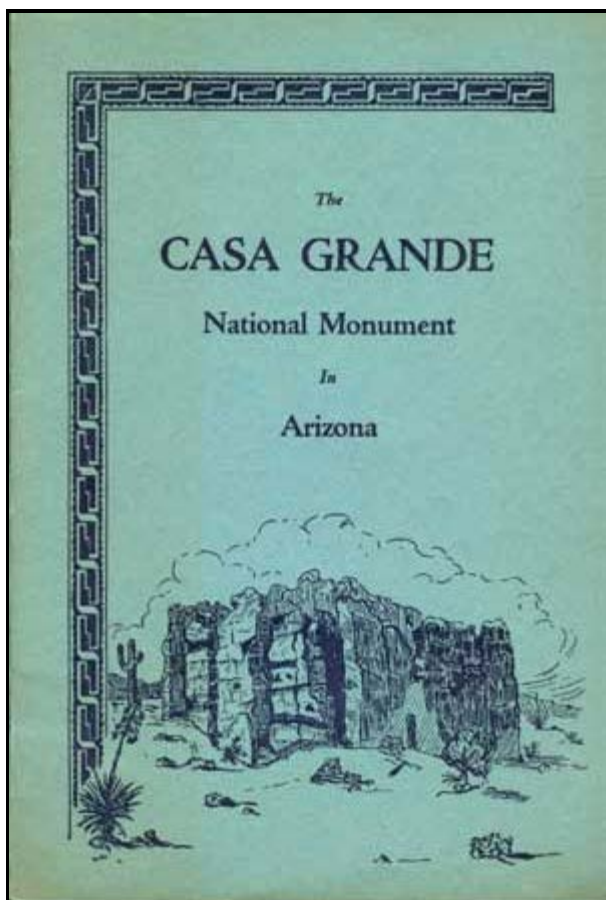


CASA GRANDE

The Casa Grande National Monument



THE CASA GRANDE NATIONAL MONUMENT

By
Frank Pinkley

With Historical Data By
Edna Townsley Pinkley

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CASA GRANDE

The Casa Grande National Monument



THE CASA GRANDE RUINS

By
FRANK AND EDNA PINKLEY

The work of the Interior Department is divided among several Bureaus of which the last to be formed was the National Park Service.

The National Park Service has charge of some twenty-odd national parks and some thirty-odd national monuments.

Congress, in 1906, by the National Monuments Act, authorized the President, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of scientific and historic interest, to be national monuments.

Congress reserves to itself the sole right to make national parks but delegated to the President the power to make national monuments. This is the legal difference between a national park and a national monument.

The reservation now known as Casa Grande National Monument was first segregated from the public domain and reserved by executive order on June 22, 1892. Its boundaries were changed on December 10, 1909. On August 3, 1918, by Presidential proclamation it was officially designated as a national monument. On June 7, 1926, a small portion, amounting to eight acres was released from the reservation leaving an area of 472 acres.



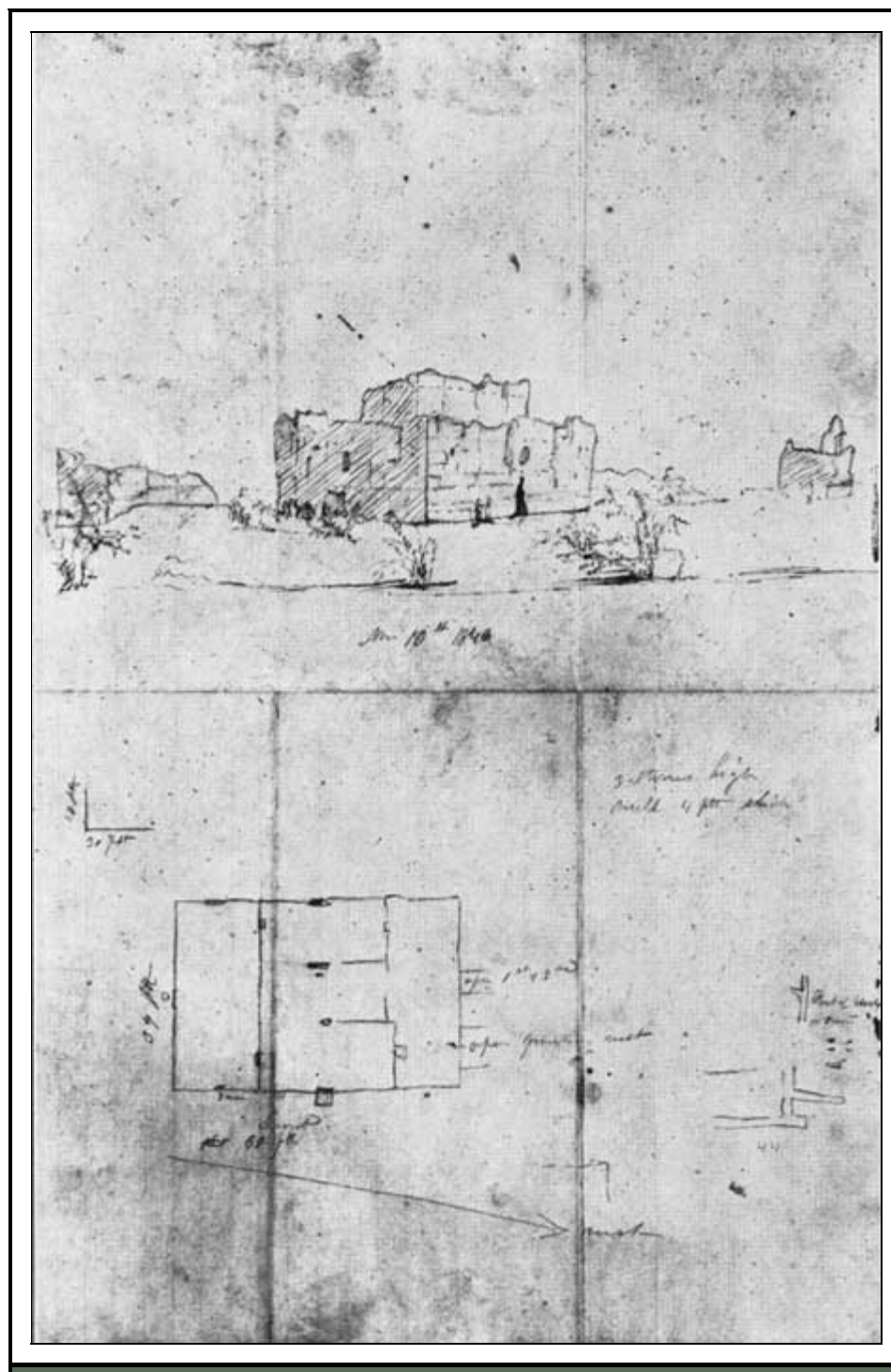
Casa Grande about 1878. (Photo by Buchman)

The monument lies in the southern part of Arizona 57 miles southeast of Phoenix and 65 miles northwest of Tucson. The nearest town and point of departure from the railroad is

Coolidge, where the visitor may secure hotel and camp ground accommodations and can easily make the short journey of 2-1/2 miles to the ruins.

