parallel with the face of the cliff.

This room has also a small cist of masonry in one corner, which calls to mind certain sealed cavities in the cavate dwellings. The two side walls of m and n are respectively eight and ten feet high. There is nothing exceptional in the standing walls of room o, one of which, five feet in altitude, still remains erect. Room p has a remnant of a rear wall plastered to the face of the cliff. Room r is a finely preserved chamber, with lateral walls high, of well-constructed masonry, that in the rear, through which there is an opening leading into a dark chamber, occupying the space between it and the cliff. It is braced by connecting walls at right angles to the face of the solid rock. At s, the face of the cliff forms a rear wall of the room, and one of the side walls is fully high. The points of insertion of the flooring are well shown, about from the ground, proving that the ruin at this point was at least two stories high. Two walled inclosures, one within the other, characterize room u. On the cliff above it there is a series of simple pictographs, consisting of short parallel lines pecked into the rock, and are probably of Apache origin. This room closes the second series, along the whole length of which, in front of the lateral walls which mark different chambers, there are, at intervals, piles of débris, which enabled an approximate determination of the situation of the former front wall, fragments of the foundations of which are traceable in situ in several places. The hand of man and the erosion of the elements have dealt harshly with this portion of Honanki, for not a fragment of timber now remains in its walls. This destruction, so far as human agency is concerned, could not have been due to white men, but probably to the Apache, or possibly to the cliff villagers themselves at the time of or shortly after the abandonment of the settlement. From the second section of Honanki we pass to the third and best-preserved portion of the ruins ,indicated in the diagram from a to g. To this section I have referred as the "main ruin," for it was evidently the most populous quarter of the ancient cliff dwelling. It is better preserved than the remainder of Honanki, and is the only part in which all four walls of the chambers still remain erect. Built at a higher level than the series of rooms already considered, it must have towered above them, and possibly served as a place of retreat when danger beset the more exposed quarters of the village. The main ruin of Honanki The main ruin of Honanki Approaching the main ruin of Honanki from the east, or the parts already described, one passes between the buttress on which the front wall of the rounded room h is built and a fragment of masonry on the left, by a natural gateway through which the trail is very steep. On the right there towers above the visitor a well-preserved wall of masonry, the front of room a, and he soon passes abreast of the main portion of the ruin of Honanki. This section is built in a huge cavern, the overhanging roof of which, is formed by natural rock, arching far above the tops of the highest walls of the pueblo and suggesting the surroundings of the "Cliff Palace" of Mesa Verde, so well described by the late Baron G. Nordenskiöld in his valuable monograph on the ruins of that section of southern Colorado. The main ruin of Honanki is one of the largest and best preserved architectural monuments of the former people of Verde valley that has yet been described. Although somewhat resembling its rival, the well-known "Casa Montezuma" of Beaver creek, its architecture is dissimilar on account of the difference in the form of the cavern in which it is built and the geological character of the surrounding cliffs. Other Verde ruins may have accommodated more people, when inhabited, but none of its type south of Canyon de Chelly have yet been described which excel it in size and condition of preservation. I soon found that our party were not the first whites who had seen this lonely village, as the names scribbled on its walls attested; but so far as I know it had not previously been visited by archeologists. In the main portion of Honanki we found that the two ends of the crescentic row of united rooms which compose it are built on rocky elevations, with foundations considerably higher than those of the rooms in the middle portion of the ruins. The line of the front wall is, therefore, not exactly crescentic, but irregularly curved ,conforming to the rear of the cavern in which the houses are situated. About midway in the curve of the front walls two walls indicative of former rooms extend at an angle of about to the main front wall. All the component rooms of the main part of Honanki can be entered, some by external passageways, others by doorways communicating with adjacent chambers.

None of the inclosures have roofs or upper floors, although indications of the former existence of both these structural features may readily be seen in several places. Although wooden beams are invariably wanting, fragments of these still project from the walls, almost always showing on their free ends, inside the rooms, the effect of fire. I succeeded in adding to the collection a portion of one of these beams, the extremity of which had been battered off, evidently with a stone implement. In the alkaline dust which covered the floor several similar specimens were seen. The stones which form the masonry of the wall were not, as a rule, dressed or squared before they were laid with adobe mortar, but were generally set in place in the rough condition in which they may still be obtained anywhere under the cliff. All the mortar used was of adobe or the tenacious clay which serves so many purposes among the Pueblos. The walls of the rooms were plastered with a thick layer of the same material. The rear wall of each room is the natural rock of the cliff, which rises vertically and has a very smooth surface. The great natural archway which covers the whole pueblo protects it from wind and rain, and as a consequence, save on the front face, there are few signs of natural erosion. The hand of man, however, has dealt rudely with this venerable building, and many of the walls, especially of rooms which formerly stood before the central portion, lie prone upon the earth; but so securely were the component stones held together by the adobe that even after their fall sections of masonry still remain intact. Structure of wall of Honanki Structure of wall of Honanki There are seven walled inclosures in the main part of Honanki, and as each of these was formerly at least two stories high there is substantial evidence of the former existence of fourteen rooms in this part of the ruin. There can be little doubt that there were other rooms along the front of the central portion, and the fallen walls show them to have been of large size. It would likewise appear that the middle part was higher than the two wings, which would increase the number of chambers, so that with these additions it may safely be said that this part of Honanki alone contained not far from twenty rooms. The recess in the cliff in which the ruin is situated is lower in the middle than at either side, where there are projecting ledges of rock which were utilized by the builders in the construction of the foundations, the line of the front wall following the inequalities of the ground. It thus results that rooms g, a, b, and a part of c, rise from a foundation about breast high, or a little higher than the base of rooms d, e, and f. The front wall of a has for its foundation a spur or ledge of rock, which is continued under b and a part of c. The corner or angle of this wall, facing the round chamber, is curved in the form of a tower, a considerable section of its masonry being intact. Near the foundation and following the inequalities of the rock surface the beginning of a wall at right angles to the face of the ruin at this point is seen. A small embrasure, high above the base of the front wall, on the side by which one approaches the ruin from the east, and two smaller openings on the same level, looking out over the valley, suggest a floor and lookouts. The large square orifice in the middle of the face of the wall has a wooden lintel, still in place; the opening is large enough for use as a door or passageway. The upper edge of the front wall is somewhat irregular, but a notch in it above the square opening is conspicuous. The rear wall of room a was the face of the cliff, formed of solid rock without masonry and very much blackened by smoke from former fires. As, however, there is evidence that since its destruction or abandonment by its builders this ruin has been occupied as a camping place by the Apache, it is doubtful to which race we should ascribe this discoloration of the walls by soot. On the ground floor there is a passageway into chamber b, which is considerably enlarged, although the position of the lintel is clearly indicated by notches in the wall. The beam which was formed there had been torn from its place and undoubtedly long ago used for firewood by nomadic visitors. The open passageway, measured externally, is about above the foundation of the wall, through which it is broken, and about below the upper edge of the wall. Room b is an irregular, square chamber, two stories high, communicating with a and c by passages which are enlarged by breakage in the walls. A small hole in the front wall, about from the floor, opens externally to the air.

