HE American southwest contains large numbers of pre-
historic ruins. This does not necessarily imply great
antiquity, for history in the southwest did not begin
until Coronado’s expedition, three hundred and sixty
years ago. The Indians had no written records, and
though their traditions have a definite value, they can
scarcely be classed as “historic records.”

Coronado and all explorers since his time have found many ruins
in the southwest. It is doubtful whether a full catalogue of these ever
yet has been made. Pretty nearly every year finds note made of some
new discovery of greater or lesser importance. In the year 1901,
though thousands of ruins had been noted and partially explored up
to that time, Dr. Frank Russell, of the Bureau of Ethnology, in a trip
made in the southwest and central portions of Arizona, discovered
various ruins hitherto unknown and some of them were of new types.
And the region is yet far from being completely revealed.

One of the most interesting of all the ruins is that of the so-called
Casa Grande in Arizona. Various authors have written about this
and have given widely variant figures in regard to its area. Imagine
the surprise of early readers when they were told of a “temple” in
Arizona that covered an area of nearly five acres (or about 200,000
square feet). The ruin itself, as shown in the photograph, is a
standing portion of a building occupying the southwestern corner of
a large area covered by mounds and other debris. It is the confusion
that has arisen from a failure to distinguish between the ruin of this
building and the area covered by the group of buildings as a whole
that has led to so many apparently conflicting statements of its size.
It can be reached by stage from the Casa Grande Station on the Sun-
set Line of the Southern Pacific Railway, and is about nine miles
from Florence. It is generally accepted that this building “is the
sole surviving remnant of an extensive and important class of remains
in the southwest.” It is one of the smallest of the house clusters, but
even in its ruined condition has walls over twenty-five feet high.
Careful investigation shows that it was built—not of adobe as most
travelers say—but by a crude method, somewhat similar in principle
to that followed to-day in building concrete walls. A mould was made of a framework of canes or poles, woven with reeds or grass, some three or four feet wide and five feet long. This was put into place and the earth, mixed with water to form a thick paste, was thrown in and rammed down as tightly as possible, and then allowed to stand. As soon as the mass was sufficiently dry the frame was removed along the wall and the operation repeated. The courses and vertical joints, showing the size of the framework, are clearly revealed in the structure.

The eminent archaeologist, Bandelier, when with the Pimas of Southern Arizona, collected a number of their traditions which affirm that this great house was built by their ancestors, but further than this nothing is known of its origin.

In order to preserve it both from vandals and from the weather, Congress made an appropriation in 1889 of two thousand dollars. The money was carefully expended under an expert and the building is now partially protected and under the care of a guardian, though much more should be done if it is to be preserved for future generations.

Two other sets of Pueblo ruins that at different times have caused great excitement are those of Chaco Canyon and the Canyon de Chelly. The region where these occur is far from a railroad in northern New Mexico and even to this day is personally known to comparatively few. The ruins were first definitely described by Lieut. Simpson, who commanded a detachment of troops in a force under the control of General Washington, Governor of New Mexico, operating against the hostile Navahos. While there Lieut. Simpson made a brief examination of several of the principal ruins. This was in 1849. In 1878, having gained some ideas from the Pacific railway surveyors, Emma C. Hardacre published an account in Scribner's Magazine for December, with an illustration by Thomas Moran, of these ruins. It is an interesting article illustrating how the rumors of those days, referred to in the July Craftsman, have come to be accepted as facts in these times by thousands of generally well informed persons. When the accompanying illustrations are examined it will be seen how wild and exaggerated the writer's statements were. She said in an introductory passage:
RUIN OF LA CASA GRANDE, NEAR FLORENCE, ARIZONA

RUINS NEAR THE MOUTH OF CHACO CANYON
MAIN WALL OF THE CHOLETA RUINS, NEW MEXICO

RUINS IN CHACO CANYON, SHOWING USE OF PLASTER ON WALLS
"Of late, blown over the plains, comes stories of strange newly discovered cities of the far southwest; picturesque piles of masonry, of an age unknown to tradition. These ruins mark an era among the antiquarians. The mysterious mound-builders fade into comparative insignificance before the grander and more ancient cliff-dwellers, whose castles lift their towers amid the sands of Arizona and crown the terraced slopes of the Rio Mancos and the Howenweap."

