MARTINEZ HILL RUINS

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An Example of Prehistoric Culture of the Middle Gila

by

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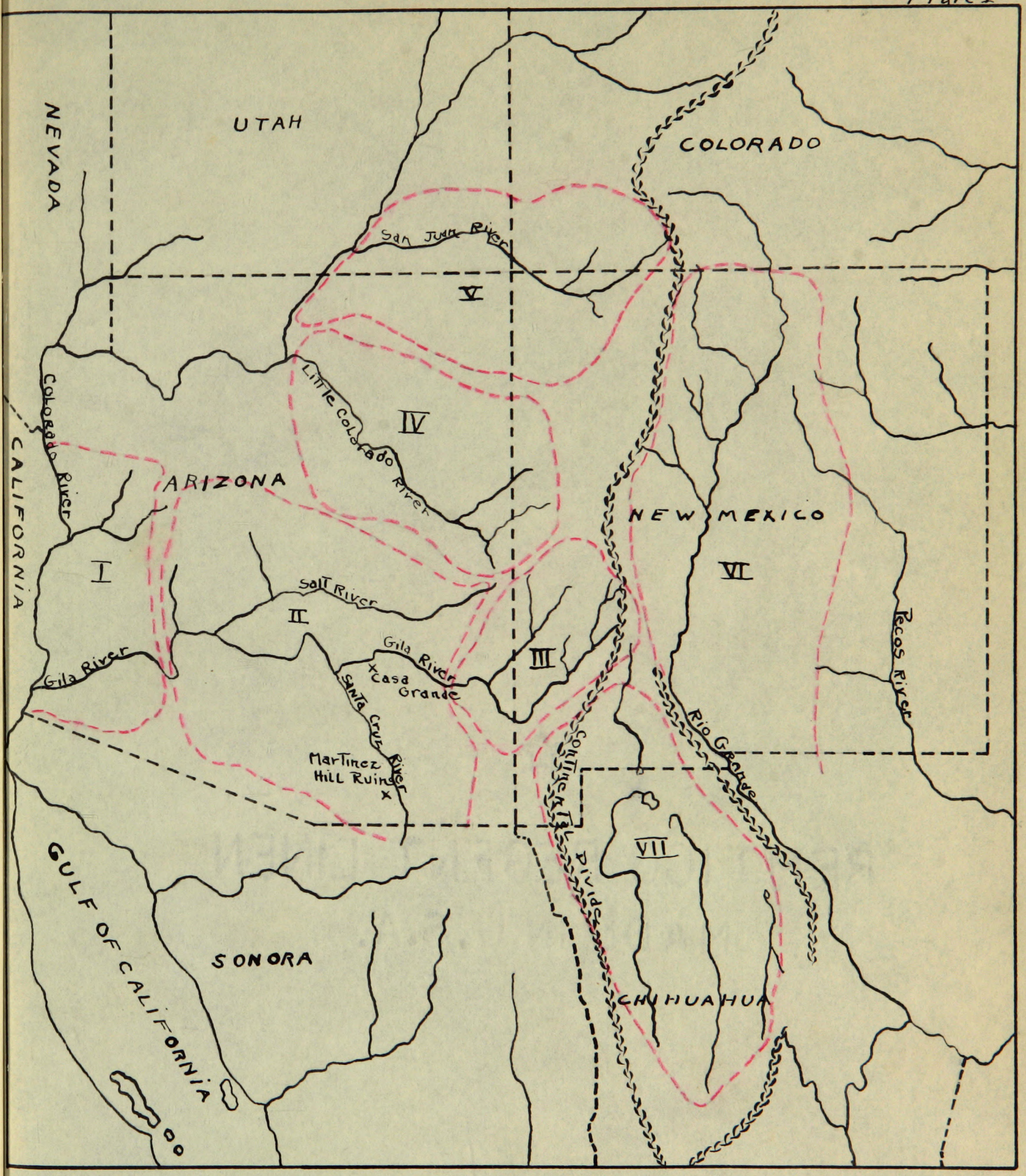

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INTRODUCTION

One of the earliest chapters in American prehistory now being assembled by archaeologists deals with the Indians of the Southwest. In this area there lived groups of mankind contemporaneously, perhaps, with ancient Egyptians, but only since a comparatively few years has the significance of this chapter in the story of man been realized. It is the endeavor of this paper to add a few more lines to one of the blurred chapters of Southwestern prehistory. The material presented, for the most part, is new and firsthand, based upon several months of excavating at a site representative of one of the later phases of this prehistoric development of man.

The area under consideration, called Martinez Hill ruins, is located in Pima County, Arizona, about ten miles south of Tucson. The site has been known for several years and during the academic year of 1929-1930, under the direction of Dr. Byron Cummings, it was examined in sufficient detail to assure the value of further investigation. The following season, beginning in October of 1930 and under the same supervision, the work was continued on an enlarged scale. Enough evidence has been brought to light since that time to permit of its description as well as to make possible a fairly clear interpretation of the group of people who

inhabited that area. In the attempt to learn of the prehistoric peoples of these ruins, like any other section of the North American continent exclusive of Mexico and Central America, it must be borne in mind that we are dealing with a culture that never made a conscious effort to record its history by the common medium of writing. The condition of these people was still that of the Stone Age; their lives were too fully occupied in wresting a bare living from a reluctant and often cruel environment to allow them the development of such a product of leisure as writing. And so it is from the chance relics that we find, from the circumstantial evidence which these primitives unwittingly left behind, that we must learn of their habits, their beliefs, their ideals, their culture generally.

The ruins to be discussed in this paper occur in the portion of the Southwest designated by archaeologists as the Gila area. This great drainage, which embraces most of southern Arizona, is further divided into the Upper, Middle, and Lower areas. The Santa Cruz valley occurs in the Middle Gila area and for reasons of clarity a brief review of the type of culture which formerly existed in this general locality will be presented before attempting the detailed description of Martinez Hill ruins.

The Middle Gila area is roughly about 200 miles north to south, and 150 miles east to west. Its southern extent is a short distance below the international

line. The east boundary runs from Douglas, Arizona north along the Chiracahua Mountains to Bylas and thence back to Pinetop; on the north it extends along the Mogollon Mesa from Pinetop west to Montezuma Castle; on the west, from Montezuma Castle south to the big bend of the Gila River and from there southward into Sonora.

In considering the prehistoric inhabitants of this area we shall use the architectural development as a basis of the general chronology of the succeeding cultures. Into this basic sequence the other cultural aspects will be fitted. The chief reasons for using architecture as the basis of chronology are that there is a continual and gradual evolvement of types in this area, and that such a basis is general enough to permit of the many variations that must necessarily occur in so young a field of investigation.

Using house types then to designate the several periods of cultural development, we shall survey first the architecture. The earliest evidences of dwellings that occur are those which were constructed by digging circular pits, sometimes over two feet deep. Slabs of stone commonly were used to line the sides of the pit, and on top earth or stones were piled to heighten the wall. Posts set within the walls supported a roof of poles, brush, and clay. This period of culture is called the Circular Pithouse

Period. Developing from this came the Transitional Pithouse Period, represented by dwellings fundamentally the same as round pithouses, but with the outline of the pit foundation in the form of a rectangle with rounded corners. The last development of the pithouse occurs in the form of a true rectangular foundation, and this phase is designated as the Rectangular.

Following the Pithouse Period there evolved types of dwellings that were completely above the surface of the ground. This is the Pueblo Period. Using clear adobe or adobe reenforced with rocks, massive walls and several storied buildings were constructed. Casa Grande ruins remains the classic example of this period of culture, and from the extensive examination made by Dr. J. W. Fewkes the term compound was coined to designate Middle Gila architectural plan of the Pueblo. Typically a compound is a group of small house structures arranged in no definite position and surrounded by a wall. Centrally located is a large structure of several rooms.

The inhabitants of this area were living in a Neolithic stage of development until the white man entered the land. Their material accomplishments, aside from architecture, are best represented by ceramics, stone work, agriculture, textiles, and ornaments.

In ceramic development there exists a degree of parallelism with the architecture. True pottery first occurs in association with the round pithouses, and is represented by crude undecorated ware. This plain ware exhibits several variations: the commonest, and apparently the oldest, is of coarse texture and workmanship, unpainted, and varying in color from gray to brown. This inferior ware occurs frequently in the shape of globular ollas that were used for cooking and storing purposes. A second type of plain ware is red in color and unpainted. A slipped variety of plain red ware is also common and here the finish is often bright and well polished, with the exterior surface commonly exhibiting dark firing clouds. A further variation of plain red pottery is that known as "onion ware". This takes its name from the vertical striations that cover the exterior of the pieces.

During the Transitional and Rectangular Pithouse Periods pottery develops rapidly. Decoration begins and takes the appearance of corrugated, black-on-white, and red-on-buff designs. Plain ware, of course, continues throughout. Workmanship improves in every department, in quantity and complexity of design, in composition of the paste, in technique of design application, and in finish. Forms include ollas, bowls, pitchers, plates, ladles, mugs, tripods, and animal effigy vessels. Designs are predominantly geometric, though zoomorphic forms do occur not infrequently.

The latest ceramic development is the type called Gila Polychrome, characterized by a three-color design: black and white on the exterior with a red interior; or, as in a later type, black, white, and red designs on the exterior.

The stone work of these people necessarily represents an industry of paramount importance. Still living in the Neolithic Age, it was on stone that they depended for most of their implements. Stone was utilized to manufacture axes and hammers of a three quarter grooved type unique in the Middle Gila district. A large part of their food - corn, mesquite beans, and other seeds - were ground in stone metates or mortars. Similarly were various pigments used in pottery decoration or in ceremonials pulverized by stone grinders. Arrow shafts were smoothed and straightened in grooved pieces of hard, volcanic stone. Many of the farming tools such as hoes, shovels, and picks, were of stone. Smooth pebbles served to assist in molding and polishing the pottery. Other forms of stone work include paint dishes and palettes, ceremonial tablets, mirrors, human and animal images, and various ornaments such as beads and pendants.

In agriculture a degree of excellence was realized that surpassed anything on the continent. By intensive methods of farming, with stone and wood tools, they cultivated corn, beans, squashes, and cotton. One of the most imposing monuments of the prehistoric Southwest

are the remains of irrigation systems that these people constructed. Some of them are still in use by modern farmers. In extent they compare favorably with the network of irrigation canals in use today; and in construction they speak forcefully of the industry, the perseverance, and the intelligence of the rude inhabitants who engineered such projects.

Not much remains of the textile industry. The exposed position of the ruins of this area has caused the obliteration of most of this less substantial art, but there are sufficient remnants to allow fair judgment of this phase. Sandals woven in the coiled technique of yucca, have been found. Baskets of two types: one, a flat shape of loose weave made, commonly, of willow boughs; the other, of the coiled variety. Mats,likewise of vegetable fibre, were manufactured. The introduction of cotton at the beginning of the Pueblo Period led to fine work in textiles. In addition to the usual weaves such as coiling, braiding, and twilling, embroidery and lacework were developed. Cloth from the salt mines on the Verde shows the best workmanship of these people.

That there was a well-developed social organization is obvious from the accomplishments indicated above. Such imposing examples of architecture as some of the compounds, such engineering feats as the irrigation

systems could not have been realized without an intelligent cooperation among the people. Religious development likewise is evident from such examples of burials, ceremonial chambers, altars, shrines, and idols as are abundant in the area.

With these general remarks of the formerly-existing culture of the Middle Gila area as a background, during the remainder of this paper we shall present an additional phase of this prehistory. It represents a little addition in the story of a semi-civilized people; this story that as yet is just beginning to be told.

LOCATION AND GENERAL DESCRIPTION

The type of country that today supports the ruins, and which must have been very nearly the same when the area was inhabited, is fairly representative of much of the Middle Gila drainage. The Santa Cruz River meanders in a generally northwest direction through the valley that bears the same name. As a whole the valley is a broad, flat plain broken at intervals by hills and bordered by mountain ranges. The area is semi-arid; mild winters and hot summers are the usual climatic condition. Generally, the elevation is less than that of other cultural areas of the Southwest, though the mountain ranges that border the valley and some of the hills within are of sufficient height to effect interesting changes in vegetation. Geologically the Santa Cruz valley is not old; nearly all of the region is of the Quaternary period. The flat plain is composed of sand, gravel, and Gila conglomerate, while the hills which interrupt this monotony usually are made up of younger volcanic rock.