The walls are, in general, about thick, and are composed of flat red stones laid in clay of the same color. The cliff forms the rear wall of the chamber. The clay at certain places in the walls, especially near the insertions of the beams and about the window openings, appears to have been mixed with a black pitch, which serves to harden the mixture. Room c is the first of a series of chambers, with external passageways, but its walls are very much broken down, and the openings thereby enlarged. The front wall is almost straight and in one place stands, the maximum height of the standing wall of the ruins. In one corner a considerable quantity of ashes and many evidences of fire, some of which may be ascribed to Apache occupants, was detected. A wooden beam, marking the line of the floor of a second story, was seen projecting from the front wall, and there are other evidences of a floor at this level. Large beams apparently extended from the front wall to the rear of the chamber, where they rested on a ledge in the cliff, and over these smaller sticks were laid side by side and at right angles to the beams. These in turn supported either flat stones or a layer of mud or clay. The method of construction of one of these roofs is typical of a Tusayan kiva, where ancient architectural forms are adhered to and best preserved. The entrance to room d is very much enlarged by the disintegration of the wall, and apparently there was at this point a difference in level of the front wall, for there is evidence of rooms in advance of those connected with the chambers described, as shown by a line of masonry, still standing, parallel to the front face of inclosures c and d. Room e communicates by a doorway with the chamber marked f, and there is a small window in the same partition. This room had a raised banquette on the side toward the cliff, recalling an arrangement of the floor similar to that in the cavate dwellings opposite Squaw mountain which I have described. This platform is raised about three feet above the remainder of the floor of f, and, like it, is strewn with large slabs of stone, which have fallen from the overhanging roof. In the main floor, at one corner, near the platform, there is a rectangular box-like structure made of thin slabs of stone set on edge, suggesting the grinding bins of the Pueblos. Room f communicates with g by a passageway which has a stone lintel. The holes in the walls, in which beams were once inserted, are seen in several places at different levels above the floor. The ends of several beams, one extremity of which is invariably charred, were found set in the masonry, and others were dug from the débris in the floor. As a result of the curve in the front wall of the ruin at that point, the shape of room f is roughly quadrate, with banquettes on two sides. There are six large beam holes in the walls, and the position of the first floor is well shown on the face of the partition, separating f from g. The passageway from one of these rooms to the other is slightly arched. Room g is elongated, without an external entrance, and communicates with f by a small opening, through which it is very difficult to crawl. Its longest dimension is almost at right angles to the front face of the remaining rooms, and it is raised above them by its foundation on an elevated rock like that of a, b, and c. There is a small, square, external opening which may have served as the position of a former beam or log. The upper level of the front wall is more or less broken down in places, and formerly may have been much higher. Beyond g a spur of masonry is built at right angles to the cliff, inclosing a rectangular chamber at the end of the ruin which could not be entered. Possibly in former times it was accessible by means of a ladder from the roof, whence communication with other portions of the structure was also had. A short distance beyond the westernmost rooms of Honanki, almost covered with bushes and adjoining the base of the cliff, there is a large ash heap in which are many fragments of pottery and the bones of various animals. It is probable that excavation in this quarter would reveal many interesting objects. In the cliffs above this ash heap, far beyond reach, there is a walled niche which has never been disturbed. This structure is similar to those near the cavate dwellings, and when opened will probably be found to contain buried mortuary objects of interesting character. I did not disturb this inclosure, inasmuch as I had no ladders or ropes with which to approach it. It is very difficult to properly estimate, from the number of rooms in a cliff house, the former population, and as a general thing the tendency is rather to overstate than to fall short of the true total.

In a pueblo like Hano, on the first or east mesa of Tusayan, for instance, there are many uninhabited rooms, and others serve as storage chambers, while in places the pueblo has so far fallen into ruin as to be uninhabitable. If a pueblo is very much concentrated the population varies at different seasons of the year. In summer it is sparsely inhabited; in winter it is rather densely populated. While Palatki and Honanki together had rooms sufficient to house people, I doubt whether their aggregate population, ever exceeded. This estimate, of course, is based on the supposition that these villages were contemporaneously inhabited. The evidences all point to a belief, however, that they were both permanent dwelling places and not temporary resorts at certain seasons of the year. The pictographs on the face of the cliff above Honanki are for the greater part due to the former Apache occupants of the rooms, and are situated high above the tops of the walls of the ruin. They are, as a rule, drawn with white chalk, which shows very clearly on the red rock, and are particularly numerous above room g. The figure of a circle, with lines crossing one another diametrically and continued as rays beyond the periphery, possibly represent the sun. Many spiral figures, almost constant pictographs in cliff ruins, are found in several places. Another strange design, resembling some kind of insect, is very conspicuous. A circle painted green and inclosed in a border of yellow is undoubtedly of Apache origin. There is at one point a row of small pits, arranged in line, suggesting a score or enumeration of some kind, and a series of short parallel lines of similar import was found not far away. This latter method of recording accounts is commonly used at the present time in Tusayan, both in houses and on cliffs; and one of the best of these, said to enumerate the number of Apache killed by the Hopi in a raid many years ago, may be seen above the trail by which the visitor enters the pueblo of Hano on the East Mesa. The names of several persons scratched on the face of the cliff indicate that Americans had visited Honanki before me. The majority of the paleoglyphs at both Palatki and Honanki are of Apache origin, and are of comparatively modern date, as would naturally be expected. In some instances their colors are as fresh as if made a few years ago, and there is no doubt that they were drawn after the building was deserted by its original occupants. The positions of the pictographs on the cliffs imply that they were drawn before the roofs and flooring had been destroyed, thus showing how lately the ruin preserved its ancient form. In their sheltered position there seems to be no reason why the ancient pictographs should not have been preserved, and the fact that so few of the figures pecked in the cliff now remain is therefore instructive. One of the first tendencies of man in visiting a ruin is to inscribe his name on its walls or on neighboring cliffs. This is shared by both Indians and whites, and the former generally makes his totem on the rock surface, or adds that of his gods, the sun, rain-cloud, or katcinas. Inscriptions recording events are less common, as they are more difficult to indicate with exactitude in this system of pictography. The majority of ancient pictographs in the Red-rock country, like those I have considered in other parts of Verde valley, are identical with picture writings now made in Tusayan, and are recognized and interpreted without hesitation by the Hopi Indians. In their legends, in which the migrations of their ancestors are recounted, the traditionists often mention the fact that their ancestors left their totem signatures at certain points in their wanderings. The Patki people say that you will find on the rocks of Palatkwabi, the "Red Land of the South" from which they came, totems of the rain-cloud, sun, crane, parrot, etc. If we find these markings in the direction which they are thus definitely declared to exist, and the Hopi say similar pictures were made by their ancestors, there seems no reason to question such circumstantial evidence that some of the Hopi clans once came from this region. One of the most interesting of the pictographs pecked in the rock is a figure which, variously modified, is a common decoration on cliff-dweller pottery from the Verde valley region to the ruins of the San Juan and its tributaries. This figure has the form of two concentric spirals, the ends of which do not join. As this design assumes many modifications, it may be well to consider a few forms which it assumes on the pottery of the cliff people and on that of their descendants, the Pueblos. The so-called black-and-white ware, or white pottery decorated with black lines, which is so characteristic of the ceramics of the cliff-dwellers, is sometimes, as we shall see, found in ruins like Awatobi and Sikyatki; but it is so rare, as compared with other varieties, that it may be regarded as intrusive.