The elevation is about 1420 feet above sea level and the reservation is covered with typical desert vegetation which should occur in this latitude at that level, consisting of Mesquite trees and the creosote or greasewood bushes, salt bushes and a few scattering examples of two or three species of cactus. The vegetation is not beautiful but is very interesting and the visitor who can give the time will be well rewarded by a short walk along one of the trails which lead away from the museum.

The typical desert animal life for this zone is also well represented and various examples may be seen from the trails. There has been practically no change in the animal and plant life since the days when the ruins were inhabited.



Photograph of a drawing of the Casa Grande made by Stanley, 1846. (Courtesy of Mr. D. I. Bushnell, Jr.)

The first record we have in history of the Casa Grande, is given by Padre Eusebio Francisco Kino, devoted missionary to the Indians of Sonora. He heard rumors of a Great House on the banks of the Gila, from Indians who lived near San Xavier del Bac where Padre Kino had established a small mission. Finally in November of 1694, Padre Kino went on a trip to visit this wonder of which the Indians spoke with superstitious awe, and tells of it as follows (Kino's Memoirs of Pimeria Alta, Pages 127-129):

"The Casa Grande is a four story building, as large as a castle and equal to the finest church in these lands of Sonora. * * * Close to this Casa Grande there are thirteen smaller houses, somewhat more dilapidated, and the ruins of many others, which make it evident that in ancient times there had been a city here. On this occasion and on later ones I have learned and heard, and at times have seen, that farther to the west, north and east, there are seven or eight more of these large old houses and the ruins of whole cities, with many broken metates, jars, charcoal, etc."

Lieut. Juan Mateo Mange reports these ruins in 1697 as follows: "We continued west, and after going four leagues more arrived at noon at the Casas Grandes, within which mass was said by Padre Kino, who had not yet breakfasted. One of these houses is a large edifice whose principal room in the middle of four stories, those adjoining its four sides being of three. Its walls are two varas thick, are made of strong cement and clay, and are so smooth on the inside that they resemble planed boards, and so polished that they shine like Pueblo pottery. The angles of the windows which are square, are very true and without jambs or crown pieces of wood and they must have made them without frame or mold. The same is true of the doors, altho they are narrow, by which we know them to be the work of Indians. It is 36 paces long and 21 wide. It is well built and has foundations. An arquebus shot away are seen twelve other half fallen houses also having thick walls and all having their roofs burned."

Kino also mentioned the canals, one of which he thought might have been repaired and used with little effort.

The next authentic narrative comes from the Rudo Ensayo which says, "Pursuing the same course for about twenty leagues from the junction of the San Pedro and the Gila leaves on the left at the distance of one league, the Casa Grande * * * This great house is four stories high still standing, with a roof made of beams of cedar or tlascal and with most solid walls of a material that looks like the best cement. It is divided into many halls and rooms and might be a traveling court. * * * The Pima tell of another house more strangely planned and built, which is to be found much further up the river. It is in the style of a labyrinth, the plan of which as it is designed by the Indians on the sand, is something like the cut on the margin."

The next record is that of Padre Francisco Garces who with Padre Font visited the Casa Grande in 1775. He mentions the tradition connecting this ruin with the Moquis or Hopis, but does not describe them, leaving that to his companion, Padre Font. Font gives the following description: "The Casa is an oblong square laid out perfectly to the cardinal points, and around about are some ruins which indicate some enclosure or wall which surrounds the house, and other buildings, particularly at the corners, where it seems there was some structure like an interior castle or watch tower, for in the corner at the southwest there is a piece of ground floor with its divisions and upper story. The exterior enclosure is from north to south 420 feet and from east to west 260. The interior of the casa is composed of five halls the three equal ones in the middle and one at each extremity large. The halls are some ten or twelve feet high and all are equal in this respect. * * * In front of the door to the east,

separate from the casa there is another building with dimensions from north to south 26 feet and from east to west 18, exclusive of the thickness of the walls."



Casa Grande about 1892, from southwest.

Fragmentary reports reach us from time to time, of later visits. In 1825 the Patties, father and son, visited it, and the name of Paul Weaver, trapper, is inscribed on the walls of the ruins in 1832. This by the way, is the only interesting inscription on the walls.

Col. W. H. Emory makes entry in his journal under date of November 10, 1846. " * * * along the day's march were remains of acequias, pottery and other evidences of a once densely populated country. About the time of the noon halt, a large pile which seemed the work of human hands, was seen to the left. It was the remains of a mud house * * * We made a long and careful search for specimens of household furniture but nothing was found except the corn grinder, or metate. The marine shell, cut into ornaments, was also found here. * * * No trace of hewn timber was discovered, on the contrary the sleepers of the ground floor were round and unhewn. They were burnt out of their seats in the wall to a depth of six inches. What was left of the walls bore marks of having been glazed, and on the wall in the north room were traced hieroglyphics."

Later reports are by Bartlett, 1852, Lieut. John T. Hughes, 1847, Richard J. Hinton, 1877, and Bandelier who gives a very valuable description, referring the first time in detail to what is now called Compound B. Cosmos Mendeliff records F. H. Cushing's researches in similar ruins, and in 1892 Dr. J. Walter Fewkes gives an exhaustive description.

The original stock of people who settled the Gila and Salt River Valleys must have arrived and begun their first steps of development two thousand years ago. Thus far no name has been given them although we often follow the custom of our friends the Pima Indians and call them the Ho-ho-kam. This term literally means "the people who have gone" and is not a distinctive name for the people who built these ruins. Custom is attaching the name to them however and we will so use it in this description.





Casa Grande Ruins, Compound A. (Photo by Pinkley)

The evidence is growing stronger year by year, as more research is being done, that the original branch of the Ho-ho-kam came into this country from the south, probably from well down in Mexico. The researches of Gladwin for the Southwest Museum and Hayden for the Van Bergen Expedition of the Los Angeles Museum strongly indicate an original penetration from the south.