Common forms of plant growth in the valley, forms which are typical of the southern desert of Arizona, include cholla, prickly pear, ocotilla, sahuaro, and many small varieties of cacti; creosote, palo verde, sage, and mesquite. In the immediate vicinity of the

ruins, creosote, sage, and mesquite exist almost to the complete exclusion of other forms. Curiously enough, this condition is identical at Casa Grande ruins where it has been interpreted by some that these flora forms have replanted themselves, since that formerly cultivated area was deserted. Generally the Santa Cruz valley is quite barren, but approaching the river are deposits of fertile soil, and in nearly any portion of the desert floor where irrigation is possible plentiful growth is assured.

The ruins under consideration lie about half a mile east of the Santa Cruz River at the very eastern edge of the Papago Indian reservation. Martinez Hill, which contributes a good land mark as well as being the name for the site, lies half a mile to the northwest. This promontory, like others in the valley, is covered with a flow of basalt lava which today is shattered into rocks of all shapes and sizes. On top of the hill are evidences of crude stone structures which will come into the discussion later.

As closely as can be determined from surface indications and from the amount of excavation that has been done to date, the main ruins are composed of seven groups of buildings occurring in an area of about a quarter of a square mile. Very probably if the lower areas in between could be uncovered, additional architectural remains would be brought to light. These seven groups of structures,

when they were first discovered and until two years ago, were completely covered with earth and vegetation; they were seven round knolls that rose from the desert floor to a height of from four to six feet. The earliest excavation uncovered parts of three of these mounds, and during the past year two of those three were completed, with the addition of one other larger group. In referring to these groups of structures the term "pueblo" has been selected. Each pueblo is further designated by a number, these numbers being also indicative of the order in which the several pueblos were examined. The rooms of each pueblo likewise are numbered in the order of their excavation.

Since architecture is the chosen basis of chronology in the archaeology of the Southwest, and since it was the phase of culture that received most attention in the work at this site, it will be chosen as the first topic of discussion. First we shall consider certain general tendencies and characteristics exhibited by all the pueblos, and later such details of each group of structures will be presented as are necessary to complete the story.

The materials used in construction were adobe, stone, caliche, and wood. The greater part of the walls are of adobe; stone occurs only as a reenforcement to some of the walls. Caliche is the usual material for the floors and for the plastering of the walls. The walls

appear to have been erected in a manner similar to that employed at Casa Grande. There are no indications of blocks of adobe having been fashioned and set in place, nor can one find evidence of the use of forms in raising the walls. All that can be asserted with assurance is that the walls in some sections show evidence of having been laid in horizontal layers. It appears that the adobe was puddled with water into a mud of proper consistency and piled along the planned courses. It was patted by hand into a smooth layer, and this layer worked around the entire extent of the wall. When one such course was finished, and it must have been a slow process, the portion at the beginning was likely sufficiently hardened for the succeeding layer to be laid. A plaster made of very fine caliche originally covered the wall on the inside. This material, being much greater in lime content than the inner bulk of the walls, gave a smooth, hard finish. In some of the better preserved portions of plastering it is indicated that the caliche was applied and smoothed by hand.

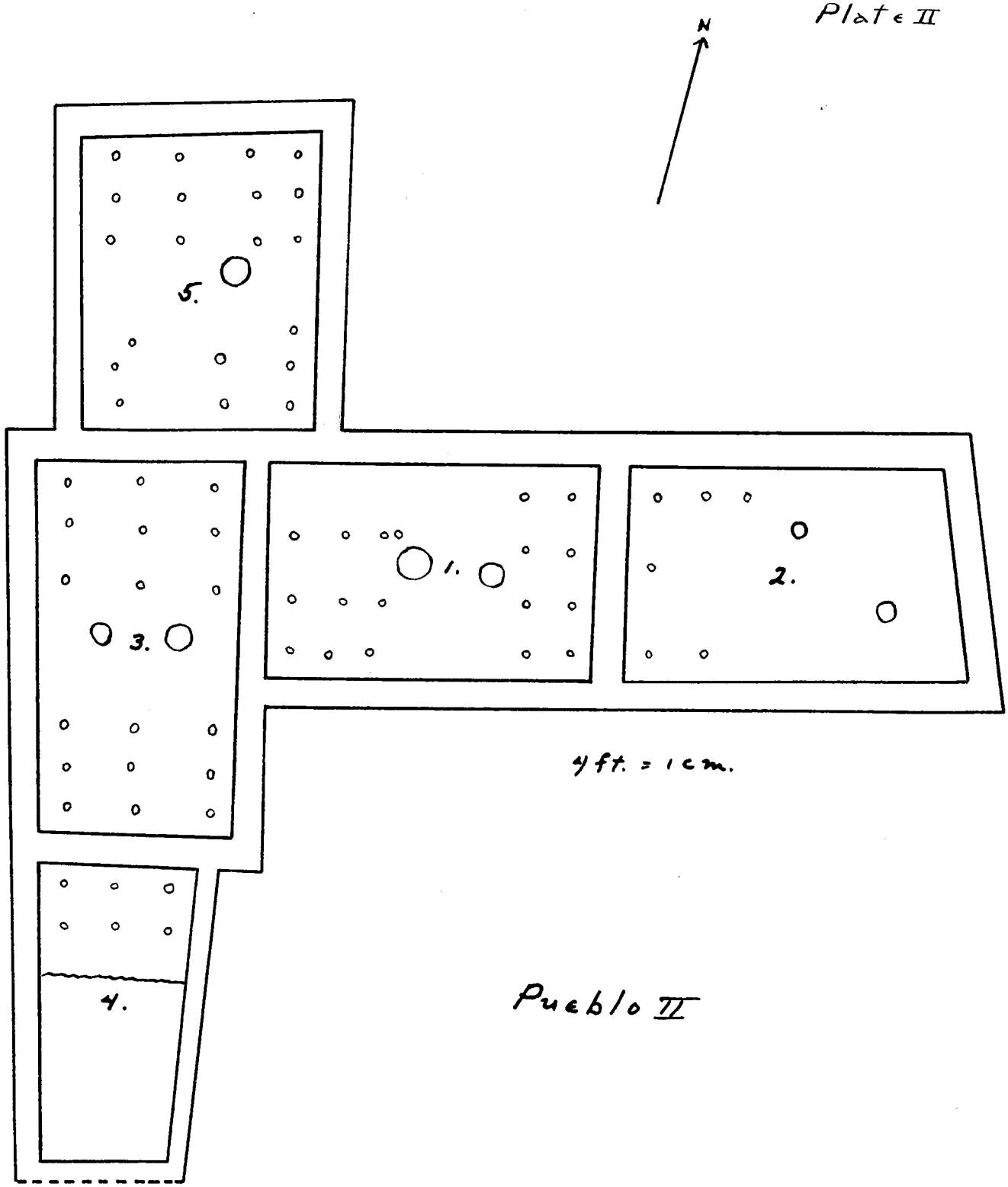
The floors, it has been remarked, are of caliche. In most of the structures the floors are sadly mutilated by water action, but there remains in a few rooms sufficient evidence to testify of their one-time excellence. Four and five inches is not an uncommon thickness for these floors, and after they have been exposed to the air long enough to drive out the damphess occasioned by their long

interment they frequently assume a hardness approaching concrete. The better preserved floors are generously interspersed with post holes and several contain fire pits.

Throughout the entire ruins there is a conspicuous absence of doorways. Among the three pueblos there are only two examples of entrances and neither of these leads to the exterior. In view of the wall heights of several of these rooms without doors, many of which are over five feet, this condition is somewhat puzzling. The only possible interpretation is that entrance was effected through the roofs. There are no windows or other means of light and ventilation in any of the structures.

The nature of the roofs is a mystery so far as direct evidence is concerned. In none of the walls is there so much as an imprint to give a clue to the manner of covering the houses. One can only infer that, since these structures resemble other types of prehistoric dwellings in the Middle Gila such as at Casa Grande where the roof construction is known, they might have been covered in a similar manner. The presence of the post holes in the floors makes such an interpretation additionally reasonable. Very likely small tree trunks were used as foundation beams. These were laid on top of or embedded in the tops of the walls. Over these beams a stratum of smaller materials, such as sahuaro ribs and brush, was laid. Brush, grass, and adobe likely formed the topmost layers.

Plate II



Pueblo II

ARCHITECTURE OF PUEBLO II

The architectural details of the structures will be presented in nearly the same order as they were brought to light. When excavation was begun in the fall of 1930 the examination was centered on the mound designated as Pueblo II. At this site there had already been one room uncovered. This room, designated as No. 1 (see plot of Pueblo II) is rectangular in outline, measuring 16½ feet east and west by 10½ feet north and south. The adobe walls have been weathered down to a height of from three feet to less than one foot, though judging from their thickness, which is nearly 2 feet in places, they must have been a good deal higher formerly. The floor, having been exposed to elements since the preceding year, was rather disturbed but not enough to conceal the indications of several post holes scattered about irregularly.

Excavation of this season began on the east side of Room 1 of Pueblo II and resulted in the uncovering of Room 2. The north and south walls of this structure are a continuation of those of Room 1, making the width of the two rooms about the same. The length of Room 2 is greater by half a foot. In height and thickness the walls do not differ enough from Room 1 to warrant separate description. The floor, with an irregular distribution of post holes, is likewise of a similar sort.

Room 3, partially attached to the west wall of Room 1, presents an interesting difference in floor plan. At the north and south ends of the floor are post holes arranged in rows of three, nine holes at each end. The central portion of the floor shows no evidence of post holes; instead, there is an area of over 6 feet extending across the room where the floor is interrupted only by two fire pits. This central space without post holes differs further in being much more weathered. It appears from these indications that when this dwelling was occupied it must have been roofed only at the north and south ends where the post holes occur. The central part, judging from the condition of the floor, must have been unprotected from the rains. In its other features this room is similar to the others. The size is 19 by 10 feet.

Room 4 is attached to the south wall of room 3 and is the smallest structure of this pueblo. From north to south the walls can be traced for over 15 feet, but the south half is disintegrated almost beyond recognition. East and west the room measures 8 feet. The floor of this room is in good condition only on the north end. It extends for over 6 feet to the south and ends abruptly. The remainder of the structure seems to have been without a true floor. Six post holes, set with regularity, are contained in the floor. Evidently this room was covered only at the north end. A few feet beyond the termination of the floor, in the

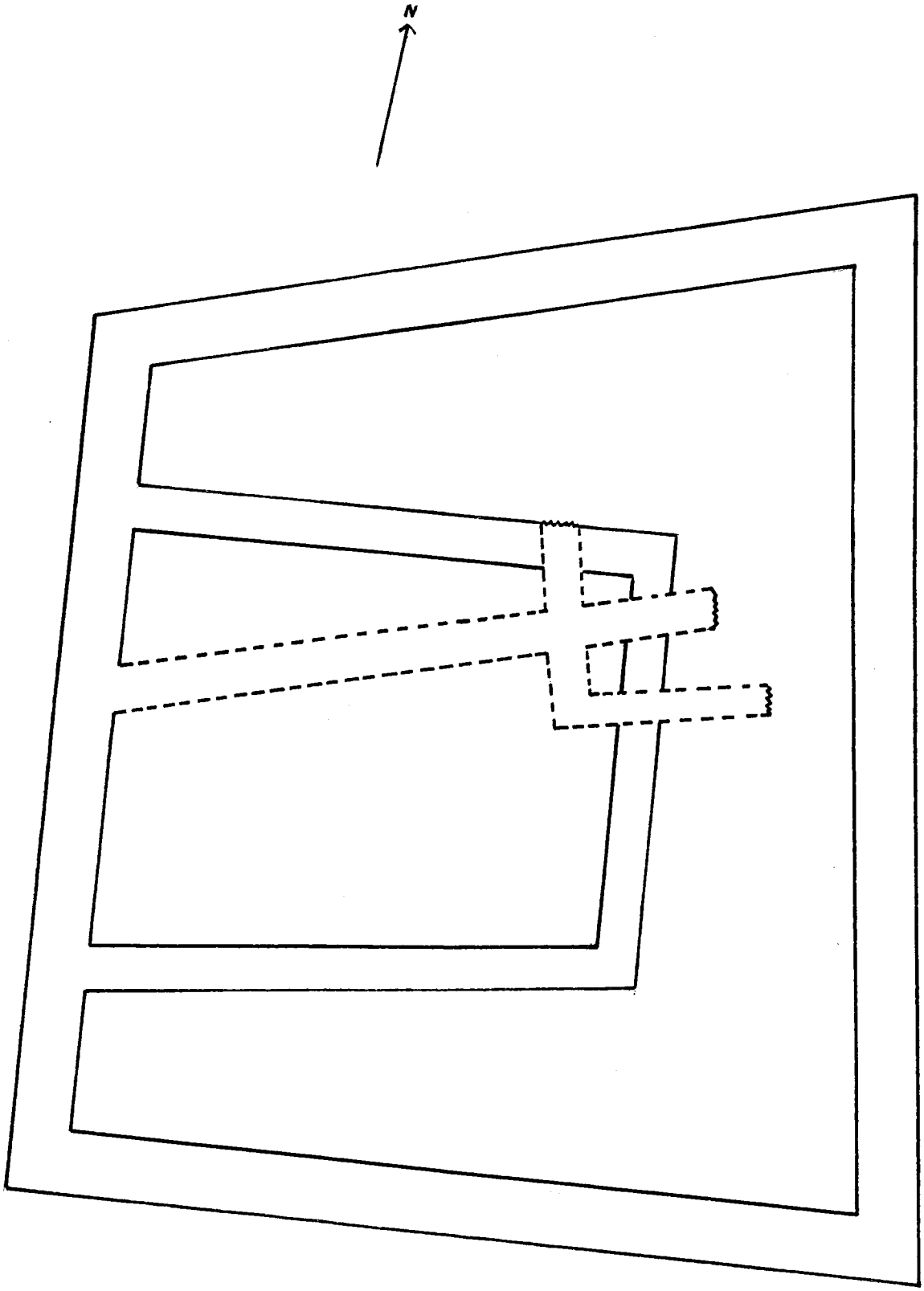
roofless area, a mass of charcoal occurred but this area was so badly disturbed by water that it was impossible to recognize a fireplace. Judging from the charcoal and abundance of sherds of cooking pots, however, such a conclusion is not unreasonable.