And of the Chaco Ruins she put it even stronger, as follows:
"In size and grandeur of conception, they equal any of the present buildings of the United States, if we except the Capitol at Washington, and may without discredit be compared to the Pantheon and the Colosseum of the Old World."

The accompanying photographs of the Chaco Ruins were made by Mr. Cosmos Mindeleff during a very exciting exploring trip he made in 1893. Up to that time, except for the visits of Indians and occasionally an adventurous white they had scarcely been seen since the time of the Simpson visit in 1849. While Mindeleff was traveling in the region a fierce snow-storm overtook his party; his Indian guides got lost, a wagon was overturned, dislocating Mr. Mindeleff’s shoulder, and for some months he was disabled. Had not a rescue party voluntarily started out from Fort Defiance it is possible that loss of life would have occurred.

From the large number of ruins found it has been inferred that there must have been an exceedingly large population. Scientific investigation has destroyed this inference. It is now fairly well known that all these ruins were made by the ancestors of the present inhabitants of the Pueblos of Arizona and New Mexico. In the early days they were a constantly, though slowly, moving people. They settled easily wherever there were good indications of water, or fertile lands, and when anything unforeseen arose, as a scarcity of water or lack of crops, they moved on. Hence different groups may have been occupied by the same people. These ruins generally consist of square rooms, many or few as the size of the building denotes, with doorways and outlooks, and often attached granaries and kivas, the latter for religious purposes. Sometimes the houses are of two or three rooms, in other cases there are thirty, forty, and even eighty and ninety rooms. Yet even these large houses were so constructed that their population could not have been large.
The masonry of these buildings, while of the same general type, is largely influenced by the character of the material nearest at hand. Being a child of nature the early aboriginal mason utilized the nearest suitable material. As will be seen from the illustrations of the five Chaco ruins they were built of small blocks of sandstone, picked up in the immediate neighborhood, laid without mortar, and without any attempt at the breaking of joints, and chinked with small pieces of chips. In some of the Chaco ruins the chinking is so artistically done as to lead to the thought that there was a conscious attempt at adornment. Where stones did not fit they were smoothed down in situ. There was very little preparation either of site or material. As a rule the site was taken just as it was and the buildings made to conform to any irregularities instead of the reverse. This is clearly evidenced in the building on the sloping rocks. Chinking was sometimes done with mud pressed in with the fingers. In many places this can still be seen with the marks of the fingers showing. It is supposed from this use of mud as chinking came the use of mud as plaster. And, strange to say, with plaster came deterioration. Being able to cover up faulty work did not aid the builder, and it is the general opinion of all careful observers that none of the more modern pueblos (nearly all of which are covered with mud) can be compared with the ancient ruins for solidity of masonic construction.

Storage cists are found all throughout these ruins, differing from the ordinary rooms only in that they have smaller entrances, and that provision was made for thoroughly sealing them. This latter precaution was necessary to prevent predatory animals gaining access to them in the absence of their owners.

The storage of water was seldom attempted, only one example of a reservoir having been found in the whole of Canyon de Chelly, though nearly a hundred house-ruins line its walls. This, in itself, is a strong argument against the popular notion (also accepted by many scientists), that the inaccessible portion of these ruins—the cliff dwellings—were constructed for defensive purposes, or chosen as refuges. With no provision for water-storage a week’s siege would make the most otherwise impregnable situation untenable, hence Mindeleff argues that these locations were chosen mainly because of the advantages offered as natural lookouts over the cornfields of these
ABORIGINAL AMERICAN HOMES

owners. The argument is too long to be presented here, but he enters into it with a good case behind him, and fortifies his statements with many interesting illustrations.

As a rule little timber is used in these dwellings, but here and there it may be found. Considering the fact that nearly all building timber had to be brought from the San Francisco mountains, a hundred miles away, its scarcity is not to be wondered at. Speaking of its use Mindeleff says:

"Instances occur where a cross wall has been tied into a front wall with timber, and so effective was the device that in one instance a considerable section of cross wall can be seen suspended in the air, being completely broken out below and now supported wholly by the ties. Instances can also be seen where partition walls are supported on crossbeams at some distance from the ground, forming large and convenient openings between rooms."