One of the simplest forms of the broken-line motive is a Greek fret, in which there is a break in the component square figures or where the line is noncontinuous. In the simplest form, which appears prominently on modern pottery, but which is rare or wanting on true black-and-white ware, we have two crescentic figures, the concavities of which face in different directions, but the horns overlap. This is a symbol which the participants in the dance called the Húmiskatcina still paint with pigments on their breasts, and which is used on shields and various religious paraphernalia. A study of any large collection of decorated Pueblo ware, ancient or modern, will show many modifications of this broken line, a number of which I shall discuss more in detail when pottery ornamentation is considered. A design so distinctive and so widespread as this must certainly have a symbolic interpretation. The concentric spirals with a broken line, the Hopi say, are symbols of the whirlpool, and it is interesting to find in the beautiful plates of Chavero's Antigüedades Mexicanas that the water in the lagoon surrounding the ancient Aztec capital was indicated by the Nahuatl Indians with similar symbols. The isolation of these ruins and the impossibility of obtaining workmen, combined with the brief visit which I was able to make to them, rendered it impossible to collect very many specimens of ancient handiwork. The few excavations which were made were limited almost wholly to Honanki, and from their success I can readily predict a rich harvest for anyone who may attempt systematic work in this virgin field. We naturally chose the interior of the rooms for excavation, and I will say limited our work to these places. Every chamber was more or less filled with débris—fragments of overturned walls, detached rock from the cliff above, dry alkaline soil, drifted sand, dust, and animal excreta. In those places where digging was possible we found the dust and guano so dry and alkaline that it was next to impossible to work for any length of time in the rooms, for the air became so impure that the workmen could hardly breathe, especially where the inclosing walls prevented ventilation. Notwithstanding this obstacle, however, we removed the accumulated débris down to the floor in one or two chambers, and examined with care the various objects of aboriginal origin which were revealed. In studying the specimens found in cliff-houses due attention has not always been given to the fact that occupants have oftentimes camped in them subsequently to their abandonment by the original builders. As a consequence of this temporary habitation objects owned by unrelated Indians have frequently been confused with those of the cliff-dwellers proper. We found evidences that both Honanki and Palatki had been occupied by Apache Mohave people for longer or shorter periods of time, and some of the specimens were probably left there by these inhabitants. The ancient pottery found in the rooms, although fragmentary, is sufficiently complete to render a comparison with known ceramics from the Verde ruins. Had we discovered the cemeteries, for which we zealously searched in vain, no doubt entire vessels, deposited as mortuary offerings, would have been found; but the kind of ware of which they were made would undoubtedly have been the same as that of the fragments. No pottery distinctively different from that which has already been reported from the Verde valley ruins was found, and the majority resembled so closely in texture and symbolism that of the cliff houses of the San Juan, in northern New Mexico and southern Utah, that they may be regarded as practically identical. The following varieties of pottery were found at Honanki: I. Coiled ware. II. Indented ware. III. Smooth ware. IV. Smooth ware painted white, with black geometric figures. V. Smooth red ware, with black decoration. By far the largest number of fragments belong to the first division, and these, as a rule, are blackened by soot, as if used in cooking. The majority are parts of large open-mouth jars with flaring rims, corrugated or often indented with the thumb-nail or some hard substance, the coil becoming obscure on the lower surface. The inside of these jars is smooth, but never polished, and in one instance the potter used the corrugations of the coil as an ornamental motive. The paste of which this coiled ware was composed is coarse, with argillaceous grains scattered through it; but it was well fired and is still hard and durable. When taken in connection with its tenuity, these features show a highly developed potter's technique. A single fragment is ornamented with an S-shape coil of clay fastened to the corrugations in much the same way as in similar ware from the ruins near the Colorado Chiquito. The fragments of smooth ware show that they, too, had been made originally in the same way as coiled ware, and that their outer as well as their inner surface had been rubbed smooth before firing. As a rule, however, they are coarse in texture and have little symmetry of form. Fragments identified as parts of bowls, vases, jars, and dippers are classed under this variety.