Room 5 on the north side was the last room uncovered at Pueblo II. It measures 12 feet north and south by 16 feet east and west. In plan and construction it does not exhibit any marked differences from the other structures of this group.

A feature common to all the walls of this group is that the interiors are all smoothed and finished, whereas the exteriors are strikingly rough and irregular. This condition at first led to the belief that these structures might have been pithouse types, and only after the exteriors of the walls were completely exposed and the original ground level located did it become apparent that they were true surface structures. The unfinished appearance of the wall exteriors is due, in large measure, to the action of flood waters, and no doubt partially to the original nature of construction. All the rooms of Pueblo II are not of the same level. Room 2, for example, is 6 inches higher than Room 1; and Room 5 is likewise several inches lower than Room 1. None of these differences in floor levels are great enough, however, to cause much concern.

Mention has been made, in several of the above statements, of the evidence of water action on the structures. Apparently the entire area of the Santa Cruz valley under consideration was exposed to flood, not once but repeatedly. Much of the debris that was filled in and covered the ruins is flood material, and the destructive action of this element has been one of the severest forces at these ruins. The melting down of the walls, sometimes their complete disintegration, the destruction of some of the floors, and the obliteration of such architectural details as plastering, post holes, and fire pits - all these are due in large measure to flooding.

Generally the architecture of Pueblo II is less substantial than that of the other groups. One may picture the dwellings in their original state as single storied, adobe walled, with flat roofs of beams, brush, and clay. As a whole they must have resembled the modern type of Indian adobe home quite closely.



Plan of surface walls occurring over Pueblo III

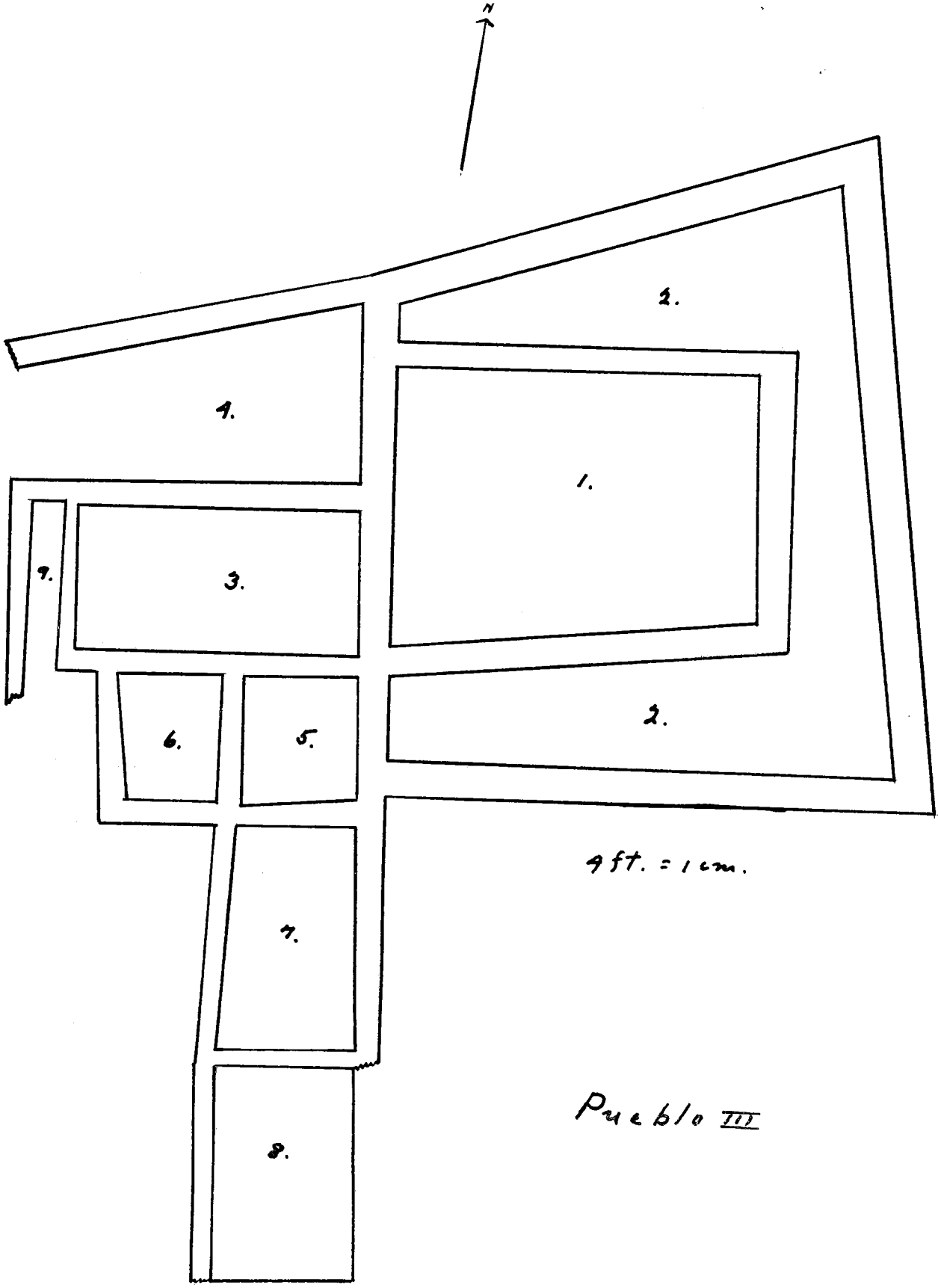
3 ft. = 1 cm.

ARCHITECTURE OF PUEBLO III

The ruins contained in Pueblo III are the most extensive in area of any at this site. The greatest extent from morth to south is over 70 feet, while east to west an area of 64 feet is occupied by structures, exclusive of an open court that is attached to the west end of the buildings.

Above the main group of ruins at this mound was a set of superimposed walls representing a later occupation. These walls, as the diagram indicates (Plate III were not nearly so extensive as those which lay beneath. The west end of these surface walls was attached to the large central wall of the earlier pueblo, and apparently some of the older wall was used over again in the later occupation. Between the lower and upper sets of walls was a layer of flood material. Evidently the older pueblo was abandoned for long enough to allow the wind, rain, and floods to fill up the structures and melt down some of the walls. When the area was re-occupied, the new dwellings were constructed on top of the debris which covered the old buildings. Some of the old walls were still standing when the newcomers arrived, and these they strengthened and re-used. The west wall of the second occupation is of this type; it served for both the old and new groups. The surface wall which runs to the east and

Plate IV



Pueblo III

then branches near the end is dissociated from the earlier ruins and represents an entirely new set of structures. The height of these walls was nowhere greater than a foot and a half, and their limited extent gave little indication of the appearance of this last occupation. In order to complete the examination of the better preserved and larger ruins lying beneath, it was necessary to destroy the surface walls.

The earlier structures of Pueblo III include nine rooms and an open court. The large chamber designated as Room 1 (Plate IV) is perhaps the most interesting of the entire group; its size alone makes it rather imposing for this type of culture. As the diagram indicates, it is a nearly rectangular room averaging some 30 feet east and west by 20 feet north and south. The floor level is the lowest in the entire pueblo, being two and a half feet lower than the floors of Room 2. The walls likewise are unusually high; one section of the west wall measures 8 feet from the floor to the top. On the west and south walls are remnants of the fine caliche plastering that formerly covered the entire inner surfaces of the walls. The floor, which is in good condition, is of caliche. A large fire pit is located six feet from the north wall, halfway between the east and west walls. Only two post holes occur in the entire room. These are in the east-west line, 10 feet apart, and equidistant from the north and south walls. Judging from the dimensions of these holes, the beams that rested in them were 12 inches

West wall - Room 1 - Pueblo III

Room 1 - Pueblo III

in diameter, but such liberal proportions were by no means superfluous since these two timbers were the only support within the walls for the entire roof. The covering of such a large chamber with such comparatively large spaces between supports was no mean feat of construction. Timbers of a length exceeding 10 feet were necessary to reach from the walls to the central supporting posts, and these timbers must have been of proportionately ample diameter to bear the great weight of layers of beams, brush, and clay which comprised the roof. To procure logs of such size in this locality, where the nearest large trees are along the banks of the Santa Cruz River, was in itself a great task. This room, as it originally stood, with a ceiling at least 8 feet high, with such a floor area only interrupted by two posts, was unusually spacious for the type of culture it represents.

The floor level of Room 1, as has been stated, is 2½ feet lower than that in room 2. Room 2 extends along the north, east, and south sides of Room 1. This feature, when first discovered, suggested the possibility of two occupations being represented in the two levels. Further examination completely dissipated the possibility of such a theory. Two pits were sunk through the floors of Room 2, one immediately against the north, and another against the south walls of Room 1. Immediately beneath the floor level of Room 2 in both tests the outsides of the walls of Room 1

rapidly tapered inward and disappeared in a caliche stratum that to all appearances was the original ground level. The insides of the walls continue downward for more than a foot below the caliche layer on the outside. This, it is believed, quite fairly indicates that Room 1 was a partially subterranean chamber and belongs to the same occupation as the other rooms of Pueblo III. The pottery of both levels similarly points to the single occupation of both levels. The relatively imposing appearance of Room 1, together with its partially sunken construction, suggests that it might have been a ceremonial chamber.

Room 2, which borders Room 1 on three sides, possesses the longest and most massive walls of any of the buildings. The north wall is 38½ feet long; the east wall, 46 feet; the south, 41 feet; and the west, which serves also as the west wall of Room 1, is 37 feet long. These walls are smooth and vertical on the inside, but decidedly tapering toward the top on the outside. For example, a portion of the north wall is 5 feet 5 inches thick at the ground level and only 2 feet 8 inches at the top; and this dimunition is quite rapid since the wall at this point is but 4½ feet high. The entire wall of Room 2 averages more than 4 feet in thickness at the base, almost as much as the average height. To what extent the walls have been weathered down, of course, is impossible to determine; but such massiveness as remains

North wall - Room 2 - Pueblo III

East wall - Room 2 - Pueblo III

speaks forcibly in favor of the building having originally been more than one story high. These walls further illustrate better than any others the method of reenforcing the adobe with boulders. All along the bases on the three exposed sides are large rocks protruding slightly from the adobe into which they were embedded for added strength.