Naturally these first pioneers did not begin their occupation in this new country by the erection of such pretentious structures as the Casa Grande. Their earliest houses thus far located were rather primitive buildings, one room in plan, of the pit-house type. An excavation was made some 18 inches deep on a plan varying from seven by nine feet to twelve by fourteen feet and the floor and side walls of this pit were covered with a good coat of mud plaster. The corners were never rectangular but always slightly rounded. A light mud plastered brush superstructure was erected over this pit and the family was ready to move in. The only permanent built-in feature in this primitive dwelling was a fire-pit about a foot in diameter and five inches deep generally placed a little to one side of the geographical center of the room and through the side wall near this fire-pit was a narrow passage, possibly serving as an inlet for fresh air and in some cases probably serving as an entrance and exit.

To a person who visited this district two thousand years ago, a village of such low mud covered houses must have presented no very spectacular appearance. Even at this early time the Ho-ho-kam must have begun digging his ditches and starting the extensive irrigation systems which afterward filled the Gila and Salt River Valleys. While he raised the greater part of his food, he did some hunting to help fill the larder. He lived in villages partly because of his gregarious instinct and possibly because even in that early day he was subject now and then to raids from enemy Indians who lived outside the valley.

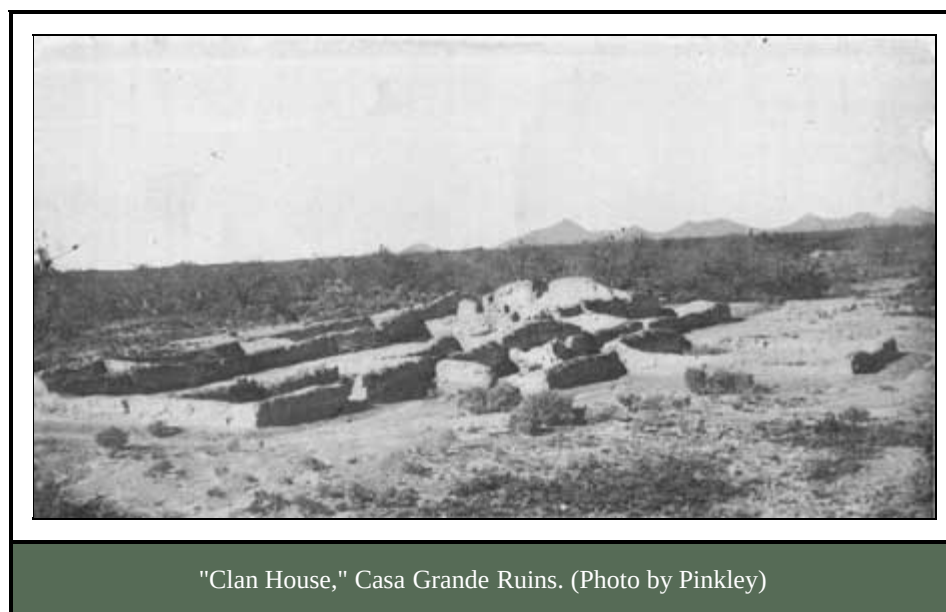
The women of this early period were making both plain and decorated pottery. The decorated pottery was of the type which we have long called "old red ware", but which Gladwin has more properly named "red on buff" because it is a red oxide of iron paint on a buff colored clay.

Shell jewelry was extensively worn as necklaces, bracelets, rings and bangles. The shells for this purpose were procured from the Gulf of California where the people probably journeyed for the double purpose of getting salt and shells.

Some of the finest shell engraving was done in this early period and, strange to say, there is evidence of a good bit of bone engraving at this time, which later practically disappears.

The dead were cremated, and, after the cremation fires had died the fragments of humanity which might be left in the ashes were raked out, and given symbolic burial.

Stone, bone and wooden tools were in use; no metal implements and of course no pack or draft animals.



It was at this early period of the culture in the Gila Valley that the village, of which the Casa Grande Ruin is a part, began to grow, and the earliest part of the village yet explored lies a mile to the east of the Great House. Not having any specialized divisions such as a business district to tie it to one place it was easy for such a village built as it was of rude and short lived construction, to creep away from its point of origin. This led in this particular village to a growth toward the west.

A reinforced type of wall comes in early in the period of the village life. These houses have their floors on the ground level and the walls were constructed by planting upright posts some three or four inches in diameter about one foot on centers, lashing horizontal cross rods to the upright posts and over this frame-work building a wall ten inches to a foot in thickness. This house, like the earlier pit-house, usually has a fire pit to one side of the geographical center of the room and in front of the fire-pit the door will usually be found.

The reinforced wall type of house seems to come into more general use as time goes on and a new factor of an enclosing wall also comes into use. This is without doubt a defensive wall and, erected around a group of houses, forms a unit which is called a compound.

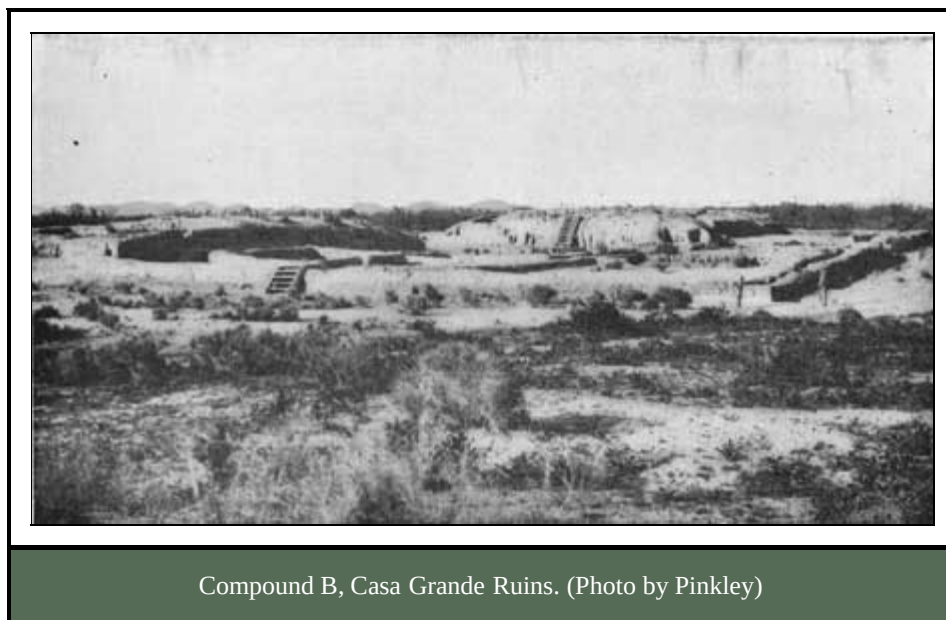
This grouping of houses inside defensive walls certainly speaks of enemies and the fighting here indicated can not have been between villages here in the valley because civil war would have wiped the culture out of the valley in one or two generations whereas the defensive walls continue to be used through a long sequence of compounds.