As a rule they are badly or unevenly fired, although evidently submitted to great heat. There was seldom an effort made to smooth the outer surface to a polish, and no attempt at pictorial ornamentation was made. The fragments represented in were made of a much finer clay, and the surface bears a gloss, almost a glaze. The ornamentation on the few fragments which were found is composed of geometric patterns, and is identical with the sherds from other ruins of Verde valley. A fragment each of a dipper and a ladle, portions of a red bowl, and a rim of a large vase of the same color were picked up near the ruin. Most of the fragments, however, belong to the first classes—the coiled and indented wares. There was no evidence that the former inhabitants of these buildings were acquainted with metals. The ends of the beams had been hacked off evidently with blunt stone axes, aided by fire, and the lintels of the houses were of split logs which showed no evidence that any metal implement was used in fashioning them. We found, however, several stone tools, which exhibit considerable skill in the art of stone working. These include a single ax, blunt at one end, sharpened at the other, and girt by a single groove. The variety of stone from which the ax was made does not occur in the immediate vicinity of the ruin. There were one or two stone hammers, grooved for hafting, like the ax. A third stone maul, being grooveless, was evidently a hand tool for breaking other stones or for grinding pigments. Stone implement from Honanki Stone implement from Honanki Perhaps the most interesting stone implement which was found was uncovered in the excavation of one of the middle rooms of the western part of the ruin, about three feet below the surface. It consists of a wooden handle rounded at each end and slightly curved, with a sharpened stone inserted midway of its length and cemented to the wood with pitch or asphaltum. The stone of this implement would hardly bear rough usage, or sustain, without fracture, a heavy blow. The edge is tolerably sharp, and it therefore may have been used in skinning animals. Judging from the form of the handle, the implement is better suited for use as a scraper than for any other purpose which has occurred to me . The inhabitants of the two ruins of the Red-rocks used obsidian arrowpoints with shafts of reeds, and evidently highly regarded fragments of the former material for knives, spearheads, and one or two other purposes. The stone metates from these ruins are in no respect characteristic, and several fine specimens were found in place on the floors of the rooms. One of these was a well-worn specimen of lava, which must have been brought from a considerable distance, since none of that material occurs in the neighborhood. The existence of these grinding stones implies the use of maize as food, and this evidence was much strengthened by the finding of corncobs, kernels of corn, and charred fragments at several points below the surface of the débris in the chambers of Honanki. One of these grinding stones was found set in the floor of one of the rooms in the same way that similar metates may be seen in Walpi today. Of bone implements, our limited excavations revealed only a few fragments. Leg bones of the turkey were used for awls, bodkins, needles, and similar objects. In general character the implements of this kind which were found are almost identical in form with the bone implements from Awatobi and Sikyatki, which are later figured and described. Although the bone implements unearthed were not numerous, we were well repaid for our excavations by finding an ancient fireboard, identical with those now used at Tusayan in the ceremony of kindling "new fire," and probably universally used for that purpose in former times. The only shell was a fragment of a bracelet made from a Pectunculus, a Pacific coast mollusk highly esteemed in ancient times among prehistoric Pueblos. The majority of the wooden objects found showed marks of fire, which were especially evident on the ends of the roof and floor beams projecting from the walls. Tinder tube from Honanki Tinder tube from Honanki A considerable collection of objects made of wickerwork and woven vegetal fiber was found in the alkaline dust and ashes of the Red-rock cliff houses, and while there is some difficulty here as elsewhere, in deciding whether certain specimens belonged to the original builders or to later temporary occupants, there is little doubt that most of them were the property of the latter. There were many specimens of basketry found on the surface of the rubbish of the floors which, from the position of their occurrence and from their resemblance to the wickerwork still used by the Apache, seem without doubt to have been left there by temporary occupants of the rooms. There were likewise many wisps of yucca fiber tied in knots which must probably be regarded as of identical origin.

The Yucca baccata affords the favorite fiber used by the natives at the present time, and it appears to have been popular for that purpose among the ancients. Several specimens of sandals, some of which are very much worn on the soles, were found buried at the floor level. These are all of the same kind, and are made of yucca leaves plaited in narrow strips. The mode of attachment to the foot was evidently by a loop passing over the toes. Hide and cloth sandals have as yet not been reported from the Red-rock ruins of Verde valley. These sandals belonged to the original occupants of the cliff houses. Fabrics made of cotton are common in the ruins of the Red-rocks, and at times this fiber was combined with yucca. Some of the specimens of cotton cloth were finely woven and are still quite strong, although stained dark or almost black. Specimens of netting are also common, and an open-mesh legging, similar to the kind manufactured in ancient times by the Hopi and still worn by certain personators in their sacred dances, were taken from the western room of Honanki. There were also many fragments of rope, string, cord, and loosely twisted bands, resembling head bands for carrying burdens. A reed in which was inserted a fragment of cotton fiber was unlike anything yet reported from cliff houses, and as the end of the cotton which projected beyond the cavity of the reed was charred, it possibly was used as a slow-match or tinder-box. Several shell and turquois beads were found, but my limited studies of the cliffhouses revealed only a few other ornaments, among them being beads of turkeybone and a single wristlet fashioned from a Pectunculus. One or two fragments of prayer-sticks were discovered in a rock inclosure in a cleft to the west of the ruin. The ruins of the Verde region closely resemble those of Tusayan, and seem to support the claim of the Hopi that some of their ancestors formerly lived in that region. This is true more especially of the villages of the plains and mesa tops, for neither cave-houses nor cavate dwellings are found in the immediate vicinity of the inhabited Tusayan pueblos. The objects taken from the ruins are similar to those found universally over the pueblo area, and from them alone we can not say more than that they probably indicate the same substratum of culture as that from which modern pueblo life with its many modifications has sprung. The symbolism of the decorations on the fragments of pottery found in the Verde ruins is the same as that of the ancient pueblos of the Colorado Chiquito, and it remains to be shown whether the ancestors of these were Hopi or Zuñi. I believe it will be found that they were both, or that when the villages along the Colorado Chiquito [29] were abandoned part of the inhabitants went to the mesas of Tusayan and others migrated farther up the river to the Zuñi villages. Two centers of distribution of cliff houses occur in our Southwest: those of the upper tributaries of the Colorado in the north and the cliff houses of the affluents of the Salt and the Gila in the south. The watershed of the Rio Grande is, so far as is known, destitute of this kind of aboriginal dwellings. Between the two centers of distribution lie the pueblos of the Little Colorado and its tributaries, the home of the ancestors of the Hopi and the Zuñi. The many resemblances between the cliff houses of the north and those of the south indicate that the stage of culture of both was uniform, and probably the same conditions of environment led both peoples to build similar dwellings. All those likenesses which can be found between the modern Zuñi and the Hopi to the former cliff peoples of the San Juan region in the north, apply equally to those of the upper Salado and the Gila and their tributaries to the south; and so far as arguments of a northern origin of either, built on architectural or technological resemblances, are concerned, they are not conclusive, since they are also applicable to the cliff peoples of the south. The one important difference between the northern and the southern tier of cliff houses is the occurrence of the circular kiva, which has never been reported south of the divide between the Little Colorado and the Gila-Salado drainage. If a kiva was a feature in southern cliff houses, which I doubt, it appears to have been a rectangular chamber similar to a dwelling room. The circular kiva exists in neither the modern Hopi nor the Zuñi pueblos, and it has not been found in adjacent Tusayan ruins; therefore, if these habitations were profoundly influenced by settlers from the north, it is strange that such a radical change in the form of this room resulted. The arguments advanced that one of the two component stocks of the Zuñi, and that the aboriginal, came from the cliff peoples of the San Juan, are not conclusive, although I have no doubt that the Zuñi may have received increment from that direction.