The floor of this room is much inferior to that of Room 1. Those portions, however, that have retained a good deal of their one-time appearance reveal the same construction. Post holes are not so much in evidence here, partly because the disintegrated condition of the floor has obliterated them and partly, perhaps, because there never was as much need for them. In Room 1 the builders seem to have avoided sacrificing floor space by using only two large posts in the center of the room instead of a great many smaller ones as is the more common method of roof support. To realize this desire for spaciousness, they went to the trouble of using roof beams 10 or more feet long. The same method might have been employed in Room 2. The distance between the inner and outer walls of this room is nowhere greater than 10 feet, and logs of that length could have been laid across the walls and supported the roof with little additional bracing between the walls.

The west side of the pueblo is composed of six rooms and an open court. Rooms 3, 4, 5, 6, and 9

Pueblo III - View from south

are at the same level as Room 2. Room 3 measures 9 by 20 feet. Its east wall is the west wall of Room 1 and stands between 7 and 8 feet high; the other sides are weathered down three and four feet lower. The usual occurrence of post holes is indicated on the floor.

It is not an absolute certainty that the structure designated by the number 4 was a true room, as no wall was encountered on the west end. The floor has been so badly mutilated by weathering that its condition rather adds to the possibility of there having been no roof over it. The north wall likewise adds to this interpretation in that it begins at the northwest corner of Room 2 and runs west, not in a straight line as should be expected, but curving in a southwesterly direction. Nor does this wall terminate at the point equal to the end of the south wall of Room 4; instead it continues its curving course for a total distance of 80 feet. Beyond 30 feet it rapidly diminishes in height and thickness until for the last 30 or more feet it is only 6 or 8 inches high. About two feet from the southeast corner of structure 4 and attached to the south wall is a rectangular pit with raised sides. This pit is 1½ by 3½ feet and 4 inches deep. Judging from the amount of charcoal that was contained in this pit, it must have been a fire-place, though it does not conform in shape to the typical

firepits that occur in other rooms. Either structure 4 was a room with only three sides, whose west end was completely opened to the adjoining open court, or it was not a room at all but part of the patio itself.

Rooms 5 and 6 are very nearly the same in size and shape; both would average nearly 7 feet east and west by 9½ feet north and south. The west walls of both rooms have gaps several feet across, reaching almost to the floor level. These openings might have been entrances which have fallen and weathered away to their present jagged condition, although there is not enough evidence to make this view any more than a doubtful possibility. The floors of both these rooms have been so badly disturbed that it is impossible to determine the location of either post holes or fire pits.

Room 9, judging from its long narrow proportions, could not have served as a dwelling. It is 9 feet long north and south and 2½ feet east and west. The most logical function for this room, it seems, was for storage.

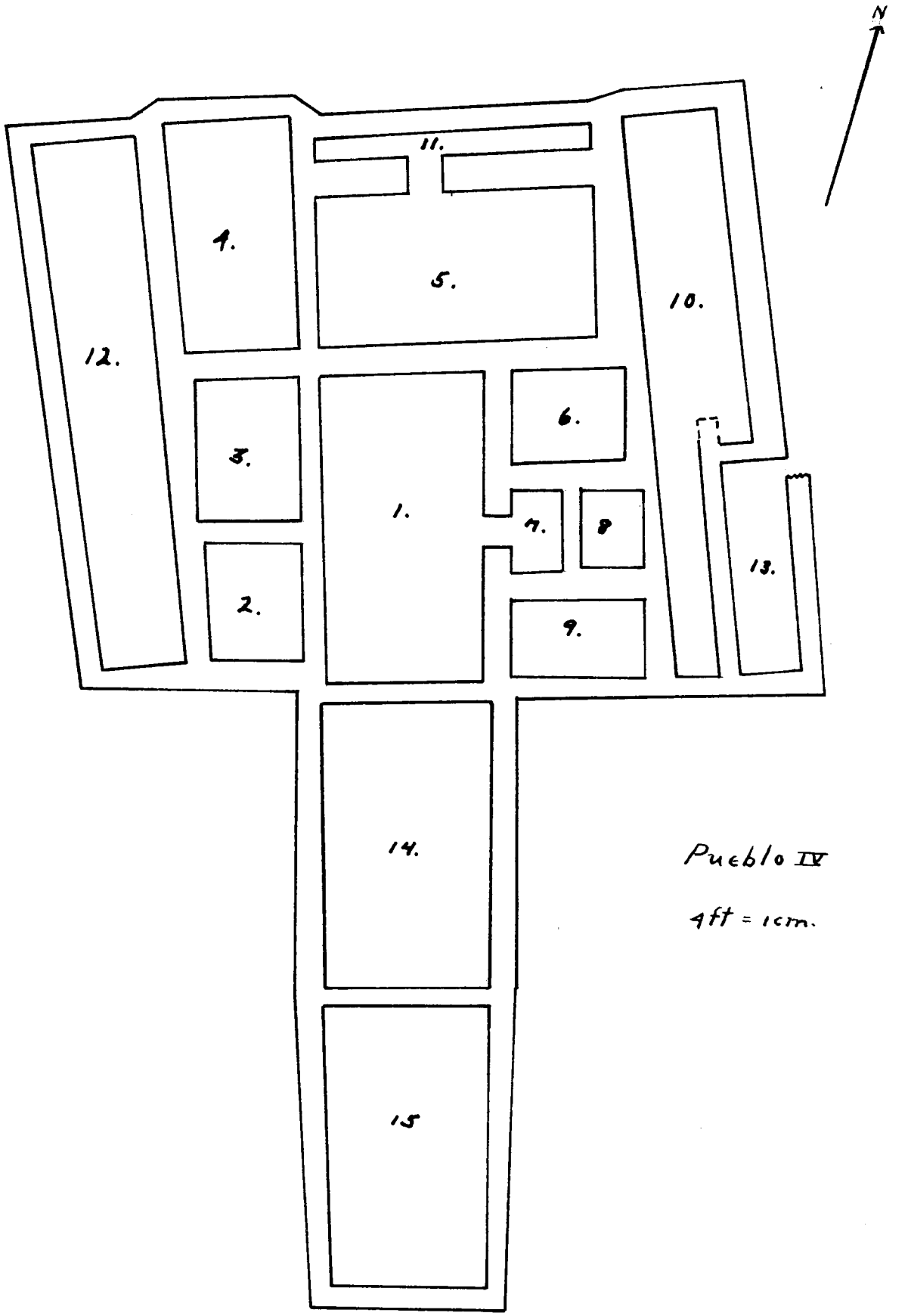
Structures 7 and 8 on the extreme south side of the pueblo reveal a floor level nearly a foot lower than those rooms just described. In every other aspect of their construction they conform very well to the rest of the pueblo. The measurements of Room 7 average 16½ by 10 feet; of Room 8, 14½ by 9½ feet. The condition of the walls varies a great deal. At the north end, where Room 7 is attached to

the main group, the walls are in fair condition, about a foot thick and 3 to 4 feet high. Toward the south both the height and thickness lessen. This deterioration may be due to the fact that these rooms jut out from the main part of the pueblo and, standing alone as they do, were more exposed to the ravages of the floods. The floors of both rooms are irregularly interspersed with post holes, and both dwellings contain fire pits.

An open court has been mentioned in the foregoing as occurring on the west side of this pueblo. On the east side this patio is extremely irregular, being bordered by Rooms 4, 9, 6, 7, and 8. The north wall of structure 4 continues curving in a southwesterly direction and confines the northern extent of the court. Neither the west nor south limits have been determined as yet. Fifteen feet west of Room 9 on the floor of the patio a curious bit of masonry has been uncovered. It is composed of a low double wall of adobe reenforced with rocks. These parallel walls are about 6 inches high, equally as wide, and can be followed for 8 feet. Unlike most double walls of this sort, these are not immediately against each other; between them runs a concave depression made of smooth, hard caliche. Roughly, the structure resembles a trough or irrigation channel, but its position in the patio with no apparent connection to anything else and its termination on the south

end against a small surface wall remove the possibility of such an interpretation and give no further clue to its original function.

Plate V



Pueblo IV

4ft = 1cm.

ARCHITECTURE OF PUEBLO IV

The last group of buildings uncovered at Martinez Hill ruins, Pueblo IV, lies about a hundred yards southeast of Pueblo III. From this mound, which extends about 80 feet north and south by 44 feet east and west, fifteen rooms were uncovered, rooms of extreme diversity both in size and shape. In general construction these dwellings are not unlike the others that have been described, but as a whole the state of preservation here is superior to the other pueblos. This condition is owing to a peculiarity that baffles absolute interpretation.

All the rooms of Pueblo IV, with the exception of 14 and 15 (Plate V), the last to be uncovered, contained great quantities of rocks. These rocks were embedded in the usual fill that has been washed and blown into the structures, and they occurred in such abundance from the floors to the tops of the walls, sometimes to a depth of 7 feet, that it was obvious they had been placed there intentionally. Nearly all of the stones were of the igneous type that does not occur on the desert floor, and in size many exceeded 50 and 75 pounds. It was necessary to convey all that stone from the hills, a distance of half a mile at the least. A similar condition was exhibited in the work done at Pueblo I during the preceding year and at Pueblo III

Pueblo IV - View from southwest

Pueblo IV - Southeast view

to a lesser degree.

What the possible meaning of the presence of these stone-filled rooms might be is an interesting theme for conjecture. The Indian laborers suggested that their legends attribute this condition to a desire on the part of former invaders from the east to make the rooms unfit for future habitation. The chief reason for not giving too much credence to this tale is that it seems hardly sensible for conquerors to expend the great amount of labor necessary to transport so much rock when it would have been much simpler to knock down the walls.

Another possibility which presents itself is that after the village had been abandoned for some time and the dwellings had been partially filled with flood material, the people returned to the site. Knowing the danger of the flood they filled the old buildings with rocks to form elevated and substantial foundations for their new homes. This conjecture is partially substantiated by the occurrence of surface walls that have been described as superimposed over Pueblo III.

The most satisfying explanation to the writer is that the rocks were placed there by the people who inhabited the dwellings; that some calamity visited the village, a famine perhaps or a pestilence, and their superstitious minds placed a curse upon the area. Before

Portion of room 1 - Pueblo IV

Doorway connecting rooms 1 and 7.

Pueblo IV

deserting the village they wanted to assure themselves that it would never be inhabited again. But the presence of evil spirits in the buildings would not allow their being leveled to the ground. And so, stimulated by awe and fear, they hit upon a means of rendering the homes unfit for habitation without destroying them, and they set about the huge task of dragging and carrying rocks from the hills and throwing them into the rooms. Whatever the correct interpretation may be, it is owing to the protective presence of these rocks that some of the walls and floors are so well preserved.

The rooms of Pueblo IV occur at two levels. The four large rectangular structures, 1, 5, 14, and 15, which occur in a north and south line, are from 6 inches to a foot lower than the floors of the other rooms. The room first uncovered in this pueblo, Number 1, revealed a state of preservation surprisingly superior to any room of the entire ruins. It measures 21 feet north and south by 11½ feet east and west. The walls on the north side run to a height of 7 feet; to the south they are weathered down to less than 5 feet. In thickness they average 2 feet. The inner surfaces of the walls, especially on the north and east sides, still retain much of the original plastering. A doorway is located nearly in the center of the east wall and leads to a small chamber (Room 7). The base of this entrance is raised some 6 inches above the floor and on the other side,

in Room 7, it drops again to the same level as Room 1, thus forming a barrier between the two rooms half a foot high and over 2 feet thick. The size of this connecting passage is strikingly ample. It is 2½ feet across at the top and 2 feet at the bottom. Its height extends to the top of the wall which at that point is over 5 feet. The floor is in a condition that could not have been much better when the place was inhabited; with the exception of small cracks it is perfectly preserved. In the center of the floor in an east-west line are two round fire pits 10 inches in diameter. North of these pits, occupying about a third of the floor area, are nine post holes arranged in rows of threes. On the south side of the floor, in an area nearly the same, are seven post holes, six of which are in two rows and one oddly placed.

Room 5, attached to the north end of Room 1, is of a similar appearance. It is 19 feet east and west by 10½ feet north and south. The walls, which in height and thickness average about the same as those of Room 1, are less well preserved on the inside. Only a little of the original plastering remains, while at the base and running up for over a foot the adobe has been partially eaten away, a condition that can be explained only by the former presence of water which must have stood in the room for a rather long time. The north wall is interrupted by a doorway of nearly

Doorway connecting room 5 and 11.