One has only to look to the north and east of the valley into the rough mountainous country to see the probable home of the enemy. Any tribes living in such a rough country must have lived principally on game and tiring of their meat diet would have naturally raided these valley people at about the times the crops were ripe. Thus the stage would be set for a sporadic, raiding warfare, and would account for the valley people having times of peace in which to clean their ditches, plant and raise their crops, build their homes and attend to the many daily duties of living and yet needing defensive walls to withstand the attacks of the

enemy who raided the country at the times the crops were ripe.

The rise of the defensive wall, forming the village unit or compound must have resulted in a tendency to stabilize the village and hold it on one site. Houses within the compound wall would be torn out and rebuilt over the old location. We might expect then, to find much more superimposition of structures in the compound type of village than in the unwallled or open-built type and this is just what we do find.

Gladwin's operation 8 in 1927 developed a compound about 200x100 feet square which was built, used and abandoned in the red-on-buff period of pottery making and here he found the reinforced type of wall construction throughout. The buildings of this period did not exceed one story.



The solid mud walls was the last type to develop. The type probably first came into use in the compound wall where, bearing its own weight only, some one reasoned that it did not need the reinforcing poles and thought he would have as good construction by leaving out the expensive timber and substituting the cheap and easily obtained mud, making the wall thicker than had been the practice theretofore.

It is at about this time that we find the Gila Polychrome type of pottery coming into use, the cremation burial changing to inhumation and now or a little later the houses go into the second or third story.

The evidence is pretty plain that these changes are caused by an infiltration of a second stock which comes down out of the Salt River drainage east of the Roosevelt Dam.

We now get larger compounds, higher buildings and the general indications of a larger and more prosperous population. It is in this later period that Compound B and still later Compound A are inhabited.

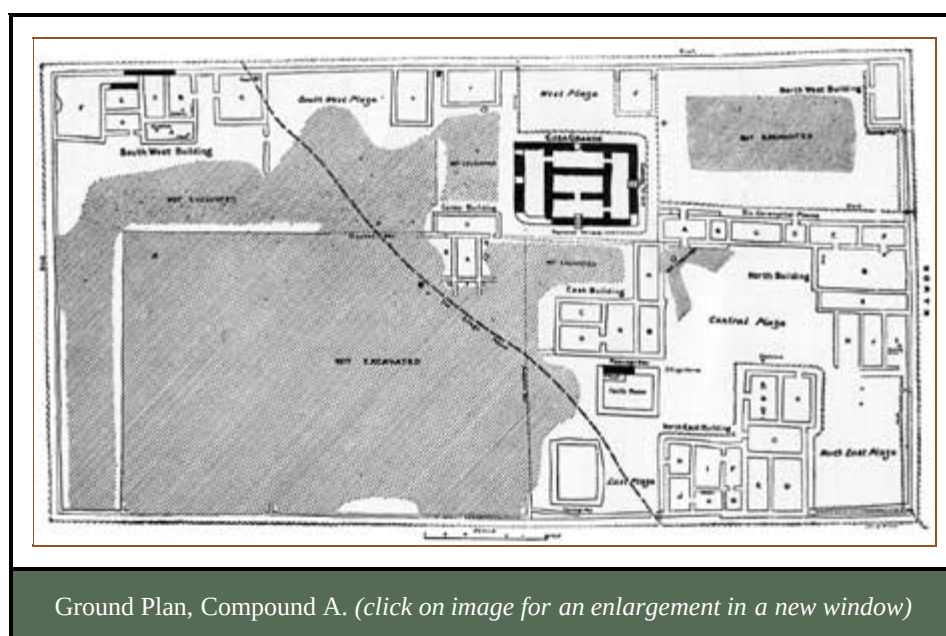
Having sketched in the scheme of cultural development which led up to its construction, let us now examine Compound A.

We have here a complex plan of several buildings completely inclosed by a defensive wall which is nearly rectangular in plan and measures approximately 216 feet by 419 feet on the south and west sides. This wall originally stood about 10 or 11 feet high and had no doorway

or gateway. Having no domesticated animals and no vehicles, no gateways were needed and we may presume that no doorways were used in the outside wall as a measure of safety, the inhabitants going in and out by means of ladders over the walls.

Inside this wall we have thus far located some 50 rooms on the ground plan, and in the southeast quarter, which has not yet been excavated, there must be the remains of many one-story houses.

All the structures in Compound A were not built at one time, but the exact sequence of construction has not been determined. We can say, however, with a fair degree of certainty that the main building, the Casa Grande itself, was one of the last to be built. It stands four stories high in the center and three stories in the outside rooms. The people who built it 800 or 1000 years ago were Indians who had no pack or draft animals and no metal tools. They went out some 250 yards northeast and about the same distance southwest from the site of the proposed building where we have identified the pits from which they obtained their material. The surface soil, being a sandy loam, was not adapted to their purpose and they dug it off to a depth of about four feet and threw it away. This let them down on the second strata which we call caliche. Digging this caliche out they mixed it with a little water to about the consistency of putty or modelling clay. Putting this in baskets or skin pack sacks, they carried it on their backs or heads to the site of the proposed building. The basket of mud was dumped on the wall and spread out by kneading it with the hands. Other baskets of mud were added until about two feet had been built up. Knowing that if they built higher at the time they would add so much weight as to squeeze the lower layers of freshly laid material; after getting the newly laid course about two feet high, they began carrying it forward horizontally a long the wall. By the time they had built one of these courses around the walls, to the point of beginning, the first part of the course was dry and hard enough to bear the weight of another course or layer. Thus the walls were raised in what we might call monolithic courses, without the use of bricks, blocks or forms.



Horizontal lines which mark these courses can be plainly seen on the outside of the walls.

The outer walls were not made the same thickness all the way up but were battered or tapered by drawing the outer face so that from a thickness of nearly four feet at the base they were reduced to about 18 inches at the top. The inner walls were off set in many cases at the floor levels with the same idea of making them thinner near the top where they carried less weight.

