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Papers of the Archaeological Institute of America.

AMERICAN SERIES.

IV.

FINAL REPORT

OF

INVESTIGATIONS AMONG THE INDIANS OF THE  
SOUTHWESTERN UNITED STATES, CARRIED ON  
MAINLY IN THE YEARS FROM 1880 TO 1885.

PART II.

BY

A. F. BANDELIER.



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## VII.

## WESTERN NEW MEXICO.

IN a report devoted to the presentation of results obtained by personal investigation, it may seem out of place to treat of regions which I have not myself studied. Yet I have been compelled to do this in some of the preceding chapters, and I am obliged to do so here, in order to facilitate the understanding of many features, and chiefly in order to complete the general picture. I have personally investigated but a small portion of Western New Mexico, my work having been limited to a strip of country lying on both sides of the Atlantic and Pacific Railroad, and to parts of the southwestern portion of the Territory. But the antiquities which these sections contain cannot well be treated of separately, and I hope, by means of material gathered by other trustworthy investigators, to do better justice to the subject. In all that portion of New Mexico lying west of the Rio Grande valley and of the Jemez and Chama streams, I have visited but a few strips and patches; so that the entire northwest, the country between the ranges of Acoma and Zuni, and also of the Mogallones, the interior of that chain, and the extreme southwestern corner of New Mexico, must be described by means of the work done by others. It is very difficult to subdivide the whole area geographically with profit to archæological results. We miss the guidance of ethnological and historical facts, which so materially assists us in Eastern New Mexico. With the exception of two

districts, Acoma and Zuñi, there is no historical information of any practical importance about the numerous ruins of the vast remainder. Navajo traditions speak of "pueblos," and of people who inhabited them, but as to who they were, and at what time the pueblos were inhabited, they tell nothing. Zuñi folk-lore may yet throw light upon the past of many pre-historic ruins. Of the few traditions of Acoma which I was able to obtain, I shall speak in their proper place.

It may be stated here as an historical fact, that the sedentary population, with the exception of the tribes of Zuñi and Acoma, had vanished from Western New Mexico previous to the arrival of the Spaniards. Laguna is a modern pueblo, founded in 1699.<sup>1</sup> The region in the northwest through which the pre-historic ruins are disseminated was found occupied in the sixteenth century by a semi-sedentary stock, the Navajos.<sup>2</sup> Farther south, outlying bands of the same stock, but so far estranged from it as to discard tribal connection, speak a different dialect, and bear a different name,—the Apaches,—roamed, hunted, and prowled through the otherwise uninhabited country.<sup>3</sup>

The Navajo country cannot be separated, so far as its

<sup>1</sup> It was founded by Governor Don Pedro Rodriguez Cubero, on July 4, 1699. Escalante, *Relacion*, p. 177: "Dia 30 de Junio del año siguiente pasó Cubero con el padre vice-custodio á tomar posesion de estos tres pueblos; dia 4 de Julio dieron la obediencia los Queres del nuevo pueblo, que Cubero nombró Señor San Jose de la Laguna."

<sup>2</sup> Espejo (in *Relacion del Viage*, p. 117) mentions the Navajos under the name of Querechos in 1582, and represents them as being neighbors to the Acomas, and as living in the Sierra de San Matéo, north of that pueblo. The earliest mention of the name of Navajó which I have been able to find dates from 1626. Zárate-Salmeron, *Relaciones de todas las cosas*, par. 113: "La nacion de los Indios Apaches de Nabaju." In regard to their condition in the seventeenth and sixteenth centuries, compare Part I., page 175 *et seq.*

<sup>3</sup> The "Apaches" of the "Perrillo," of the "Xila." See Benavides, *Memorial*, pp. 13 and 53.