In the Canyon del Muerto, the chief tributary of Canyon de Chelly, the most important of the ruins is that here pictured. It is known as the Mummy Cave, and is the largest in the whole region of the class commonly regarded as defensive structures. It has an extensive outlook, being situated upon an elevation about eighty feet above the slope of earth shown in the photograph, and about three hundred feet above the level of the stream bed. There are two caves in the rock, connected by a narrow bench about 110 feet long. It is certainly a most picturesque place for a home. The western cave is about one hundred feet across and its back is perhaps seventy-five feet from the front wall of the cliff. The eastern cave is over two hundred feet across and perhaps one hundred feet deep. Ruins occur on the central ledge and on similar ledges in the back parts of both caves. Careful study of the ruins show that there are about ninety rooms, but as many of these could be used only for storage purposes, it is assumed that even though they were all occupied at one time the population could not have been larger than sixty persons. In the photograph the shadows cast by the timbers used in the construction of the tower can plainly be seen. The doorway in this tower is the only entrance into the western cave. It is to the left, and is exceptionally large, being about six feet high. A little
ABORIGINAL AMERICAN HOMES

below its top is a single stick upon which, doubtless, a blanket was hung to close the opening.

In this collection of ruins are the remains of three or four circular chambers known as kivas. These were the places where the governmental and religious affairs of the people were carried on. It is interesting to note why they are circular, when all the rest of the rooms are square. The aborigines were exceedingly conservative. They attributed a living power, not only to the animate, but also to the inanimate creation. They believed that even the forms of things had a definite purpose. From the earliest days of their traditions all meetings of the elders for governmental or religious purposes had taken place in circular lodges. This circular form was the prescribed one. It was the time honored one. In a round building, therefore, it would be easier to do the right thing and harder to do the wrong, because the building itself had a living influence upon those who came into it. Hence, even when their own rooms were made square, the greater importance of their religious rooms led to the retention of the circular form.

In a later photograph an entrance to a kiva will be seen which is square. To trace the mental changes that must have taken place in the minds of the aboriginal man before his conservatism allowed this change of form in the religious structure is most interesting. It grew out of his association with other peoples who used the square form. By association he learned that no harm came from the divergence and thus, little by little, he was led to the change.

Of a similar type are the ruins at Jemez, New Mexico. A careful look will reveal in about the center of the picture, a modern house of adobe. Jemez is one of the older pueblos that has a most interesting history. It was visited by the earliest Spanish explorers, was one of the first pueblos to have Christian instruction, rose in rebellion against the Spanish rule in 1680, and has altogether a most fascinating history. This is one of a class of many similar ruins found throughout the region. It has been said that there is no dressed stone in any of the ruins of the southwest. Mr. Mindeleff evidently does not agree with this statement, for he refers to walls in the Canyon de Chelly, the stones of which show surface peckings. The corners of the Chaco Canyon masonry are also clearly of dressed
stone as the photograph shows. In the next two photographs in this series are ruins which are of dressed stone, or so say some of the best known stone experts of the country. These are ruins on a mesa in New Mexico, known to the Mexicans as Ciboleta. They are about twenty miles south of Grant’s Station on the main line of the Santa Fé. In some places the wall is more than ten feet high, and the stones were evidently chosen with great care. While occasionally the joints of two layers come together, as a rule they are broken. The chinking is done with spalls of the same material of which the wall is composed. At the right the main wall turns and forms a wing or arm, some thirty-five feet in length. It is in the corner stones of this part of the masonry that the clearest evidence of stone dressing exists. The rocks are hewn to the curve as distinctly as any similar rock placed in a modern building.