The original plaster on the inner walls is about 75 percent intact where the wall still remains to hold it. This is all the more remarkable when we consider the number of centuries through which the plaster has withstood the storms since the floors and roof were burned. No hand prints occur on the finish plaster; the builders seem to have taken great care to obliterate them by using a rotary motion of the hand instead of the straight spatting motion which was common among the cliff dwellers.

In the east, center and north rooms the present level is within an inch or two of the original floor level. In the west and south rooms, through an error of excavation, the present level is considerably below the real floor level.

The builders never intended to live in the first story rooms of the Casa Grande; there is no plaster on the first story walls; there are no connecting doorways between first story rooms; and none of the first story rooms show the characteristic rafter holes at what would have been ceiling height had the rooms been used. This can only mean that while the building was under construction the builders carried in about 10,000 extra man loads of dirt and filled up all five rooms in the first story.

The reason for this fill probably lies in the height and weight of the walls of the center room. The people of this village had never before erected a four-story wall. They had no means of computing the weight of such wall, or of knowing the breaking strain of the material they were using. Fearing that the weight of this fourth story, added to the other three would cause the wall to crush at the foundation, they probably devised this method of filling the building one story deep which would leave only three stories of the center wall to carry strains and they thought it would do this.

Here we have a pretty clear indication of the primary use of the Casa Grande. The filling of five rooms in the first story in order to carry one room on the fourth story would lead us to believe they were driving the structure into the air as far as they could in order to use it as a watch tower. The surrounding plain must have been covered with much the same type of trees and brush which we see today. From the ground level it would have been impossible to see an approaching enemy more than two or three hundred yards. From the top of the Casa Grande one can see for several miles across the plain. It was necessary to know the enemy was approaching some time before he arrived so they could withdraw the workers from the fields and prepare for defense. As soon as the watchman on top of the building saw anything out of the ordinary in the distance he could throw up a smoke signal from the roof which, in five or ten minutes would be visible to all the workers in the fields to the west and north where the ancient ditch lines can be traced. They would then have time to come in from the fields and arm for defense before the enemy could come up to attack.

The secondary use of the smoke signal might have been to telegraph up and down the valley from one village to another so reinforcements might be sent to a particular point of attack.

This line of reasoning leads us to tell visitors the Casa Grande was built primarily as a watch tower and was secondarily inhabited as an apartment house.

The small doorways, which, so far as we have learned, were universally in use in these ruins, are no indication whatever of a small race of people. The real reason for their size was that they might be more easily defended. The small door forces the enemy to enter one man at a time; were the doorway a large one he could gang his men and get the advantage of numbers. After forcing the enemy to come in one at a time, the small doorway makes that man stoop down so he can no longer throw an axe, or shoot a bow and arrow. As his head enters the room in this helpless position he can easily be brained with one blow of a club or an axe.

In the center room of the top story are nine holes through the walls; one each at the north and

south; two on the west and five on the east side. The use of these holes is unknown and no theory yet offered will stand under analysis.

A large hole on the floor level through the west wall of the center room on each story was probably used for drainage of surplus water when wetting down the floors.

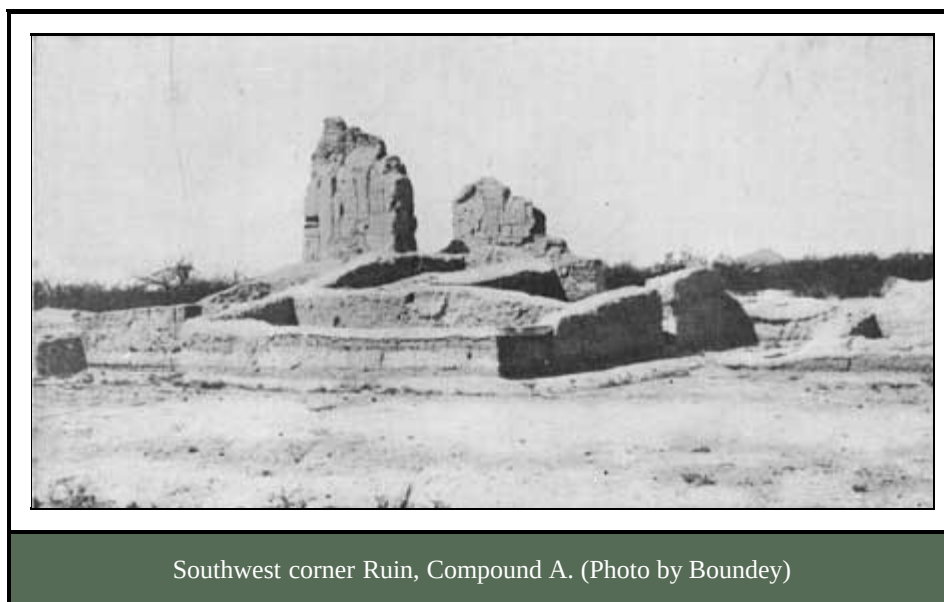
The so-called "Calendar holes" are two holes, one through the east wall of the ruin, coming into the east room and the other through the wall between the east and center rooms. The inner end of these holes can be seen in the center room about four feet above the floor and three feet from the northeast corner of the room going through the east wall and upon looking through this hole the one through the next wall to the east will be observed.

These holes are so located that the rising sun came over the eastern horizon twice each year at the proper point to shine through these two holes and put a spot of sunlight on the west wall of the center room for about eight minutes after sunrise.

This episode occurred on the morning of the 7th of March and the 7th of October as we commonly count our year, and from this the Ho-ho-kam could have counted their time, and if they did, their civil year would never slip on the solar year; their many ceremonies would always occur at the proper season of the year and they would never have to adjust their calendar as we do every fourth year with a 29th of February.

A spiral design occurs about 5 feet above the light holes on the east wall of the center room. This sign might have been put on the wall during the habitation of the building but is of no value to us as it has been used by nearly every tribe in the Southwest in the last two thousand years.

At about the same height above the floor as the spiral but on the north wall near the northwest corner is a maze or labyrinth design which has aroused much interest. This design is quite complicated and has not thus far been reported from any other ruins on the North or South American Continents but the same design is found on certain copper coins in the Isle of Crete in the Mediterranean Sea, the coins being some two thousand years old. The probable chances of a design as complicated as this one being accidentally duplicated elsewhere are so remote as to be almost negligible, yet no theory of connection which will stand analysis has ever been broached.