archæology is concerned, from Southwestern Colorado, Southeastern Utah, and the northeastern corner of Arizona. The San Juan region is a well watered country, and a number of streams empty into the main river from the north. The portions of Colorado, as well as of New Mexico, contiguous to each other, are said to be filled with ruins of compact many-storied pueblos, and of cliff-houses; and they also contain caves sheltering whole villages of one or more storied buildings.<sup>1</sup> Circular watch-towers are also quite common.<sup>2</sup> Much is said about superior workmanship exhibited in the construction of the walls, which are usually thicker than those of more southerly pueblo ruins. But I must recall here the words of Lewis H. Morgan in regard to the stone-work which he investigated on the Rio de las Animas in 1878: —

“The neatness and general correctness of the masonry is now best seen in the doorways. In the standing walls of the second story, and of the first, where occasionally uncovered, there are to be seen two doorways in each room. . . . The stones used in these doorways are rather smaller than those in other parts of the wall, but prepared in the same manner. . . . I brought away two of these stones, taken from the

<sup>1</sup> Lewis H. Morgan, *Houses and House Life of the American Aborigines* (Contributions to North American Ethnology, vol. iv. p. 192). W. H. Holmes, *Report on the Ancient Ruins of Southwestern Colorado* (Hayden's U. S. Survey, 1876, p. 383): “Yet there is bountiful evidence that at one time it supported a numerous population: there is scarcely a square mile in the 6,000 examined that does not furnish evidence of previous occupation by a race totally distinct from the nomadic savages who hold it now, and in many ways superior to them.” Lieut. Rogers Birnie, *Report on Ruins visited in New Mexico* (vol. vii. of Wheeler's Survey, p. 346): “The evidences that there were former inhabitants in localities now entirely depopulated were numerous, being observed along the Cañon Ceresal, Cañon Largo, Cañon de Chaco, and the San Juan and Las Animas rivers.”

<sup>2</sup> See the authorities quoted above, and my letter in the *Fifth Annual Report to the Institute*, p. 59.

standing walls of the main building, as samples of the character of the work with respect to size and dressing. . . The upper and lower faces of the stone are substantially, but not exactly, parallel. It also shows one angle, which is substantially, but not exactly, a right angle, and it was so adjusted that the long edge was on the doorway, and short one in the wall of a chamber or apartment, with the right angle at the corner between them. This stone was evidently prepared by fracture, probably with a stone maul, and the regularity of the breakage was doubtless partly due to skill and partly to accident. It shows no marks of the chisel or the drove, or of having been rubbed, and where the square is applied to the sides or angles the rudeness of the stone is perfectly apparent."

Comparing these specimens of the stonework on the Rio de las Animas with a sample of cut sandstone, Mr. Morgan adds: —

"The comparison shows that no instruments of exactness were used in the stone-work of the pueblo, and that exactness was not attempted. But the accuracy of a practised eye and hand, such as their methods afforded, was reached, and this was all they attempted. With stones as rude as that . . . a fair and even respectable stone wall may be laid."<sup>1</sup>

These remarks of the great American ethnologist might be applied with equal justice to many ruins farther south, such as Quivira, Cebollita west of Acoma, and others. Perfection or imperfection in a certain kind of house building is mostly a local feature, brought about by environment, abundance or lack of time, protracted peace or constant insecurity, and by the availability or absence of materials favorable to neatness and accuracy in execution.

<sup>1</sup> *Houses and House Life of the American Aborigines*, p. 179.

From my limited knowledge of the ruins in the extreme north of the pueblo region, I should presume that the compact type, in which one single large communal building sheltered the entire population of a village, prevails more exclusively in that section than anywhere else where pueblo architecture is represented.