Pueblo IV

the same shape and size as the one described in Room 1. This entrance leads to the long, narrow structure designated as Room 11, a room nearly 20 feet long and only a foot and a half wide. This arrangement is not a little puzzling. Here is a large room with a well made doorway leading into another structure of odd dimensions and which has no exit whatever to the exterior. Why the inhabitants of this group of buildings should obstruct their entrance by such a heavy wall as forms the north side of Room 11 is completely unaccountable. Had they simply wished to close the passage for protection it would have been much easier to seal up the entrance itself. Room 11, further, is of such dimensions that it could have served for very little practical use.

The two structures in line with Room 1 to the south are nearly the same in size. Strangely enough, neither of these dwellings had the usual large amount of rock in them and, as a result of this, they are not so well preserved. The walls are much lower and more deteriorated generally. The floors are in good enough condition to recognize a number of post holes.

The west side of Pueblo IV is occupied by four rooms, 2, 3, 4, and 12. All of these are on the same level, and this level is between 6 inches and a foot higher than the rooms just described. Rooms 2, 3, and 4 lie in a north-south line and differ only in size. Room 2 is the smallest, measuring 6½ feet north and south by 8½ feet east

and west; number 3 is somewhat larger, 10½ feet north and south by 7½ east and west; and number 4 has the greatest dimensions, being 15½ feet north and south by 8 feet east and west. The walls of all these rooms average about 2 feet in thickness and 4 feet in height. On the inner surfaces the plaster has been completely destroyed and the floors are so badly disturbed that the usual details cannot be traced. Room 12, the outside structure of the pueblo on the west, is an elongated rectangle 37 feet north and south by 6 feet east and west. The floor, which for the most part is well preserved, when examined revealed neither post holes nor fire pits. Evidently the west and east walls were close enough together to allow the roof beams to be supported without the assistance of posts between the walls. On the north end of the floor is the remnant of some former wall that has been worn down until it is nearly level with the floor.

Rooms 6, 7, 8, 9, 10, and 13 on the east side of the pueblo are several inches higher than the central Room 1. The proportions of Rooms 9 and 6 are ample enough to have served the inhabitants as dwellings; they are 8½ and 9½ feet long, and 6 and 6½ feet wide respectively. Neither of the rooms contains post holes nor fire pits. The two smaller rooms, 7 and 8, located between 6 and 9, could not possibly have been utilized as sleeping or living rooms. Room 7 is 3 feet 8 inches by 6 feet and, as has been pointed out earlier, is connected on the west side to Room 1 by a

South half of room 10 - Pueblo IV

doorway. It is reasonable to suppose that Room 8 served as a storage room; its small size bears out such a view but to interpret the use of Room 7 similarly leaves room for serious doubt. The presence of so large an entrance in this diminutive chamber, one-third as wide as the entire room, is a significant obstacle to such a belief. The two remaining rooms of this group, 10 and 13, occur on the east border of the pueblo. Room 10 in a manner balances the long, narrow structure on the west edge of the pueblo, Room 12. The outside wall extends for 22½ feet from north to south, then jogs to the west for a yard and again continues southward for 17 feet. The west wall runs a straight course for 39 feet. The irregularity in the east wall results in the room being 6½ feet across at the north end, and only 3 feet 2 inches at the south end. At the inner part of the jog in the east wall and extending toward the north end of the room is an interesting pedestal-like block of smooth hard adobe. This rectangular block is of the same thickness as the wall of the room, about a foot and a half; but it rises 2½ feet above the floor, while the walls around it are a foot higher. What its function was is by no means clear, though its appearance does suggest that it may have been a resting place for an image, a trophy, or some other revered object. The floor contains two small fire pits and several post holes.

Room 13 is set against the narrow part of Room 10, on the east side. It is 15 by 5 feet. The walls

are among the least substantial of this group, being scarcely a foot through on the average. Its floor is in too poor condition to detect any details.

Whether these ruins may be considered as a "compound" type of architecture is uncertain. A compound, as has been defined, should be composed of groups of structures surrounded by a wall. As far as the dwellings themselves go, their construction and plan hold to the recognized definition of a compound. But the presence of an enclosing wall is doubtful.

Attached to the northeast corner of Pueblo III and running eastward, a wall has been traced for about 269 feet. For over 200 feet its thickness would average over 3 feet at the base and a few inches less at the top. The height is nearly the same. This wall, however, does not appear to have formed an outside enclosure of the ruins as was at first suspected. Instead, it was revealed by excavation that attached to both sides are other walls running north and south. The walls attached to the south or inside of the main wall are in no wise out of conformity with what a compound should be; but those attached to the north or outside clearly indicate more structures to the north and remove this heavy wall from the category of an enclosing wall. Other aspects which remove this structure from the usual type of compound wall are that instead of running in a straight line eastward, it is remarkably irregular in its

North wall - West portion

North wall - East portion

course and it also makes a gradual bend toward the south.

None of the walls attached to the main wall have been traced. Their beginnings occur as follows: on the north side the first one is 86 feet from the corner of Pueblo III; the second is 22 feet farther; the third, 22 feet farther; the fourth, 24 feet farther; and the fifth, 27 feet beyond. At a point 28½ feet beyond this fifth wall is a 7-foot jog to the south. Sixteen feet beyond this interruption is the last wall of the north side. A break in the wall occurs 14½ feet from the east end. This gap, which measures 15 feet across, does not seem to have been made by the wall disintegrating and it might have been an entrance. On the south side of the main wall there are four attached walls at intervals of 64, 24, 54, and 48 feet.

Attached to the east end of the wall just described is another one running southward for nearly 180 feet. The wall answers the description of a compound wall. It runs in a straight line and has no structures attached on the east or outside. On the inside there are five attached walls: at intervals of 20 feet, 6 inches; 22 feet, 9 inches; 32 feet; 19 feet; and 28 feet, 6 inches respectively, from north to south. Generally this east wall is not so substantial as the one on the north side of the ruins. It is less than a foot thick and not over 2 feet high. The distance of 180 feet, given as the length of this wall, does not indicate

its original extent because at the end of that distance the wall became so disintegrated that it was not possible to trace it farther.

Excavations for this season were terminated before it was possible to determine definitely if a south wall exists as a continuation of the east and north walls. However, there are surface indications of such a condition. Judging from the extent of the north and east walls and from surface indications elsewhere, it is possible that further examination will reveal Pueblos III and IV and the mound between them as the nuclei of a village surrounded by some sort of a wall. This wall may not be of the true compound type, as the north side of it indicates. The typical compound wall takes its description from relatively few ruins in the Middle Gila drainage, and it should not be surprising if the same plan does not hold without variation in all parts of the area.

The work done in connection with the tracing of the above-described walls gives a further hint of the former appearance of the village. The numerous smaller walls extending off from the main ones indicate that a large portion of the areas between the mounds were formerly the sites of smaller dwellings. From this one may conceive of the community as containing several groups of main buildings, some of them, perhaps, more than one story high. Attached

to these more imposing structures were smaller, one-storied dwellings, and at irregular intervals between the dominating buildings were groups of single-storied homes. The main groups, such as Pueblo III, probably were ceremonial or civic centers, and the rooms attached may have served as dwellings for the priests and other leaders. The bulk of the populace lived in adobe shelters scattered among these centers. Open courts, such as the one described on the west side of Pueblo III, were used by the community likely as places of rest, recreation, and industry.

HILL TOP RUINS

Located on the top of Martinez Hill itself there are several interesting structures that are completely different from those below. The differences are chiefly in size, plan, construction, and use. Comprising these remnants are several enclosures constructed of rock, the same lava rock of which the hill is formed. On the north end of the summit there are three such enclosures, one next to the other. Of this group the one farthest west is in the form of an irregular ellipse, 142 feet east and west by 80 feet north and south. Attached to the east end is the next enclosure, this one nearly circular in outline and roughly measuring 50 feet in diameter. The third structure, immediately to the east, likewise is a circular enclosure of rocks, slightly smaller than the preceding one. On the south side of the hill occur two smaller circles of the same general type.

In none of these enclosures are the walls still standing; the rocks have all tumbled down. There are no indications that any kind of mortar was ever used to hold the stones in place. Apparently, in their original state the walls were raised by piling up the unshaped rocks, fitting them roughly in place against each other. Judging from the quantity of stone, the wall could not have been more than 3 or 4 feet high.

On the north and south sides of the hill near the top the rocks are arranged in such a manner as to suggest terracing. The clearest indication of this occurs on the south slope where three tiers of stone at succeeding levels run east and west for several hundred feet. The areas in between these rows are fairly clear of stone. Pot sherds are quite abundant on the hill top, but they are of such small dimensions that it is impossible to judge the forms they once assumed. With the exception of one small sherd which was decorated with a red-on-buff design, all the fragments were of undecorated ware. Slipped and unslipped pieces occur. The paste is similar to that found at the main ruins, generally rather coarse, and ranging in color from buff to brown. No other artifacts have been found among this group of ruins, with the exception of a single crude mortar.

The best interpretation of these groups of structures is that they were crudely constructed walls which served as protective enclosures for the inhabitants of the village at the bottom of the hill. We are certain that there formerly were seasons when the waters of the Santa Cruz River rose to such unusual levels as to flood the habitations of the people. When such a disaster occurred, it is probable the inhabitants moved to the hill top where they found refuge, and there they waited for the flood to subside. Within the protection of the stone walls they might have

constructed brush shelters which, because of their flimsy nature, have long since been obliterated by the wind and rain. A less plausible explanation of the use of these structures is that they were used as fortifications. Certainly such a position would have been invulnerable; no enemy could have succeeded in storming a group of warriors stationed at the top. However, there are too many aspects of these people which make such a belief improbable. It is fairly certain they were a peaceful folk like the rest of the pueblo people. Among the hill top ruins there has not been found a single war implement, and from the main ruins on the valley floor come only a few arrowheads. All of the artifacts taken from this site point to an industrious, persevering group of humanity, intent upon satisfying the elemental needs of life and a few comparatively simple indulgences.

CERAMICS

The study of pottery at Martinez Hill ruins was not a little handicapped by the striking scarcity of whole pieces. Practically all the information coming from ceramics at this site was gathered from sherds, which fortunately occur in great abundance; and this information has been sufficient to give a fair conception of the nature of this phase of development. The only complete specimens of pottery found have been those associated with the few burials that were unearthed.

Most of the sherds found at the ruins came from within the rooms; the rest, from the ground surface and from trenchings on the outsides of the pueblos and walls. In some of the rooms the floors were cut through, and wherever this test was made more sherds and refuse were detected below the levels of the pueblos. Obviously this indicates that there were inhabitants in the same locality before the construction of the pueblos, and that when the pueblos were built, debris heaps were chosen as foundations. It has been pointed out that at Pueblo III there was an occupation later than the one responsible for the major part of the ruins. Thus there are indications of three occupations in one mound: the first one, represented by the stratum of refuse below the floor levels of Pueblo III; the

second, by the dwellings of Pueblo III themselves; and the last, by the surface walls superimposed upon Pueblo III. Curiously enough, the study of the pottery types from each of these levels does not reveal any alteration, either by gradual development or by sudden change. The only satisfactory conclusion which can be reached in this regard is that the succession of occupations must have extended over a period of time so relatively brief as to effect no appreciable change in ceramics, and that the people of each occupation were of the same culture.

In the basic elements of the pottery, that is, the paste, temper, finish, and decoration, one notes certain general tendencies and several differences. The color of the paste varies from brown, which is frequently tinged with red, to gray. The texture of the paste is equally heterogeneous; it runs from coarse and porous to fine. Several sorts of tempering materials occur: fine sand, quartz particles, mica, and crushed shell. In finish some pieces are excellent, well smoothed and polished, while others are left rough and crude.

There is no great abundance of different forms in the pottery. Ollas, bowls, and pitchers complete the number of shapes. Each of these three styles, however, is quite variable. The ollas run from globular to flattened globular, to elongated, with mouths wide or constricted. As

a rule they are straight necked. The rim may be straight or outcurving, and frequently in the smaller pieces there is a projecting lip on one or both sides of the rim. The Gila shoulder occurs.

The bowls, which with ollas, represent the most common forms of pottery on the site, are more often of the deep type. Invariably they are round bottomed with sides that vary from almost straight to curved. Most of the rims are straight, though outcurving rims are present also. Only one example of incurving rim has been unearthed.