Cushing has, I believe, furnished good evidence that some of the ancestors of the Zuñi population came from the south and southwest; and that some of these came from pueblos now in ruins on the Little Colorado is indicated by the great similarity in the antiquities of ancient Zuñi and the Colorado Chiquito ruins. Part of the Patki people of the Hopi went to Zuñi and part to Tusayan, from the same abandoned pueblo, and the descendants of this family in Walpi still recognize this ancient kinship; but I do not know, and so far as can be seen there is no way of determining, the relative antiquity of the pueblos in Zuñi valley and those on the lower Colorado. The approximate date of the immigration of the Patki people to Tusayan is as yet a matter of conjecture. It may have been in prehistoric times, or more likely at a comparatively late period in the history of the people. It seems well substantiated, however, that when this Water-house people joined the other Hopi, the latter inhabited pueblos and were to all intents a pueblo people. If this hypothesis be a correct one, the Snake, Horn, and Bear peoples, whom the southern colonists found in Tusayan, had a culture of their own similar to that of the people from the south. Whence that culture came must be determined by studies of the component clans of the Hopi before the arrival of the Patki people. The origin of the round shape of the estufa, according to Nordenskiöld (p. 168), is most easily explained on the hypothesis that it is a reminiscence of the cliffdwellers' nomadic period. "There must be some very cogent reason for the employment of this shape," he says, "for the construction of a cylindrical chamber within a block of rectangular rooms involves no small amount of labor. We know how obstinately primitive nations cling to everything connected with their religious ideas. Then what is more natural than the retention, for the room where religious ceremonies were performed, of the round shape characteristic of the original dwelling place, the nomadic hut? This assumption is further corroborated by the situation of the hearth and the structure of the roof of the estufa, when we find points of analogy to the method employed by certain nomadic Indians in the erection of their huts." This theory of the origin of the round form of dwelling and its retention in the architecture of the kiva, advanced by Nordenskiöld in 1893, has much in its favor, but the rectangular form, which, so far as known, is the only shape of these sacred rooms in the Tusayan region, is still unexplained. From Castañeda's narrative of the Coronado expedition it appears that in the middle of the sixteenth century the eastern pueblos had both square and round estufas or kivas, and that these kivas belonged to the men while the rooms of the pueblo were in the possession of the women. The apparent reason why we find no round rooms or kivas in the southern cliff houses and in Tusayan may be due to several causes. Local conditions, including the character of the building sites on the Hopi mesa, made square rooms more practical, or the nomadic stage was so far removed that the form of the inclosure in which the ancients held their rites had not been preserved. Moreover, some of the most ancient and secret observances at Walpi, as the Flute ceremony, are not performed in special kivas, but take place in ordinary living rooms. As in all the other ruins of Verde valley, circular kivas are absent in the Red-rock country, and this fact, which has attracted the attention of several observers, is, I believe, very significant. Although as yet our knowledge of the cliff houses of the upper Gila and Salado and their numerous tributaries is very fragmentary, and generalization on that account unsafe, it may be stated provisionally that no circular kivas have yet been found in any ruins of the Gila-Salado watershed. This form of kiva, however, is an essential feature of the cliff dwellings of Rio Colorado, especially of those along its affluents in southern Colorado and northern New Mexico. Roughly speaking, then, the circular kiva is characteristic of the ruins of this region and of certain others in the valley of the Rio Grande, where they still survive in inhabited pueblos. Circular ruins likewise are limited in their distribution in the Southwest, and it is an interesting fact that the geographic distribution of ancient pueblos of this form is in a general way the same as that of circular kivas. There are, of course, many exceptions, but so far as I know these can readily be explained. No ruins of circular dwellings occur in the Gila-Salado drainage area, where likewise no circular kivas have been observed. Moreover, the circular form of dwelling and kiva is distinctively characteristic of prehistoric peoples east of Tusayan, and the few instances of their occurrence on its eastern border can readily be explained as extra-Hopi. The explanation of these circular kivas advanced by Nordenskiöld and the Mindeleffs, that they are survivals of round habitations of nomads, has much to commend it.