Remains of small houses have been frequently noticed in the northwestern parts of New Mexico, and farther north, and Mr. Holmes has given the ground plan of a ruin on the Rio de la Plata, near the Colorado boundary line, which resembles in several ways the villages on the middle course of the Gila, in Arizona, at Casa Grande and its vicinity.<sup>1</sup>

The frequency of round or circular structures has been noticed by investigators, and a kind of double round tower construction has attracted particular attention. The interior is formed by a circular room, and around this is built a ring divided transversely into a number of cells.<sup>2</sup> The circular estufa also occurs, but seems to be distinct from those constructions which, as Mr. F. H. Cushing has ingeniously suggested, may have been first attempts at rearing buildings of stone on the part of village Indians.<sup>3</sup> While the ordinary round towers occur almost everywhere over the pueblo area, this more complex structure seems to be a feature peculiar to the extreme northwest of New Mexico and the adjoining sections of Colorado and Utah. One feels tempted, when perusing the suggestions offered by Mr. F. H. Cushing on the origin of Pueblo architecture, to accept also the conclusion of Morgan, "that the remarkable area within the

<sup>1</sup> See Plate I. Figure 1, taken from Holmes's *Report on the Ancient Ruins of Southwestern Colorado* (Hayden's Survey, 1876). For the compact pueblos, see Figures 2 and 3.

<sup>2</sup> Holmes, *ut supra*, p. 388 *et seq.*, and plates. Morgan, *Houses and House Life*, p. 191.

<sup>3</sup> *A Study of Pueblo Pottery as illustrative of Zuñi Culture Growth* (Report of Bureau of Ethnology, 1882-83), p. 474.

drainage of the San Juan River and its tributaries has held a prominent place in the first and most ancient development of village Indian life in America."<sup>1</sup> This remark should be limited to the use of stone in the construction of houses, as the round dwellings of the Mandans, made of wood and bark, and the rectangular buildings of wood and hide used by tribes along the Upper Missouri, were as permanently occupied as many of the pueblos of stone and adobe.<sup>2</sup>

The artificial objects found are those of a people limited to stone, bone, and wood for the material of its implements and tools. The pottery is described as of better make, and more tastefully decorated, than that of more southerly and particularly of historic pueblos. It is what I believe to be justly called the most ancient types: white decorated with black lines, red with black geometrical designs, corrugated, indented, plain red, and plain black. The coarsely glazed kind, so common farther south, is unknown there. In short, we find in these northern sections the class of pottery which, in Central and Eastern New Mexico, is characteristic of the small houses, and of a very few ancient pueblos; while in the northwest it appears associated with all kinds of ruins, — compact phalansteries, as well as detached family dwellings, round structures, cliff-houses, and villages built in caves or natural rock-shelters. This adds to the probability of the assumption that Northwestern New Mexico, Northeastern Arizona, Southwestern Colorado, and Southeastern Utah, were the regions where the Indian first began to practise and develop the art of constructing stone houses.

I have spoken of the northeastern corner of Arizona ; in this I had in view chiefly the cliff-houses and cave dwellings which line the walls of the Tzé-yi, commonly called Cañon de

<sup>1</sup> *Houses and House Life*, p. 192.

<sup>2</sup> There is not a single pueblo which, as far as its houses are concerned, is three hundred years old, and few of them have been in existence two centuries.

Chelly. In that long and narrow cleft the house dweller was compelled to build his abode above the bottom, and therefore on ledges of rocks and in natural cavities. The pottery brought from the ruins in that cañon has been described to me as quite handsomely decorated; but the list of collections published by the Bureau of Ethnology mentions only the black and white, the corrugated, the indented ware, and some odd plastic decorations. Yet I believe that other shades of colors also appear, and that some of the specimens show much painstaking care in their ornamentation.

In regard to such local perfection in pottery I fully agree with Mr. F. H. Cushing, when he says: "There are to be found about the sites of some ancient pueblos potsherds incredibly abundant and indicating great advancement in decorative art, while near others, architecturally similar, even where evidences of ethnic connection is not wanting, only coarse, crudely moulded and painted fragments are discoverable, and these in limited quantity." After quoting some striking examples, Mr. Cushing continues: "In quality of art quite as much as in that of material this local influence was great. In the neighborhood of ruined pueblos, which occur near mineral deposits furnishing a great variety of pigment material, the decoration of the ceramic remains is so surprisingly and universally elaborate, beautiful, and varied as to lead the observer to regard the people who dwelt there as different from the people who had inhabited towns about the sites of which the sherds show, not only meagre skill and less profuse decorative variety, but almost typical dissimilarity. Yet tradition and analogy, even history in rare instances, may declare that the inhabitants of both sections were of common derivation, if not closely related and contemporaneous."<sup>1</sup>

<sup>1</sup> *Pueblo Pottery*, p. 494.