The pitchers occur in large and small globular shapes. Commonly the body is the same as an elongated type of olla. A handle made of a solid bar of clay is attached, one end at the top just below the rim and the other end fastened half way down the side. The neck usually is straight and terminates in a straight or slightly outcurving rim.

With very few exceptions the types of pottery show no departure from that of the rest of the Middle Gila area. The several varieties may be placed under these heads for convenience: plain ware, red-on-buff, red-on-black, black-on-red, Gila polychrome, Martinez Hill polychrome, corrugated, and black-and-white.

The plain ware represents the oldest and most abundant of all the forms. It may be divided into

plain gray ware and plain red ware. The plain gray is of coarse paste, unslipped, and often poorly fired. The most common tempering materials are siliceous particles and mica. This ware represents the most inferior of any of the ceramics and appears to have served mainly for cooking and storing purposes. A characteristic example is a globular, medium sized olla with a short neck and an outcurving rim. An interesting variation in Middle Gila plain ware is exhibited in the occurrence of several ollas with protruding lips on the rims. Most of the specimens of this ware found on the floors of rooms were generously smudged. Several of these larger cooking utensils would measure a foot and a half to two feet at the point of greatest diameter.

The plain red ware is of four varieties: unslipped pieces, slipped and unpolished, slipped and polished, and "onion" ware. The base clay of all these is gray and of rather coarse texture. It is usually thickly tempered with finely ground particles of quartz and other siliceous materials. The difference in the finish is the distinguishing feature of the four varieties. The first division, as the name implies, did not attain its red color by coating the surface with a pigment. The color is a result of the presence of iron oxide in the base paste which, upon coming in contact with the intense heat in the firing, turns a light red shade. Examination of a few freshly broken

sherds of this type gives evidence of the truth of this fact; it will be seen that the paste at either surface and extending inward is red, while the central portion of the clay is still its original gray color, showing that the heat did not penetrate entirely through the paste with sufficient intensity to complete the transformation of color. The second and third varieties of the plain red ware are both covered with a red paint which gives them a deeper and richer shade of red than the unslipped type. This slip often contains a considerable amount of powdered mica. The surfaces of both these types are well smoothed, and the third variety is made glossy by means of rubbing with stones. The shapes represented in these types of plain red ware are ollas and bowls. The bowls frequently exhibit a burnished black interior, and the exterior is often smudged with firing clouds. Most of the bowls are deep with curved sides and straight rims. The last variety is the "onion" ware. The name is descriptive of the exterior finish of the pieces; it is striated in such manner as to suggest the surface of an onion. The interior of this ware usually is black, and not infrequently burnished. Only bowl forms have been found.

Of the decorated wares, the most abundant type is red-on-buff. As has been stated, red-on-buff pottery occurs commonly in the Salt and Gila Valleys and extends throughout southern Arizona. In this area it may be

divided into early and late phases. Among the earliest examples are unpolished pieces with a paste that ranges in color from gray to tannish pink. The first designs are confined to simple lines and dots, and characteristically the decoration consists of groups of small, independent units which occur over and over on the piece and are arranged in series of lines, horizontal, vertical, and oblique. This early red-on-buff pottery throughout the Gila drainage occurs first in the period of the Transitional Pithouse Culture and merges into the Rectangular Pithouse Culture where it seems to reach its peak. As the decoration develops, such elements as zigzag, parallel, and hatched lines appear. Designs become more complex and technique in application improves. Common elements of decoration, in addition to those mentioned in the early red-on-buff, are the interlocked and meandering symbols, the scroll, the corn and "H" symbol, with many variations of all these. Zoomorphic forms occur also and include bird figures, real or conventionalized, the lizard, the snake, mountain sheep, and human forms. Heretofore the work done in the Middle Gila area has shown that all this development occurred before the Rectangular Pithouse Period was terminated. Always when one approached the Pueblo Period such as exemplified at Casa Grande, a new type of pottery, Gila polychrome, had become more abundant than red-on-buff. At Martinez Hill ruins, which architecturally is certainly of the Pueblo Period, this condition is

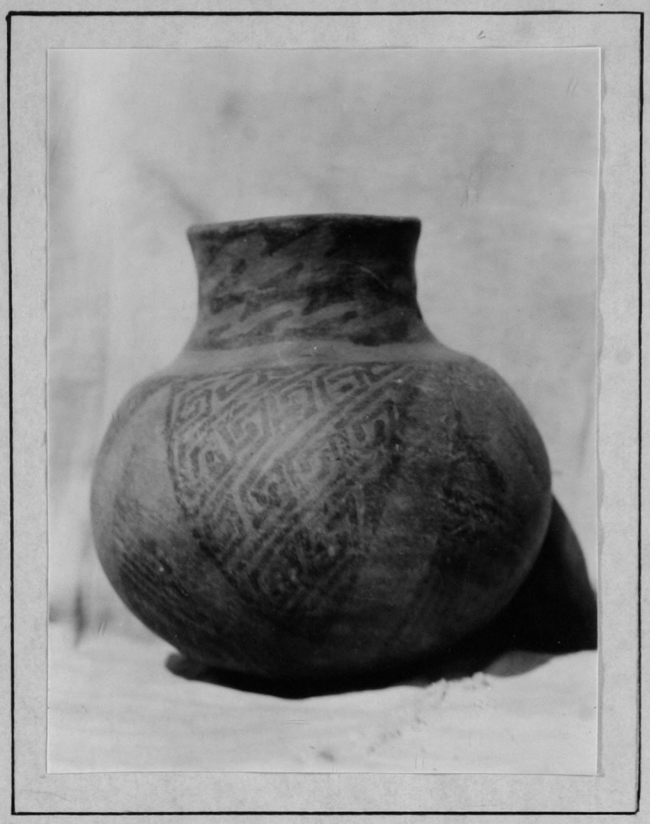
changed. Here we find a Late Pueblo culture with a dominance of red-on-buff pottery. Sherd counts made from finds coming from Rooms 1 and 2 of Pueblo III showed that 80% of the pottery was plain ware, 16% red-on-buff, and the remaining 4% was of the other types of decorated ware.

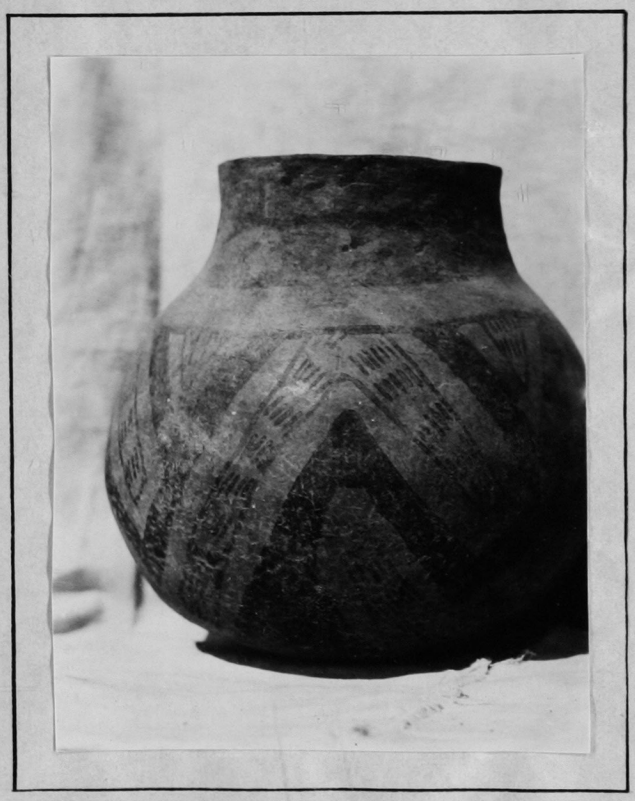
The red-on-buff ware is of fairly coarse paste, ranging from gray to tan in color. The slip also is extremely variable; it runs from coarse to fine in texture, from thin to heavy in thickness, and from light buff to dark brown in color. This latter feature, the great differences in color of the slip, has suggested to some who have examined it the necessity of dividing the ware into red-on-buff and red-on-brown. To avoid the confusion that often arises from too many sub-dividing distinctions, we shall class both the light and dark slipped pottery under the one head of red-on-buff. The development of the light and dark buff background is a parallel one, as indicated by the similarities in forms, in paste, and in design.

As has been mentioned, the early red-on-buff of the Middle Gila is not represented at Martinez Hill Ruins. What we find there is a well developed type. The decoration, with the exception of only two sherds, is completely geometric; the more common designs are parallel lines, hatching and cross hatching, rows of repeated elements such as the lines with dots or triangles attached, the

"H" design, the succession of broken scrolls, rectangles, steps, and broken lines. Commonly one group of elements is confined to a single field of the piece. The field may be divided into several panels separated by straight or curved lines with a different set of designs painted into each panel. Heterogeneous arrangements of several geometric elements occur frequently. The two sherds referred to as exhibiting zoomorphic designs are animal and plant forms. One sherd contains a single squash blossom representation several inches in diameter, and the other is decorated with several rows of repeated and conventionalized images of a deer.

The forms of red-on-buff include the usual three sorts found on the site: ollas, bowls, and pitchers. Ollas and bowls appear in greatest abundance and represent the most variety. The lack of whole pieces does not permit of much information as to the range in sizes. Judging from the proportions of the fragments, however, the ollas vary from 4 to 5 inches to over a foot and a half. The bottoms are flat, round, or slightly curved; the sides are usually generously rounded and several have the Gila shoulder. Modeling of the rim may be straight, constricted, flaring, or recurving, with edges straight or curved. Most of the necks are curved. Usually the decoration is all over the outside and the designs of the neck and body commonly are





Red on Buff Pottery

separated by a red line. One excellent whole piece that served as a cremation urn was modeled in imitation of a squash, with grooves extending vertically from the bottom upward to just below the neck. In each of the raised areas between the grooves was a series of geometric decorations with no two of the fields duplicated.

Bowls occur in sizes from a few inches to well over a foot across the orifice. They may be decorated on the interior or on the exterior, though just as frequently the designs occur on both sides. Often, when the design is confined to the outside, the interior is finished in a well burnished black. An apparently new variation in decoration of bowls is encountered at this site. It consists of a red-on-buff exterior with red-on-black interior. The black background of the interior is a carbon pigment which either was applied as a paint or attained by smudging and polishing the inside. The orifices of the bowls commonly are wide and flaring. The depth is variable, but the general tendency is toward the deep types. The edges of the rims are flat, rounded, or bevelled.

The second variety of decorated ware is red on a black background. In the basic elements, such as paste, temper, and finish, this ware is not unlike the red-on-buff. No whole pieces have been found, nor are sherds in sufficient abundance to indicate what forms were represented. The decoration is always geometric and occurs either

on the exterior of the piece or on both sides. Close examination of the black background shows that in most of the pieces this dark color is a result of smudging and polishing; less frequently it seems to be a true paint.

Another type of pottery is one which can be distinguished from red-on-black only by rather careful scrutiny. Though it is decorated in red and black, the red is the background over which the design in black is applied. This sort is more scarce than the red-on-black, and in every aspect other than the decoration is the same.

Corrugated ware is only represented at Martinez Hill Ruins by five sherds. These are dark, reddish brown in color, of a paste that is hard and compact, The outstanding features of this type are the corrugations which cover the exteriors, an effect produced by not completely obliterating the coiled modeling. No direct insight can be gained as to the shapes of the pieces, but it can be believed that, as in the rest of the Middle Gila, the forms were confined to ollas.

Black and white pottery occurs in such meagerness and is so far removed from its center of development that it has been interpreted as an intrusive type. It is held generally that this variety is a localized sort, confined with a few exceptions to the Salt River Valley. The paste of this ware usually is gray and coarse with sand temper. The pieces generally are well fired and have a smooth

surface and the slip, which is white, is covered with black designs of geometric style. Solid black elements are a common design, or a combination of solid elements with hatched lines or dots.

Gila polychrome, a type of ceramic art that is so abundant in the Middle Gila area, occurs at Martinez Hill but with surprising meagerness. Farther north in the Gila drainage it apparently represents the latest ceramic development of the prehistoric inhabitants of that area. In decoration it is, broadly, a creamy white and dead black on a base that ranges from red to brown. On the basis of workmanship Gila polychrome divides itself into early and late phases. Generally the early type is of a better quality; the paste is finer, the drawing, firing, and decoration more accomplished. In hardness and finish it is likewise superior to the late polychrome. Especially in decoration does the late type show decided deterioration. Poor application of the slip frequently is in evidence in its checked appearance. The comparatively few sherds of Gila polychrome coming from Martinez Hill are hardly sufficient to tell much of the ware as it once occurred. The examples that do occur, however, are all representative of the early and better phase. Ollas and bowls probably are the common forms that this ware assumed. The decoration is entirely geometric; angled patterns predominate, although

curvilinear elements occur also. Solid and outlined triangles, hatched lines, interlocked symbols, stepped elements, and broad black lines are the most frequent motives.