But whether sufficient or not, the geographic limitation of these structures tells in favor of the absence of any considerable migration of the prehistoric peoples of the upper Colorado and Rio Grande watersheds southward into the drainage area of the Gila-Salado. Had the migration been in that direction it may readily be believed that the round kiva and the circular form of dwelling would have been brought with it. The round kiva has been regarded as a survival of the form of the original homes of the nomad, when he became a sedentary agriculturist by conquest and marriage. The presence of rectangular kivas in the same areas in which round kivas occur does not necessarily militate against this theory, nor does it oblige us to offer an explanation of a necessarily radical change in architecture if we would derive it from a circular form. It would indeed be very unusual to find such a change in a structure devoted to religious purposes where conservatism is so strong. The rectangular kiva is the ancient form, or rather the original form; the round kiva is not a development from it, but an introduction from an alien people. It never penetrated southward of the Colorado and upper Rio Grande drainage areas because the element which introduced it in the north was never strong enough to influence the house builders of the Gila-Salado and tributary valleys. No region of our Southwest presents more instructive antiquities than the ancient province of Tusayan, more widely known as the Moki reservation. In the more limited use of the term, Tusayan is applied to the immediate surroundings of the Hopi pueblos, to which "province" it was given in the middle of the sixteenth century. In a broader sense the name would include an as yet unbounded country claimed by the component clans of this people as the homes of their ancestors. The general character and distribution of Tusayan ruins has been ably presented by in a previous report. While this memoir is not regarded as exhaustive, it considers most of the large ruins in immediate proximity to the three mesas on which the pueblos inhabited by the Hopi are situated. It is not my purpose here to consider all Tusayan ruins, even if I were able to do so, but to supplement with additional data the observations already published on two of the most noteworthy pueblo settlements. Broadly speaking, I have attempted archeological excavations in order to obtain more light on the nature of prehistoric life in Tusayan. It may be advantageous, however, to refer briefly to some of the ruins thus far discovered in the Tusayan region as preliminary to more systematic descriptions of the two which I have chosen for special description. The legends of the surviving Hopi contain constant references to former habitations of different clans in the country round about their present villages. These clans, which by consolidation make up the present population of the Hopi pueblos, are said to have originally entered Tusayan from regions as far eastward as the Rio Grande, and from the southern country included within the drainage of the Gila, the Salt, and their affluents. Other increments are reputed to have come from the northward and the westward, so that the people we now find in Tusayan are descendants from an aggregation of stocks from several directions, some of them having migrated from considerable distances. Natives of other regions have settled among the ancient Hopi, built pueblos, and later returned to their former homes; and the Hopi in turn have sent colonists into the eastern pueblo country. These legends of former movements of the tribal clans of Tusayan are supplemented and supported by historical documents, and we know from this evidence that there has been a continual interchange between the people of Tusayan and almost every large pueblo of New Mexico and Arizona. Some of the ruins of this region were abandoned in historic times; others are prehistoric; many were simply temporary halting places in Hopi migrations, and were abandoned as the clans drifted together in friendship or destroyed as a result of internecine conflicts. There is documentary evidence that in the years following the great rebellion of the Pueblo tribes in 1680, which were characterized by catastrophes of all kinds among the Rio Grande villagers, many Tanoan people fled to Tusayan to escape from their troubles. According to Niel, Tanoan refugees, under Frasquillo, loaded with booty which they had looted from the churches, went to Oraibi by way of Zuñi, and there established a "kingdom," with their chief as ruler. How much reliance may be placed on this account is not clear to me, but there is no doubt that many Tanoan people joined the Hopi about this time, and among them were the Asa people, the ancestors of the present inhabitants of Hano pueblo, and probably the accolents of Payüpki. The ease with which two Franciscan fathers, in persuaded of these to return to the Rio Grande, implies that they were not very hostile to Christianity, and it is possible that one reason they sought Tusayan in the years after the Spaniards were expelled may have been their friendship for the church party.

With the exception of Oraibi, not one of the present inhabited pueblos of Tusayan occupies the site on which it stood in the sixteenth century, and the majority of them do not antedate the beginning of the eighteenth century. The villages have shifted their positions but retained their names. At the time of the advent of Tobar, in there was but one of the present three villages of East Mesa. This was Walpi, and at the period referred to it was situated on the terrace below the site of the present town, near the northwestern base of the mesa proper. Two well-defined ruins, called Kisakobi and Küchaptüvela, are now pointed out as the sites of Old Walpi. Of these Küchaptüvela is regarded as the older. Judging by their ruins these towns were of considerable size. From their exposed situation they were open to the inroads of predatory tribes, and from these hostile raids their abandonment became necessary. From Küchaptüvela the ancient Walpians moved to a point higher on the mesa, nearer its western limit, and built Kisakobi, where the pueblo stood in the seventeenth century. There is evidence that a Spanish mission was erected at this point, and the place is sometimes called Nüshaki, a corruption of "Missa-ki," Mass-house. From this place the original nucleus of Walpians moved to the present site about the close of the seventeenth century. Later the original population was joined by other phratries, some of which, as the Asa, had lived in the cliff-houses of Tségi, or Canyon de Chelly, as late as the beginning of the eighteenth century. This, however, is not the place to trace the composition of the different modern villages. Sichomovi was a colony from Walpi, founded about, and Hano was built not earlier than. The former was settled by the Badger people, later joined by a group of Tanoan clans called the Asa, from the Rio Grande, who were invited to Tusayan to aid the Hopi in resisting the invasions of northern nomads. By the middle of the eighteenth century the population of the province of Tusayan was for the first time distributed in the seven pueblos now inhabited. No village has been deserted since that time, nor has any new site been occupied. In order that the reader may have an idea of the Tusayan pueblos at the time mentioned, an account of them from a little-known description by Morfi in is introduced: account of the Tusayan pueblos Quarenta y seis leguas al Poniente de Zuñi, con alguna inclinacion al N. O. están los tres primeros pueblos de la provincia de Moqui, que en el dia en el corto distrito de leguas tiene siete pueblos en tres mesas ó peñoles que corren linea recta de Oriente á Poniente. Tanos En la punta occidental de la primera, y en la mas estrecho de su eminencia están situados tres de los quales el primero es el de Tanos (alli dicen Tegüas), cuyas moradores tienen idioma particular y distinto del Moquino. Es pueblo regular con un plaza en el centro, y un formacion de calles. Tendráfamilias. El segundo pueblo dista del precedente como un tiro de piedra, es de fundacion moderna, y se compondrá de mas que se retiraron aqui de: Gualpi Gualpi que dista del anterior un tiro de fusil, es mas grande y populoso que los dos anteriores, puede tener hasta. Estas tres pueblos tienen poco caballada, y algunas vacas; pero mucho ganado lanar. Mosasnabi Al poniente de esta mesa, y á legua y media de distancia está la segunda, cuyo intermedio es un arenal, que ertrando un poco en ella la divide en dos brazas. En el septentrional, que es el mas inmediata á Gualpi hay dos anillos distantes entre si un tiro de piedra. En la cima del primero está situado el pueblo de Mosasnabi compuesto de poco mas ó menos. En la cumbre del secundo cerrito se fundó el quinto pueblo llamado Xipaolabi, que tendrá solo: está casi arruinado, porque sus vecinos se han trasladado al brazo austral de la mesa y formaron el sexto pueblo llamado: Xongopabi Xongopabi goza mejor situacion que todos los demas, tienen tres quarteles mui bien dispuestos y en ellas unas. Estos tres pueblos tienen mas caballada que los primeros y mucho ganado menor. Oraybe Dos y media leguas al Poniente de esta mesa, está la tercera, y en sucima el septimo pueblo que llaman Oraybe. Es como la capital de la provincia, el mayor y mas bien formado de toda ella, y acaso de todas las provincias internas. Tiene once quarteles ó manzanas bien largas y dispuestos con calles á cordel yá todos vientos, y puede llegar su poblacion á. Tienen buena caballada, mucho ganado menor y algun vacuno. Aunque no gozan sino una pequeña fuente de buena agua, distante del pueblo mas de una milla al Norte, han construido para suplir esta escasez, en la misma mesa, y mui inmediato à las casas seis cisternas grandes donde recoger la agua de las lluvias y nieves. The distribution of the population of Tusayan in the seven pueblos mentioned above remained practically the same during the century between. Summer settlements for farming purposes were inhabited by the Oraibi for brief periods.