Instances of this kind may be found among the present Pueblos also. Taos and Picuries make no pottery, or only of the plainest kind. The pottery of Cia is quite elaborately decorated and handsome, much superior to that of Cochiti and San Felipe, although all three pueblos belong to the same linguistic stock. Among pre-historic ruins I would refer to the great difference in the pottery at Ojo Caliente and that of the other Tehua and Tano pueblos south of San Juan.

I have stated that potsherds with coarsely glazed ornamentation do not occur, at least to my knowledge, in the northwest. That variety appears farther south and southeast, and is more particularly associated with the ruins of historic pueblos. As I have before remarked, the discovery of this glazing process may have been a local incident; but its diffusion among different stocks is a feature of greater importance. That all the ruins in the northwest of the Pueblo region should be accompanied by the same general type of pottery, while farther south that type should become confined almost exclusively to the detached houses, while the compact pueblos adopted the coarsely glazed kind, is quite a significant indication.

I have also been informed by the late Mr. James Stevenson, that strings, thread, and textile fabrics made of yucca fibre have been discovered in the cliff-houses of the Tzé-yi. This is not an isolated find, as will be seen in the course of this Report. Skirts and kilts made of yucca leaves were worn by the Pueblos as late as the beginning of the seventeenth century, perhaps later.<sup>1</sup> The "Pita," as the thread made from Yucca fibre is commonly called, was used by all Pueblo Indians until very lately. In caves in which pueblo houses had been constructed, and in cliff-houses, such easily

<sup>1</sup> See Part I., page 158, note 1.

perishable remains were not so much exposed to decay as in villages constructed in the open air, and they have consequently remained intact for a greater length of time. They are not by any means evidences of a peculiar culture, or even of an industry peculiar to the inhabitants of the places where they were found.

I do not in the least doubt the accuracy of the statement as to the large number of settlements spoken of. But it does not follow that they were all flourishing at the same time. I cannot sufficiently insist upon the many changes of abode customary among the most sedentary Indians in their primitive state. Nor is it certain that the various types of architecture appeared in regular chronological sequence. In some parts of the same region, cliff-houses may have been inhabited at the same time with compact pueblos or cave towns in other districts. The country lacks the elements of support for a large population. That the sedentary Indian changes his location and his plan of living easily, under the pressure of physical causes and of danger from enemies, outweighs any explanations based upon hypothetical climatological changes, or upon geological disturbances supposed to have taken place since the first appearance of man in the country.

Nevertheless, even without any large ancient population, the northwestern corner of the Southwest presents itself as a starting point for the development of a peculiar kind of sedentary life, which expanded into more southerly regions. It was what Mr. Morgan aptly terms a "centre of subsistence"<sup>1</sup> for tribes devoting themselves to agriculture. On poorly irrigated lands a culture might spring up, which, from the nature of the countries over which it after-

<sup>1</sup> *Indian Migrations*, North American Review, October, 1869, and January, 1870.

wards spread, deserves the designation of "Aridian," applied to it by Mr. Cushing.<sup>1</sup> The spread of that culture was in the direction of the south and southeast, not towards the north and west. Physical causes may have been instrumental in compelling the sedentary tribes to move in one direction rather than in the other; but the pressure exercised by nomads upon the house dwellers has had equal, if not greater influence.