The evidences of the floor lines between the various stories may be seen in almost every

room, but the complete details of floor construction are best seen in the north room. Wooden poles were laid from the north to the south sides of the room forming the joists upon which the floor was to rest. These poles were of pine, pinon, juniper and in at least one case, oak. It will be noted that none of these varieties would grow in the vicinity of the 1400-foot level. The people must have walked back up the Gila River system to the east a matter of fifty to seventy-five miles, where, on the higher levels, this timber could be cut. It was probably rafted down the river then carried up to the site, a mile or more from the river, by hand. As soon as the rafters were bedded in, a transverse layer of light sticks, probably the ribs of the sahuaro cactus, were laid over them. The sockets of these sticks can best be seen at the east end of the north room. On top of these light sticks and again crosswise, which would make them parallel with the joists, a layer of arrow-weeds was spread. The sockets of these weeds can be seen on the south side of the room and just west of the north doorway on the north side. The final covering was a layer of some ten inches of mud, the line of which can be seen on the south side of the room.

Such floors make very heavy construction and are one of the factors which cause the extra thick walls in the building. The walls are not especially thick in this building for use as a fort; a two-foot wall would have effectually stopped the attack of the enemy; these thick walls were structurally necessary to carry the great weights which were to rest upon them.

At the west end of the upper north room is a large round opening looking to the west. This was probably put in for use in shooting out and downward over the west surrounding wall which at this point was only 32 feet away. A similar opening is located in a similar position in the west end of the upper south room and probably served a similar purpose.

In going from the north room down into the west room one passes through a doorway in which the wall is broken down exposing the header system. The socket holes show that four rows of headers were used over the opening. The builders knowing nothing of the arching strains which exist over the opening, put in enough logs to carry the dead weight of a column of material as wide as the door opening and as high as the wall. This was an error on the side of safety as one or two rows of headers would have easily carried the load. These headers, in every case where they have been checked, were of mesquite wood. The reason for this is no doubt that the mountain wood which was used for joists because of its straightness, was too valuable in time and labor to be used where a substitute could be found and straightness not being a necessary qualification for headers, the local mesquite, which is crooked but lasting, was used.

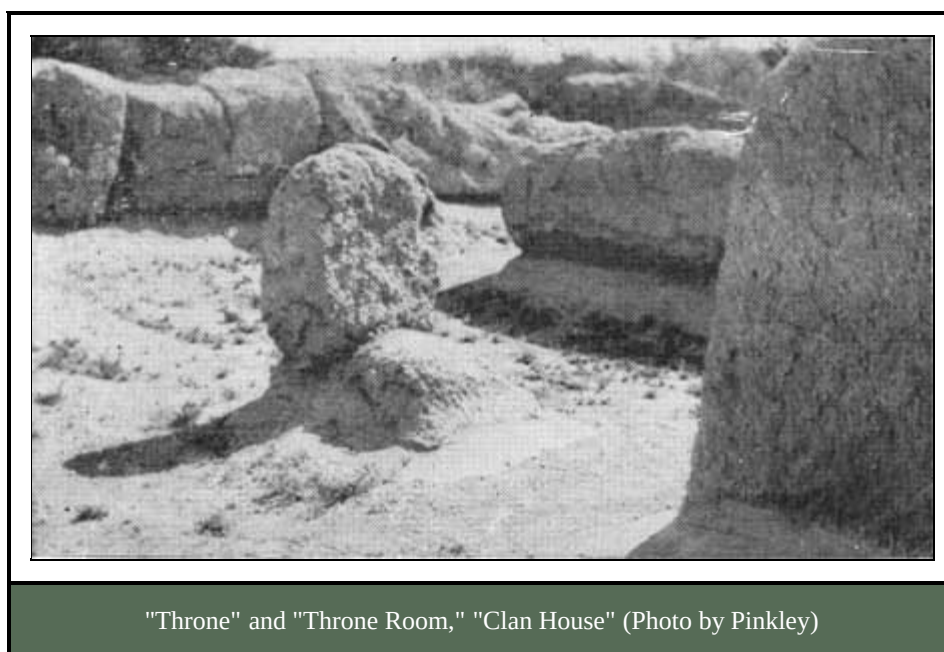
Two stopped doorways may be seen in the south wall of the west room. These seem to have been stopped soon after the building was occupied as the plaster on the blocks is identical with the plaster on the wall of the ruin.

The west window in the upper story is also stopped; probably because by sad experience they found they had built the house too close to the west surrounding wall and the enemy could snap arrows over the wall and into the window before a defender could dodge.

An interesting patch occurs in the upper west wall just north of the window. A leaking roof in a long continued wet season must have cut a large gash in the wall and the people living in the apartment had to go out and bring in new material to patch the wall. This later mason did not understand the original method used in plastering, which was a rotary motion of the hand, and tried to finish his patch by patting the plaster to a surface. The finger prints show quite plainly on the surface of the patch.

It will be noted that the present level in the west room is considerably below the level in the north room. This is due to an error in excavation which happened in 1891. Not understanding

their problem, the excavators came into the room filled with debris some seven feet higher than the present level. Seeing that they were standing some nine feet above the desert outside, thinking the floor of the Casa Grande would be on the desert level, the excavators began work. At the level of the thresholds of the north and south doorways they reached a floor level which they did not notice and dug through it several feet down to the present level in the west room.



The proof that the first story of the building was never used lies in the lack of a system of holes for joists on a level with the thresholds of the north and south doorways; the lack of plaster on the present exposed surface of the first story wall; and the lack of first story doorways into the north and south rooms.

The threshold of the west doorway leading out of the west room has been cut down several feet too low. The top of the doorway is properly restored as to height but the threshold should be on a level with those of the other doorways in the room.

Leaving the building by the west doorway one can get a good view of the outside of the west wall of the building and here the horizontal stratification showing the lines of construction can be plainly seen. No forms were used; the mud was simply made so stiff that it could be piled up like so much modelling clay for a height of about two feet and in two or three days, after the lime content had set, another course could be built.

The west wall of Compound A can be seen a little to the west of the Casa Grande. This wall is 419 feet and 6 inches long and originally stood between 10 and 11 feet high.

Several one-story rooms were built along this wall on the inside of the compound. Such rooms were useful in defensive fighting because their roofs offered a large platform some three feet below the top of the wall. Several men could climb up on such a roof and, kneeling behind the 3-foot parapet of the outer wall, which projected that far above the roof, could be almost completely protected from the up-coming arrows of the enemy from the outside.