The absence of the late Gila polychrome, if one adds to this fact the dominance of red-on-buff, leads to the conclusion that the pueblos of Martinez Hill are earlier in time than similar architectural examples farther north in the Middle Gila area.

The last division of decorated wares is not encountered in any of the literature on the Gila area and appears as a new type. The term Martinez Hill polychrome has been chosen to designate it. This ware resembles the other varieties of decorated pottery in paste and slip; the paste is fairly coarse and tempered with siliceous material and mica. The slip likewise is sprinkled with powdered mica. Invariably the surfaces are smoothed, but not polished. Both sides are slipped with a pigment ranging in color from brick red to deeper red. A design in black is applied on the red background, and this black decoration is bordered by a white line. Usually the black decoration is only a broad line that runs parallel or oblique to the rim of the piece. On a few sherds, however, this band between the two white lines is not solid black but a black-on-red design of triangles and steps. No whole pieces have been unearthed, and it is not possible to determine which of the usual

shapes occur most frequently. In addition to the type of paste exhibited in this ware, which, as has been pointed out, is comparable to that of the other wares, the relative abundance of it is an additional argument that it is a native ware. It has been reported by colleagues that similar specimens have been found in the Santa Cruz Valley farther south. Possibly this was a local development confined to all or a part of the Santa Cruz Valley.

A few interesting types of ceramics occur at the Ruins in the forms of spindle whorls and beads. Some of the spindle whorls were fashioned from potsherds, a practice not uncommon in the Gila area. Others, however, show a marked difference from anything in the Southwest. These are conical in shape with the slanting sides slightly concave. The paste of these is the same as that used in pottery of these ruins; but the finish, which is often highly polished and slipped with a heavy, rich red pigment, resembles quite closely some of the prehistoric Mexican pieces. The clay beads illustrate this Mexican feature in a similar manner.

STONE WORK

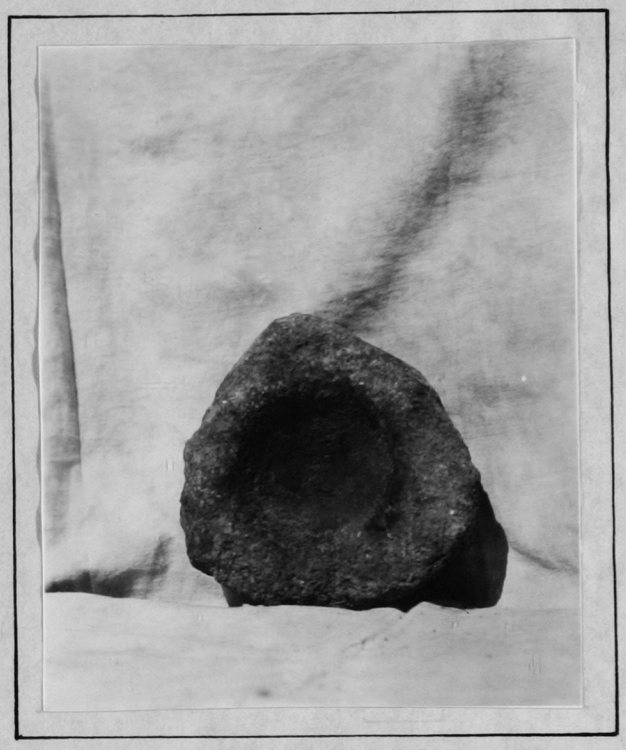
The inhabitants of the Ruins under consideration, like other prehistoric peoples of the Southwest, had not yet emerged from the Neolithic stage when the white man first entered their territories. And so it is to the stone implements that one must turn to find some of the best preserved and finest examples of their industry. Throughout the Middle Gila region the stone work is generally among the most accomplished phases in its culture; at Martinez Hill Ruins, however, the work in this department is comparatively crude. The scantiness of artifacts coming from the excavations includes stone implements, and most of the pieces found were broken. Generally the types represented include axes, hammers, grinding stones, arrow straighteners, points, scrapers, polishing stones, and paint pallets. The materials employed range in hardness from diorite to sandstone.

The axes illustrate the unique development of a type occurring in the Middle Gila area in that they are straight backed, grooved on two faces and one end instead of all the way around. No examples with two cutting edges have been found. The top of the poll is irregularly hemispherical with the curve beginning at the upper edge of the hafting groove. Immediately below the groove the

sides begin tapering downward to form the wedge-shaped blade. A representative size would measure five inches in length by 2½ inches in width, and 2 inches thick. The material used usually is a hard, black stone. As a rule the workmanship exhibited in the axes is comparable to the most finished examples of stone work. All that have been found are well shaped and polished.

The hammers or mauls are only represented by three examples. Two of these are rounded equally on both ends and grooved on three sides for hafting. The other was plainly an axe originally whose cutting edge either had broken or worn down and had been converted into a hammer. Another type of stone hammer is the unhafted sort. Many of these show no working; any stone, it seems, of proper size and weight, if it fit comfortably in the hand could be used as a hammer. Several, however, do show a degree of fashioning. These resemble a modern baseball in size and shape. Possibly some of these ball-shaped stones were used as war clubs. By encasing such a rock in skin and fastening it to a handle or thong a most efficient weapon could result.

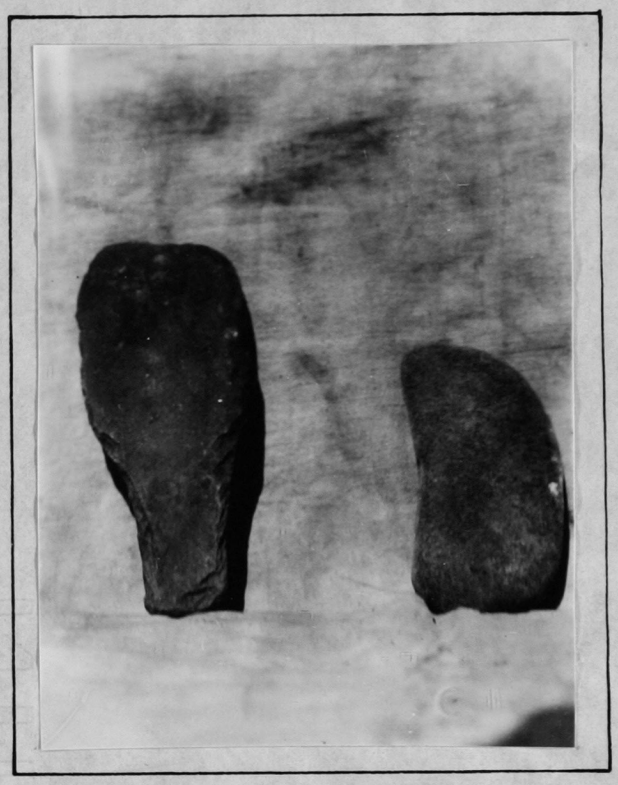
A few examples of grinding stones were unearthed. These are of two types: manos and metates; and mortars and pestles. The metates are made of a large rectangle of lava rock. The grinding surface is smooth and slightly concave, and the two sides are bordered by ridges.



Paint Mortar

The height of these raised margins is variable; it increases, of course, as the central portion of the implement is worn down with use. These raised margins that occur on the metates indicate that grinding bins were not used. Only three whole metates were uncovered and none of them was well finished, the sides and bottoms showing little or no working. The mano is that part of the grinding apparatus which is held in the hands and rubbed over the grain contained in the metate. Most of the manos from the excavation were broken, but these, with several whole specimens, were sufficient to show that they conformed to those typical of the Middle Gila. An average example might be described as a rectangle 8 inches long, 4 inches wide, and 2 inches thick. The ends may be nearly square or rounded, and occasionally the sides are slightly concave to facilitate grasping it firmly. The grinding side is always worn smooth and flat, or may be a little convex the long way.

Mortars of the larger sizes are represented by only one broken piece. This example is nothing more than an irregular, unworked piece of lava rock with a concavity on the top about three inches wide and not quite so deep. Several mortars of small sizes were found, and these were illustrative of the manner in which pigments were ground. In shape some of these paint grinders are no more than an irregular piece of stone with a shallow depression



Polishing Stones

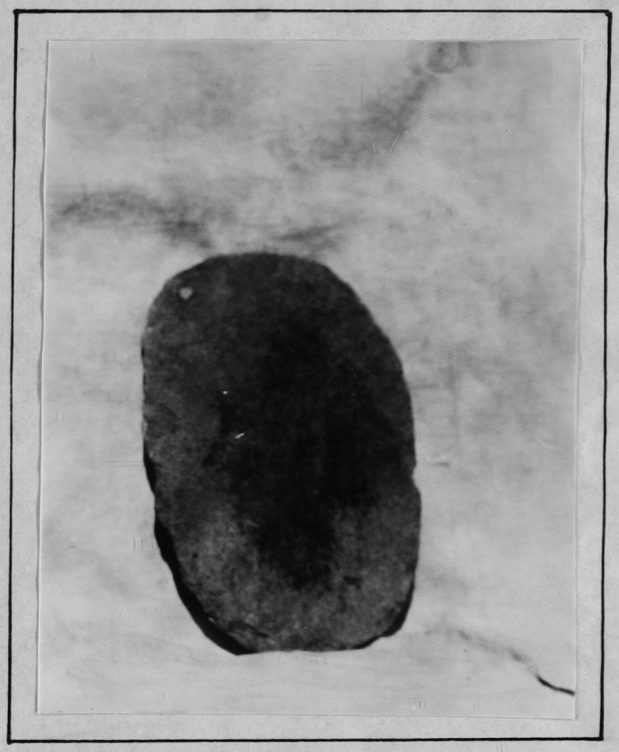
on the top; others show a good deal of workmanship. Frequently the pigment grinders still exhibit the marks of the paint on their grinding surfaces.

Arrow points are a rarity at these Ruins, and the few examples found were associated with an inhumation burial. They were of flint, rather broadly triangular in shape, and unnotched.

Polishing stones for smoothing and finishing pottery were abundant in all the pueblos. They show, perhaps, the least degree of workmanship of any of the stone implements. Any stone, of any shape, so long as it could be handled easily and possessed a fairly smooth surface, could be utilized for smoothing pottery. Frequently these polishers are not worked at all and can be recognized only by the indications of rubbing against some foreign object.

Grooved pieces of hard, black stone were used to straighten and smooth arrow shafts. A representative form is one a little less than half an inch thick, 2 to 3 inches long, and 1½ inches wide. Running crosswise are one and sometimes two grooves, highly polished from use and just large enough for an arrow shaft. It was by placing the arrow shaft into this groove and rubbing that the uneven edges were worn down and polished.

Thin slabs of stone of irregular outline, from 3 to 6 inches in diameter, have been unearthed which bear on one surface indications of contact with paint. All



Paint Palette

of them show little or no working, and no other use can be ascribed than paint pallettes which the potter included in his decorating paraphernalia.

A few types of stone tools were used in agriculture. These usually are slabs of slate little more than an eighth of an inch thick, possessed of a single cutting edge. In width and length they vary considerably. There is no indication on any of them that they ever possessed handles. Evidently they were held in the hands, and in this crude fashion were used as hoes and spades. Another type of stone tool occurs which closely resembles a hoe, but bears a series of closely set notches on the cutting edge. Most probably this instrument was used as a saw.