Between the years a beginning of a new distribution of Hopi families began, when one or two of the less timid erected houses near Coyote spring, at the East Mesa. The Tewa, represented by Polaka and Jakwaina, took the lead in this movement. From to the present time a large number of Walpi, Sichomovi, and Hano families have built houses in the foothills of the East Mesa and in the plain beyond the "wash." A large schoolhouse has been erected at Sun spring and a considerable number of East Mesa villagers have abandoned their mesa dwellings. In this shifting of the population the isolated house is always adopted and the aboriginal method of roof building is abandoned. The indications are that in a few years the population of the East Mesa will be settled in unconnected farmhouses with little resemblance to the ancient communal pueblo. This movement is shared to a less extent by the Middle Mesa and Oraibi people. On my first visit to the pueblos of these mesas, in, there was not a single permanent dwelling save in the ancient pueblos; but now numerous small farmhouses have been erected at or near the springs in the foothills. I mention these facts as a matter of record of progress in the life of these people in adapting themselves to the new conditions or influences by which they are surrounded. I believe that if this exodus of Hopi families from the old pueblo to the plain continues during the next two decades as it has in the last ten years, there are children now living in Walpi who will some day see it uninhabited. This disintegration of the Hopi phratries, by which families are separated from one another, is, I believe, a return to the prehistoric distribution of the clans, and as Walpi grew into a pueblo by a union of kindred people, so now it is again being divided and distributed, still preserving family ties in new clusters or groupings. It is thus not impossible that the sites of certain old ruins, as Sikyatki, deserted for many years, will again be built upon if better suited for new modes of life. The settlement near Coyote spring, for instance, is not far from the old site of a former home of the Tanoan families, who went to Tusayan in the beginning of the eighteenth century, and the people who inhabit these new houses are all Tanoan descendants of the original contingent. In order to become familiar with the general character of Tusayan ruins, I made a brief reconnoissance of those mentioned in the following list, from which I selected Awatobi and Sikyatki as places for a more exhaustive exploration. This list is followed by a brief mention of those which I believe would offer fair opportunities for a continuation of the work inaugurated. The ruins near Oraibi were not examined and are therefore omitted, not that they are regarded as less important, but because I was unable to undertake a study of them in the limited time at my disposal. There are also many ruins in Tusayan, north of the inhabited pueblos, which have never been described, and would well repay extended investigation. Some of these, as the ruins at the sacred spring called Kishuba, are of the utmost traditional importance. Middle Mesa ruins—Old Shuñopovi; Old Mishoñinovi; Shitaumû; Chukubi; Payüpki. East Mesa ruins—Kisakobi; Küchaptüvela; Küküchomo; Tukinobi; Kachinba; Sikyatki. Ruins in Keam's canyon. Jeditoh valley ruins— Bat-house; Jeditoh, Kawaika; Horn-house; Awatobi; Smaller Awatobi. This method of classification is purely geographical, and is adopted simply for convenience; but there are one or two facts worthy of mention in regard to the distribution of ruins in these four sections. The inhabited pueblos, like the ruins, are, as a rule, situated on the eastern side of their respective mesas, or on the cliffs or hills which border the adjacent plains on the west. This uniformity is thought to have resulted from a desire to occupy a sunny site for warmth and for other reasons. The pueblos at or nearest the southern ends of the mesas were found to be best suited for habitation, consequently the present towns occupy those sites, or, as in the case of the Jeditoh series, the pueblo at that point was the last abandoned. The reason for this is thought to be an attempt to concentrate on the most inaccessible sites available, which implies inroads of hostile peoples. For the same reason, likewise, the tendency was to move from the foothills to the mesa tops when these invasions began. Early settlers near East Mesa appeared to have chosen exposed sites for their pueblos. This would imply that they feared no invasion, and legendary history indicates that the first pueblos were erected before the hostile Ute, Apache, and Navaho appeared. The early settlements on Middle Mesa were also apparently not made with an absorbing idea of inaccessibility. All the Jeditoh villages, however, were on the mesa tops, these sites having been selected evidently with a view to protection, since they were not convenient to the farms. For many reasons it would seem that the people who occupied the now ruined Jeditoh villages were later arrivals in Tusayan than those of East and Middle Mesas, and that, as a rule.