Near the southwest corner of the compound is the ruin of a large building which had five rooms on the ground plan, four on the second story and one only on the third story. The three story tier of rooms in this building had the lower room filled with dirt at the time the house was erected. We take this evidence of wasting the lower room by filling to be a bracing

measure to increase the strength of the walls so they would carry the weight of the third story. The loss of the lower room to gain the upper would argue that the upper room was designed not particularly for housing more people but to gain the extra height, or would seem to indicate that the house was designed in this part as a watch-tower. This would automatically prove this house to be older than the Casa Grande, for they would certainly not build a 3-story watch-tower after the 4-story Casa Grande had gone into use.

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CASA GRANDE

The Casa Grande National Monument



THE CASA GRANDE RUINS

By
FRANK AND EDNA PINKLEY

THE MUSEUM

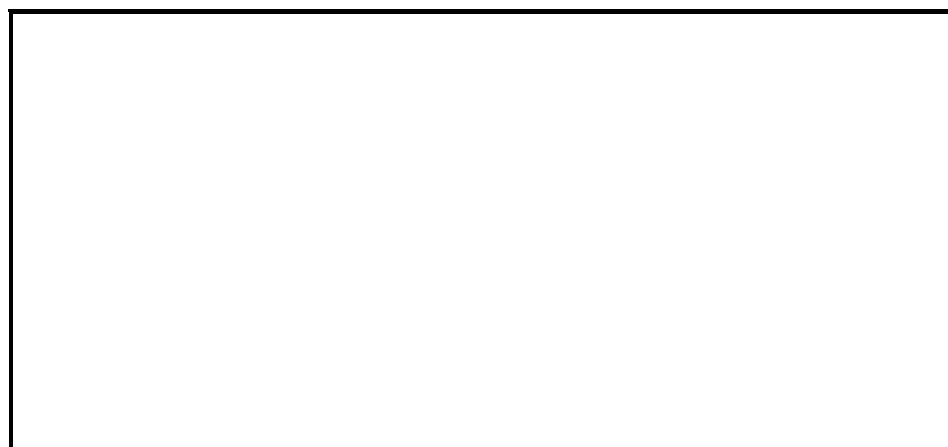
It must be remembered that in the nature of the case any museum collection gathered from the Casa Grande ruins will be more or less incomplete. This type of ruin will not preserve the perishable material for six centuries after abandonment, and we may well expect to find many more specimens of pottery, stone, bone and shell objects than of cloth, wood, tanned skin, etc. This will be largely due to the fact that soon after abandonment the roofs disintegrated and allowed the rains to penetrate, rotting out a great deal of the perishable material. The museum collection includes two or three pieces of cloth of surprisingly fine weave and showing what is now called punch work embroidery. At least one of these pieces is of cotton which, taken with the reported discovery of cotton seed, is fair evidence that cotton was raised under irrigation in the Gila Valley long before the discovery of America.

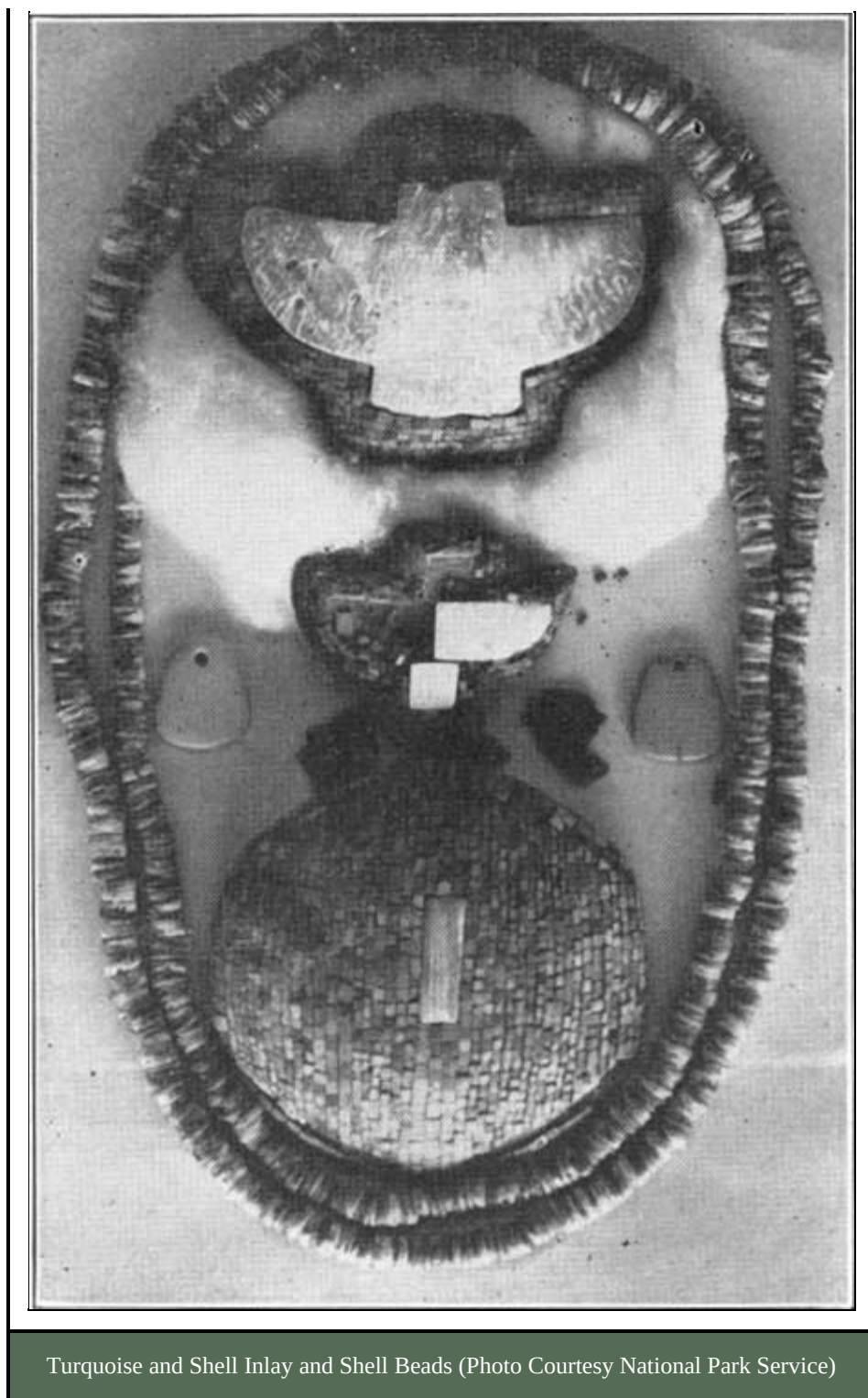
Corn is one of the highly perishable materials under the conditions which obtained here, but has been found in a charred condition in widely scattered places in the village.