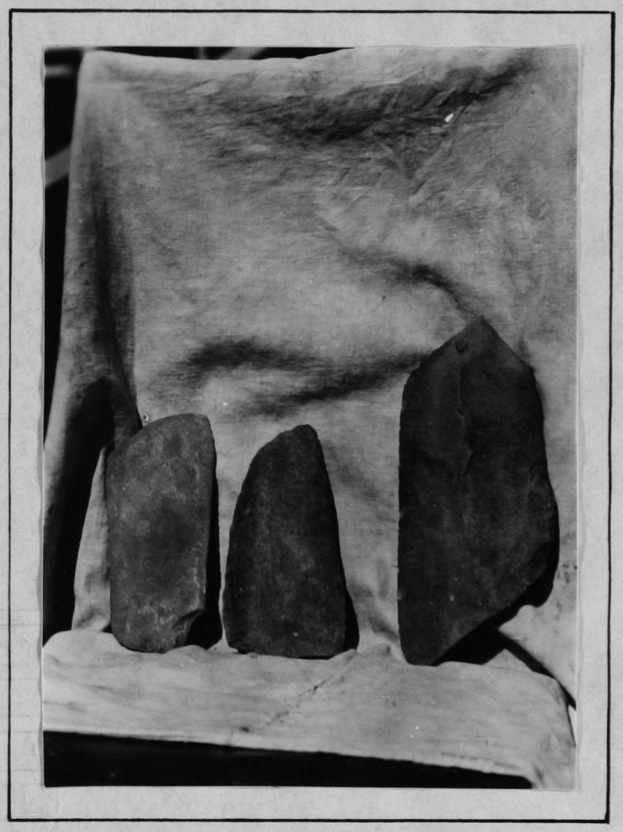
A single broken example of a stone tablet that has been interpreted as a ceremonial accessory came from Pueblo IV. This was a thin, rectangular slab of stone with a well smoothed face. Extending along the edge is a marginal slightly raised and about half an inch wide. The design contained in this border occurs on all sides of the piece and is composed of plain, short, incised lines arranged in vertical and horizontal rows.

A few oddly shaped stones have been found that suggest contact with human flesh, but their shape gives no clue of any practical use. Probably they were associated with the equipment of the medicine man. Throughout the

Southwest generally any stone that was unusual enough to be striking was regarded as efficacious in sacred rites and in healing.

BONE AND SHELL WORK

In both the bone and shell industries there is little evidence from Martinez Hill Ruins. Craftsmanship in bone is illustrated by just a few awls, and the shell work is confined to several fragments of what formerly were pendants and the remains of a necklace. Very likely objects of shell were much more in vogue among these people than the remains indicate. Shells seem to have been, and still are, esteemed by the Indians not alone for the attractive brilliance of some, but for the supposed power they possess to bring rain. Pectunculus is the common variety of shell found at the Ruins, and two pieces of cardium were found. The necklace referred to was of dentalium. All of these shells are native to the Gulf of California and the Pacific Ocean, and they indicate communication with the sea in some manner.



Farming Tools

AGRICULTURE

Among the industries of the prehistoric inhabitants of the Middle Gila area the most important to them was undoubtedly agriculture; and in this department they reached a stage of excellence that appears to have surpassed any of their Southwestern neighbors. The remnants of their farming tools give an indication of the methods; the wooden planting sticks, the hoes and spades of stone and wood reveal the primitive means by which they wrested a livelihood from a reluctant environment. From the debris heaps and from some of the dwellings come evidences of their products. Corn, as among the other American Indian tribes, was the staple. Squashes, beans, and cotton were the other cultivated products of significance. Corn, it is believed, was introduced into the Southwest from southern Mexico where a native plant, teosintli, occurs and is regarded as the ancestor of the several varieties of Indian corn. Before the period of the round pithouse in some of the archaic cave dwellings come the earliest specimens of a hard kernelled corn. Throughout the Pithouse Period and into the Pueblo Period corn saw a continual cultivation and development. Squashes, like corn, seem to have been introduced at a very early period. Beans may have been a more

recent product; evidence of their existence before the Rectangular Pithouse Period is doubtful. Cotton, it is certain, did not make its advent into this region until the Pueblo Period.

At Martinez Hill Ruins there is evidence enough that its inhabitants were also farmers, and the implements that occur at this site show further that the methods employed were similar to the rest of the Middle Gila area. There have been no finds of the actual products of the field and much must be deduced indirectly. For example, though no specimens of corn have come to light from any of the dwellings or refuse heaps, one may reasonably assume that corn was a common grain from the presence of numerous grinding implements. A similar situation presents itself when one looks for cotton. There are no examples of cotton textiles or even of raw cotton, but the presence of a number of spindle whorls, resembling those found farther north where cotton is a certainty, surely indicates that this product was used in weaving at the village.

Likewise do the farming tools that have been found testify of the manner in which these people cultivated their land. The land was cleared and broken with the simple implements of stone described earlier. Manpower was the sole means of accomplishment. Obviously, with such crude methods, it was impossible for one family to cultivate

an extensive area. Doubtless, as among some of the modern tribes in this state, a few acres sufficed for each family. These people had just enough for their daily needs with some surplus, perhaps, to carry them through an occasional period when the harvest was scant.

SOCIAL AND RELIGIOUS ASPECTS

Throughout the entire prehistoric Southwest there are indications of social grouping. The earliest pithouses point to a loose form of village life, and this type of society continues on through the Pueblo Period. Being an agricultural folk, theirs was a sedentary life and, to judge from the lack of fortifications and war implements, it must have been a peaceful one as well. At Martinez Hill Ruins the evidence all points to an identical situation. The house grouping suggests that the people lived in close proximity with each other, and that outside the village boundaries lay the fields. The uniformity in house structures that is usual in the Southwest during the Pithouse Period tends to lessen in the Pueblo Period where certain portions of the architecture become dominant over the rest of the village. This condition has been interpreted by some as the result of a change from a completely democratic government to one of more autocratic nature. The two methods of disposing of the dead, namely, inhumation and cremation, which occur in this area likewise have been explained on a basis of social ranking.

That the inhabitants of this prehistoric site had a well developed religious side of their lives is indisputable. Had no direct evidence of religion been

brought to light in the examination of these ruins, one might still with reason support the belief that a people as advanced as these must have evolved some sort of religious life. To these primitives, simply to live was a problem. The winning of the satisfactions of the elemental needs of life was a central interest, and in that striving for the values of a satisfying life, shared by the rest of humanity past and present, their religion was molded. Like other semi-civilized peoples, these were concerned with the winning of food, shelter, security, and protection from danger. Likewise they wondered about the strange phenomena of birth, the relation of the sexes, sickness, and death. Being agriculture people they must have been especially interested in the fertility of the soil, in the very necessary rain, and in the beneficent touch of the sun. Their religious ceremonies, then, must have been directed toward securing abundant food supply through the control of these phases of their natural world. Usually the sacred rites of a primitive farming people deal with preparing the soil, stimulating the seed, enriching the soil, rituals for bringing rain, protective measures to ward off blight, and petitions at the opening of harvest for a plenteous crop.

A large part of all this early religion was born of emotion; a blind, groping effort of people bound to the soil, toiling for a place in an environment that was

not always friendly. There were times when the normally assisting elements of nature apparently became cruel monsters, as when the sun struck the land with scorching heat for months on end and no cooling rains appeared. Then the crops withered and died, the children languished, and the hearts of the people were fearful.

On the other hand, there was an intellectual phase to all early religion. One connot fail to see a laudable degree of mental hungering, a cool-headed groping and probing in this effort to make a home in the world. Apparently the intellectual and emotional phases of religion were, as they continue to be, curiously at work, hand in hand. In addition to the ceremonial and magical, there was a practical and sensible method of gaining the desired ends. Though the husbandman planted his fields to the accompaniment of ritual and prayer, he never failed to plant them. When the hunter participated in the chase he might cast a spell upon the animal he wished to capture, but he never neglected his weapons,nor was he less cautious on the trail.

Man found helpers in his struggles; they were the gods. In the early parts of the human story such as we now deal with, the gods were real creatures, dwelling in a real world. And they were as useful as they were real; "gods are not so much believed in as used". (Frazer, Worship of Nature) These gods were the actual powers of the

environment. There were good spirits whose kindly cooperation helped the people realize their desires, and there were the evil ones who often lay waiting to thwart and undo the work of man. It was the duty of each responsible person to assist in the control of these forces by certain practices. The good spirits must be revered; homage must be paid to them in ritual and prayer so that their favors might continue to be enjoyed. The evil ones must be avoided and combatted, likewise by ritual in some form or other.

All of the foregoing on religion is generally applicable to early religions whose advocates gained a livelihood from the soil. Enough evidence is extant in the Middle Gila area to assure us that these generalizations also hold true here. And by correlating the finds at Martinez Hill Ruins with the rest of the Gila area one may deduce further that the religious situation was nearly the same.

Ordinarily in the archaeological work of the Southwest, the means by which the religious aspect is studied come from such sources as ceremonial chambers and furnishings, burials, altars, symbolic representations in art, and traditions. In the excavations at Martinez Hill the only evidence comes from the presence of what appears to be ceremonial chambers, from certain repeated symbols forming parts of pottery designs, and from burials.

The ceremonial chambers at this Ruins simply indicate that there was a religion of some kind, and that at intervals there were gatherings of some of the tribesmen to participate in sacred ritual.

The evidence from the pottery is of more detailed value. A striking persistence of certain designs indicates a definite significance that has been partially interpreted. Many of these designs are common to the greater part of the Southwest, and their occurrence at Martinez Hill Ruins warrants the belief that there was in general a commonality of religious belief among the several cultures. Much of the significance of these decorative symbols has been learned from modern tribes of this neighborhood. Where the same designs are employed by the Indians of today and where one can learn their modern meanings, he gains a fair knowledge of their ancient import. Naturally enough, many of the commonest designs used by the potters of Martinez Hill site were in some manner related to rain. Thus the zigzag line and the terraced figures are symbolic of lightning. The heavy or violent rain storm that swept down the valley, the "He rain", was conventionally represented by parallel lines; while the gentle shower, the "She rain", appears on the pottery as hatched lines. Rain drops were represented as simple dots, and rain clouds as triangles.

From the burials that have been uncovered come an important addition to the religious interpretation. At this Ruins there are two types of burial customs represented: cremation and inhumation. Of these examples there is no departure from the practices of the rest of the Middle Gila area. In the cremations the body, likely, was burned in the open, as at Casa Grande. The entire remains do not seem to have been necessary, as the several burial urns contain such variable quantities of burned bones. The position of burials of this Ruins occurred: one in a trash heap at Pueblo II; two under the floor of Pueblo III; one under the wall of the same pueblo; one in the open court west of Pueblo III; and three along the wall running eastward from Pueblo III. Only two of these cremation burials were uncovered by inverted bowls, and with none of them were there any "killed" pieces of pottery or other mortuary offerings.

The inhumations all occurred within rooms. Two came from Room 1 of Pueblo III, several feet above the floor level so they must have belonged to the culture that followed the one which built the main ruins. The first of these burials that was uncovered came from a depth of nearly 6 feet below the original top of the mound. The skeleton was so badly disarticulated that it gave no clue of its one-time position. In a general way the bones

lay in an east-west direction with the head toward the east. Associated with the remains were three arrow straighteners, three arrow points, several fragments of flint and quartz showing a degree of chipping, a bone awl, two pieces of horn worn on one end, and the charred fragments of some fabric. The skull, which was well preserved, was dolicocephalic and belonged to an adult advanced in years. The second burial coming from the same room was in a more shattered condition and was unearthed at the same level farther to the east. These bones were uncovered and moved by laborers, so it was impossible to judge of their position. No artifacts were associated with this burial.

An inhumation at Pueblo IV occurred near the south wall of Room 5 about 4½ feet from the top of the wall. Here again the remains were removed by the Indian laborers before they could be observed undisturbed. The bones were surrounded by the great quantity of rocks that were so abundant in the rooms of this pueblo. An adult female and an infant comprised this burial. In connection were several artifacts consisting of a bone awl, a quantity of shell beads, white and green paint, and several scrapers of flint. These last examples of stone work were interesting specimens of purely paleolithic workmanship.

The interpretation of such burials is obvious and usual. It illustrates the universal hope for existence after death. Man through the ages has continued to search for the good and the better. Even in time of despair and defeat he has continued to hope for the fulfillment of his dreams. Certain ideals of justice, love, loyalty, pleasure, and beauty came to gain more value than the physical longings of the brute. And as these ideals were evolved came disillusionment. Human effort was continually being beaten down by overwhelming forces of evil, and in the struggle the best strength was often too weak. Man, however, in the face of what must often have appeared to be a life of futility and worthlessness, did not abandon hope. He kept his dream but postponed its fulfillment. Whether this belief in a hereafter was a result of heroic loyalty to an ideal or of "lack of nerve" is in no manner sure; but religions, it is certain, for thousands of years have been cast in this mold and into this mold can be fit the fundamental beliefs of the rude culture we have described.