They came from the eastward, while those of Middle Mesa arrived from the south. The first colonists of all, however, appear to have been the East Mesa clans, the Bear and Snake families. If this conjecture be true, we may believe that the oldest pueblos in Tusayan were probably the house groups of the Snake clan of East Mesa, for whom their traditionists claim a northern origin. THE MIDDLE MESA RUINS SHUÑOPOVI The site of Old Shuñopovi at the advent of the first Spaniards, and for a century or more afterward, was at the foot of the mesa on which the present village stands. The site of the old pueblo is easily detected by the foundations of the ancient houses and their overturned walls, surrounded by mounds of soil filled with fragments of the finest pottery. The old village was situated on a ridge of foothills east of the present town and near the spring, which is still used. On the highest point of the ridge there rise to a considerable height the massive walls of the old Spanish mission church, forming an inclosure, now used as a sheep corral. The cemeteries are near by, close to the outer walls, and among a clump of peach trees about half a mile east of the old houses. The pottery, as shown by the fragments, is of the finest old Tusayan ware, cream and red being the predominating colors, while fragments of coiled and black-and-white ware are likewise common. The ruins of Old Mishoñinovi lie west of the present pueblo in the foothills, not far from the two rocky pinnacles at that point and adjacent to a spring. In strolling over the site of the old town I have noted its ground plan, and have picked up many sherds which indicate that the pottery made at that place was the fine cream-color ware for which Tusayan has always been famous. The site offers unusual opportunities for archeological studies, but excavation there is not practicable on account of the opposition of the chiefs. Old Mishoñinovi was a pueblo of considerable size, and was probably inhabited up to the close of the seventeenth century. It was probably on this site that the early Spanish explorers found the largest pueblo of the Middle Mesa. The ruin of Shitaimovi, in the foothills near Mishoñinovi, mentioned by Mindeleff, was not visited by our party. The ruin of Chukubi bears every evidence of antiquity. It is situated on one of the eastward projecting spurs of Middle Mesa, midway between Payüpki and Shipaulovi, near an excellent spring at the base of the mesa. Chukubi was built in rectangular form, with a central plaza surrounded by rooms, two deep. There are many indications of outlying chambers, some of which are arranged in rows. The house walls are almost wholly demolished, and in far poorer state of preservation than those of the neighboring ruin of Payüpki. The evidence now obtainable indicates that it was an ancient habitation of a limited period of occupancy. It is said to have been settled by the Patuñ or Squash people, whose original home was far to the south, on Little Colorado river. A fair ground plan is given by Mindeleff in his memoir on Pueblo Architecture; but so far as known no studies of the pottery of this pueblo have ever been made. PAYÜPKI One of the best-preserved ruins on Middle Mesa is called Payüpki by the Hopi, and is interesting in connection with the traditions of the migration of peoples from the Rio Grande, which followed the troublesome years at the close of the seventeenth century. In the reconquest of New Mexico by the Spaniards we can hardly say that Tusayan was conquered; the province was visited and nominally subjugated after the great rebellion, but with the exception of repeated expeditions, which were often repulsed, the Hopi were practically independent and were so regarded. No adequate punishment was inflicted on the inhabitants of Walpi for the destruction of the town of Awatobi, and although there were a few military expeditious to Tusayan no effort at subjugation was seriously made. Tusayan was regarded as an asylum for the discontented or apostate, and about the close of the seventeenth century many people from the Rio Grande fled there for refuge. Some of these refugees appear to have founded pueblos of their own; others were amalgamated with existing villages. Payüpki seems to have been founded about this period, for we find no account of it before this time, and it is not mentioned in connection with ancient migrations. In Holguin is said to have attacked the "Tanos" village between Walpi and Oraibi and forced the inhabitants to give hostages, but he was later set upon by the Tano and driven back to Zuñi. It would hardly seem possible that the pueblo mentioned could have been Hano, for this village does not lie between Oraibi and Walpi and could not have been surrounded in the way indicated in the account. Payüpki, however, not only lay on the trail between Walpi and Oraibi—about midway, as the chronicler states—but was so situated on a projecting promontory that it could easily have been surrounded and isolated from the other pueblos.

The Hopi legends definitely assert that the Payüpki people came from the "great river," the Rio Grande, and spoke a language allied to that of the people of Hano. They were probably apostates, who came from the east about, but did not seem to agree well with the people of the Middle Mesa, and about returned to the river and were domiciled in Sandia, where their descendants still live. The name Payüpki is applied by the Hopi to the pueblo of Sandia as well as to the ruin on the Middle Mesa. The general appearance of the ruin of Payüpki indicates that it was not long inhabited, and that it was abandoned at a comparatively recent date. The general plan is not that common to ancient Tusayan ruins, but more like that of Hano and Sichomovi, which were erected about the time Payüpki was built. Many fragments of a kind of pottery which in general appearance is foreign to Tusayan, but which resembles the Rio Grande ware, were found on the mounds, and the walls are better preserved than those of the ancient Tusayan ruins. A notable absence of fragments of obsidian, the presence of which in abundance is characteristic of ancient ruins, was observed on the site of Payüpki. All these evidences substantiate the Hopi legend that the Tanoan inhabitants of the village of Middle Mesa, above the trail from Walpi to Oraibi, made but a short stay in Tusayan. There is good documentary evidence that Sandia was settled by Tanoan people from Tusayan. Morfi in so states, and in a copy of the acts of possession of the pueblo grants of we find still further proof of the settlement of "Moquinos" in Sandia. When Otermin returned to New Mexico in his attempted reconquest, in he reached Isleta on December 6, and on the 8th Dominguez encamped in sight of Sandia, but found the inhabitants had fled. The discord following this event drove the few surviving families of the Tiwa on their old range to Tusayan, for they were set upon by Keres and Jemez warriors on the plea that they received back the Spaniards. Possibly these families formed the nucleus of Payüpki. It was about this time, also, if we can believe Niel's story, that Tanos went to Tusayan. It would thus appear that the Hopi Payüpki was settled in the decade The two ruins of Küchaptüvela and Kisakobi mark the sites of Walpi during the period of Spanish exploration and occupancy between. The former was the older. In all probability the latter had a mission church and was inhabited at the time of the great rebellion in, having been founded about fifty years previously. The former or more ancient pueblo was situated on the first or lowest terrace of East Mesa, below the present pueblo, on the northern and western sides. The name Küchaptüvela signifies "Ash-hill terrace," and probably the old settlement, like the modern, was known as Walpi, "Place-of-the-gap," referring to the gap or notch (wala) in the mesa east of Hano. Old Walpi is said to have been abandoned because it was in the shade of the mesa, but doubtless the true cause of its removal was that the site was too much exposed, commanded as it was by the towering mesa above it, and easily approached on three sides. The Walpi which was contemporary with Sikyatki was built in an exposed location, for at that time the Hopi were comparatively secure from invaders. Later, however, Apache, Ute, and Navaho began to raid their fields, and the Spaniards came in their midst again and again, forcing them to work like slaves. A more protected site was necessary, and late in the seventeenth century the Walpians began to erect houses on the mesa, which formed the nucleus of the present town. The standing walls of Old Walpi are buried in the débris, but the plans of the rooms may readily be traced. Comparatively speaking, it was a large, compact, well-built pueblo, and, from the great piles of débris in the neighborhood, would seem to have been occupied during several generations. The pottery found in the neighborhood is the fine, ancient Tusayan ware, like that of Sikyatki and Shuñopovi. Extended excavations would reveal, I am sure, many beautiful objects and shed considerable light on the obscure history of Walpi and its early population. After moving from Old Walpi it seems that the people first built houses on the terrace above, or on the platform extending westward from the western limits of the summit of East Mesa. The whole top of that part of the mesa is covered with house walls, showing the former existence of a large pueblo. Here, no doubt, if we can trust tradition, the mission of Walpi was built, and I have found in the débris fragments of pottery similar to that used in Mexico, and very different from ancient or modern Pueblo ware. But even Kisakobi was not a safe site for the Walpians to choose for their village, so after they destroyed the mission and killed the priest they moved up to their present site and abandoned both of their former villages.