No evidence pointing toward the raising of beans has yet been uncovered and it is possible that the people depended on the Mesquite for beans.

Bone carving and shell carving seem to have reached a high stage of development in the very early period, and some very good examples of shell carving may be seen in the museum.

Undoubtedly the finest single find in the museum is the group of inlaid turquoise objects with the accompanying necklace, ear bangles and bracelet. This is supposed to be a ceremonial set of jewelry and is the finest thing of its kind which has yet been found in the United States. The inlaid pieces are supposed by the experts to be of turquoise from the country south of Santa Fe, New Mexico, while the two bangles are said to have come from the mines of Nevada. If this be true it would indicate a considerable trading range.





Another evidence of trade over a considerable distance is the series of copper bells in the collection which are said to have been manufactured by the Aztecs down in the Valley of Mexico. These small copper bells are found pretty generally over Arizona and New Mexico but none of them are thought to have been made in either state.

The so-called "Square and Compass" emblem, which is carved from a sea shell, has aroused wide interest. It was found about 1925 in the eastern edge of the Casa Grande Village about four feet down in a trash mound of the red-on-buff period and the indications are that it was made by the ancient inhabitants about 1,800 years ago.

Several strings of beads will be noticed in the collection, some of them quite small. These

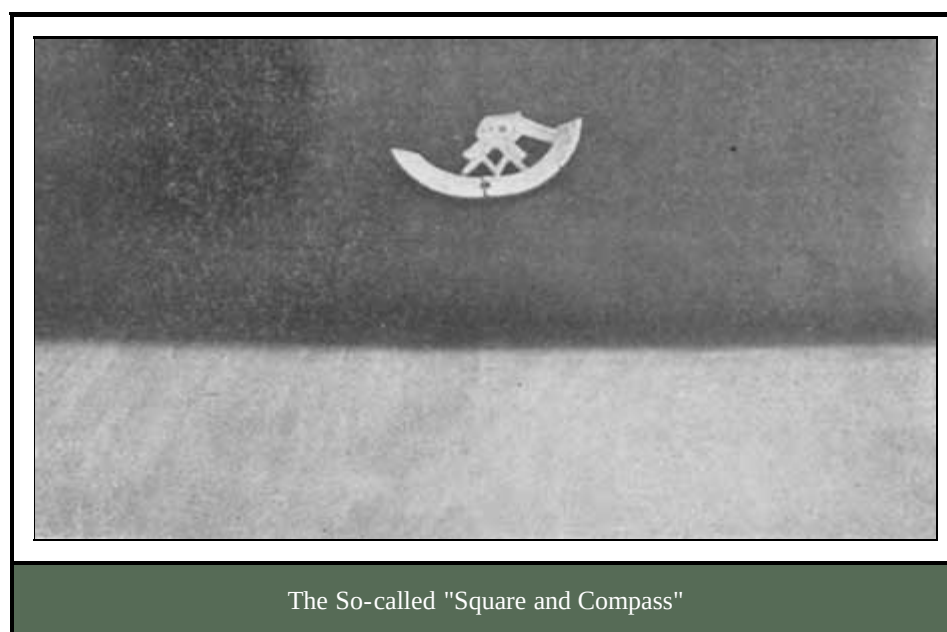
beads are made of shell, clay and stone and were evidently worn as jewelry. Shell bracelets can also be seen as well as shell rings and pendants. The shells from which all these things were manufactured, were brought in by the Ho-ho-kam from the Gulf of California some 175 miles distant, and must have been considered pretty valuable even in an unworked state as it was a perilous matter to make the long journey on foot through the desert country where there was no living water. One finds such a constant association of the shell and water as to feel pretty certain that the people made the trip themselves and did not simply trade the shells from their neighbors to the southwest.

The pottery divides normally into three major classes; the red-on-buff, the black-on-white and the polychrome.

The red-on-buff is, so far as we now know, the earliest type of decorated ware to be used among the potters of the Gila Valley. I think we are safe in saying its use goes back at least two thousand years, and several sites are now known where only this type of decoration was in general use.

Several hundred years later we find the black-on-white pottery coming into use and from thence onward the red-on-buff and black-on-white types run along together, the red-on-buff predominating.

Still later we can mark the entry of the polychrome; not long before the period of abandonment, and in this later period we have all three types mixed in the trash mounds, but the red-on-buff seems always to predominate.



Examples of all these types of pottery may be seen in the museum and the visitor is given the theory of their origin and use as well as an explanation of the various sub-types into which the main types can be divided.

Among the stone artifacts the stone axes invariably attract the attention of the visitor. It is a widely held popular belief that the stone axe was made primarily for war use. Among the Ho-ho-kam the axe was probably not carried in war to exceed two or three weeks in the year and for the other fifty weeks must have been used for very much the same purpose to which we put the steel axe of modern times. With it they cut their wood, drove stakes and did the various kinds of farm work.

While not so spectacular in appearance, the stone digging tool was much more important in the lives of the Ho-ho-kam and many specimens may be seen in the museum. These flat stone slabs were probably used in pairs, one in each hand, and with them the dirt dug out and thrown into baskets or skin bags for transportation. In this manner ditches were excavated which were eighteen or twenty feet wide, six or eight feet deep and fourteen to twenty miles long. Study over that a while and you will begin to see what we mean when we tell you these Indians were a very busy people; to do the things they had to do with the crude implements they had, must have taken about all the time there was available.

Good examples of the metates, or stone mills upon which the corn was ground, may also be seen in the museum. The stone mortars were probably not used for corn grinding but for breaking up mesquite beans, acorns or pine nuts. For grinding purposes the ancient people preferred to use the volcanic rock because it, being porous, would remain rough by the virtue of wearing new holes in the rock as the old ones were worn down, thus never needing re-sharpening or re-dressing.

A visit to the ruins and the museum leaves one with the feeling that the modern white man need not feel so smug about having recently brought the Gila Valley under cultivation in these days of steam, steel, and electricity when the ancient Indian lived here by irrigation for more than a thousand years with no draft or pack animals, and with no metal tools.

These people had no particular lost arts; we can duplicate the things they did, but we would have trouble in getting the modern American to duplicate the infinite patience they used.

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CASA GRANDE

The Casa Grande National Monument



THE CASA GRANDE RUINS

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