Beyond this wall the mesa top is covered with ruins of rooms, somewhat similar in size to those found elsewhere. These ruins extend almost to the edge of the cliff of the mesa, from which an outlook is had, the like of which is seldom to be seen in the world. It is over the vast lava field of the Zuni plateau, and except here and there, where the winds have blown sand into natural receptacles and a slow accretion has made it a resting place for some wind-carried seed which has grown into bush or tree, the whole area as far south as the eye can see, and up to the Zuni mountains in the west, is one scene of barren, black desolation that is as forbidding and awe-inspiring to the mind, as it is wearying to the foot. For, in attempting to travel over it, one’s shoes are cut to pieces in an hour or two, and, in the case of horses, which adventurous cowboys have once or twice forced into the heart of it, their hoofs have been so soon cut to the quick that they have had to be abandoned or killed, as nothing could induce them to get up after they were so cruelly cut. A mile or so away is another large circular wall, of similar masonry, in which are a score or more of small ruins. The Zunis have many traditions about the coming of the “fire rock” that drove out the inhabitants of the Ciboleta ruins. They claim that some of their own ancestors lived in them, and that when the molten fire rock flooded the country the heat and gases drove them forth, never to return.
STUDENTS of pueblo architecture claim that the present pueblo community houses such as we see at Zuni, the Hopi towns, Laguna, Taos, etc., are the natural outgrowth of the coming together of different families for mutual protection. Certainly they have every indication of such an origin. As we have already seen, the ruins in the canyons and valleys were built with reference to the opportunity they afforded for overlooking the cornfields, and giving ready access to them. As nomad and hostile Indians increased in numbers their demands upon the fields and stored supplies of the settled people became greater. The latter, therefore, came together, first of all in the valleys, and later, on high and inaccessible “mesas,” for the purpose of defense. Thus we find in the “province of Tusayan” (as it was called by the Spaniards), now known as the country of the Hopi, seven of these villages, perched high on cliff-protected sites, the only access to which is by means of perilous trails, in some places cut out of the solid rock.

As will be seen in the photograph many of the houses of these villages are terraced, and three stories high. In the early days, before the influence of the white man was felt, there was no doorway in the lower story. The only means of access was by a hole in the roof and down a ladder. Now doors and windows prevail in all except the most ancient houses. The masonry is clearly of a poorer quality than that of the ancient ruins pictured in this series. Though plaster is used and chinking also, there is less care shown in the selection of material, and it is laid with less skill. When the Spaniards came they found that the male members of the village generally slept in the kivas,—the ceremonial chambers before referred to,—and were only admitted to the houses of their wives at the will of the latter. A few were already fairly domiciled, but now practically all live “at home.” But this is a comparatively modern innovation. The women were (and still are) the house owners, and though, in building them, the men generally help in moving and placing the heavy timbers and the larger stones, the women do all the mason work, hod-carrying and everything else connected with the building.

In the foreground of the Oraibi photograph is seen the covering of, and ladder-way into, one of the kivas of the village. This is underground, is a rude square in form, and hewn out of the more or less solid rock. The passage way between the houses is shown, also
the quaint and peculiar little flight of steps leading from the first to
the second story, and the ladder from the second to the third. Space
is so valuable that generally the firewood is placed upon stilts so that
the room underneath can be utilized. Here also one may see the
partial use of plaster. The second Oraibi illustration also reveals
the same thing. In this second picture will be noticed the earthen-
ware jars placed one above another. These are serving as chimneys.
The bottoms are knocked out, and they are placed one above another,
joined with mud, and thus form excellent smoke-passages.

The next photograph is at Shungopavi, until recently one of the
least known of the Hopi villages. It is perched solitary and alone
on an offshoot from the so-called “middle mesa.” This village is
the successor of the village seen by Coronado’s lieutenant in 1542 or
thereabouts, and where later, a church was built by the Spanish
monks. In the present village some of the beams used in the old
church are to be seen, in place in houses erected soon after 1700, for,
the inhabitants of Shungopavi having risen, with all the pueblos of
New Mexico, against the Spaniards, and having slain every member
of the hated race, they fled to this new and more elevated and easily
defended site in order to better protect themselves when the avengers
came. And there they have remained ever since, though of late years
the policy of the Indian department is to induce them once again to
take up their abodes near their fields in the valleys. And as the gov-
ernment officials are using as a persuader the offer of the erection of
a new house and certain other emoluments, now and again a Hopi is
induced to return.

The last picture of the series is of Laguna, New Mexico, a pueblo
on the main line of the Santa Fé. Indeed the track runs around the
village so that travelers have a good view of it. It is built on the San
José Creek, which, like most New Mexico creeks, is dry most of the
months of the year. This is the parvenu of pueblos—the latest built
—and was erected about the year 1700. It has a Spanish church in
which services occasionally are held, while a stone’s throw away
heathen ceremonies are conducted by the Indians, that are the exact
duplicate of those of their ancestors of centuries ago when they wor-
shiped the sun, the moon, the stars, the lightning and all the powers of
nature and addressed all their prayers and petitions to Those Above—
the People of the Shadows, and Those Below,—the People who
Dwell in the Underworld.