One of the most important tasks yet to be performed in the study of the archæology of the Southwest is to determine the northern limit within which ruins of stone or adobe buildings are found. I believe it to be about the 38th degree of latitude, and that it extends along that parallel as far west as the 110th meridian, and eastward to longitude 108°, or perhaps somewhat farther.

According to Mr. Holmes, the most northerly area of settlement of natives who dwelt in stone buildings lies "wholly on the Pacific slope."<sup>2</sup> So does the nearest considerable group of ruins south of it, the famous cluster of ancient pueblos in the Cañon de Chaca, made known by the exploration of General Simpson and the subsequent investigations of Mr. Jackson.<sup>3</sup> Nowhere south of the 36th parallel and east of the 107th meridian in a comparatively small compass is such a number of fine specimens of the compact one-house pueblo met with as along the Chaca Cañon. I refer to their elaborate reports for descriptions of these interesting ruins, and will only add what Morgan has stated in regard

<sup>1</sup> *Preliminary Notes on the Origin, Working Hypothesis, and Primary Researches of the Hemenway Southwestern Archaeological Expedition*, Congrès International des Américanistes, Berlin, 1888, pp. 186 and 190.

<sup>2</sup> *Report on the Ancient Ruins of Southwestern Colorado*, p. 383.

<sup>3</sup> Simpson, *Report of an Expedition into the Navajo Country in 1849* (in Senate Ex. Doc. 64, 31st Congress, 1st Session). Jackson, in *Hayden's Report on the Geological Survey of the Territories*, 1876, p. 411 *et seq.*

to the question of water, which seems to present some difficulties there, as it has in regard to Quivira and the villages on the Médano in southeastern New Mexico: —

“The plain between the walls of the cañon was between half a mile and a mile in width near the several pueblos, but the amount of water now passing through it is small. In July, according to Lieutenant Simpson, the running stream was eight feet wide and a foot and a half deep at one of the pueblos; while Mr. Jackson found no running water and the valley entirely dry in the month of May, with the exception of pools of water in places and a reservoir of pure water in the rocks at the top of the bluff. The condition of the region is shown by these two statements. During the rainy season in the summer, which is also the season of the growing crops, there is an abundance of water; while in the dry season it is confined to springs, pools, and reservoirs.”<sup>1</sup>

It also should be borne in mind that irrigation is not indispensable to the plants cultivated by the Indian in primitive times, and that therefore the inhabitants of the Chaca had only to provide sufficient water for household purposes.

The pottery at the Chaca ruins is decidedly of the ancient type, and no specimen with glazed ornamentation has ever been found in that vicinity.

The Navajo Indians preserve traditions according to which there seem to have been, in pre-historic times, inhabited pueblos in the country which they now occupy.<sup>2</sup> They also place the origin of their tribe, as well as of the Pueblo Indians, in the San Juan country.<sup>3</sup> But no clue is given as to

<sup>1</sup> *Houses and House Life*, p. 171.

<sup>2</sup> Washington Matthews, *A Part of the Navajo's Mythology* (American Antiquarian, vol. v. p. 207, July, 1883). *Some Deities and Demons of the Navajos* (American Naturalist, vol. xx. p. 844, October, 1886). *The Gentile System of the Navajo Indians* (Journal of American Folk-lore, vol. iii. p. 89).

<sup>3</sup> See the monographs quoted above.

which tribes lived in the permanent villages spoken of in these traditions. When Mr. Simpson inquired of Nazlé, the well known Jemez Indian, about the ruins of the Chaca, he replied, "that they were built by Montezuma and his people when on their way from the north to the region of the Rio Grande and to Old Mexico."<sup>1</sup> When, a few weeks ago, I interrogated an Indian from Cochiti concerning the same ruins, he confirmed what I had been told years ago; namely, that Push-a-ya had built them, when on his way to the south. After inhabiting the Chaca villages for some time, Pushaya went to Zuñi, and thence into Sonora and Mexico.

Push-a-ya is the same mythical personage whom the Tehuwas call Pose-ueve and Pose-yemo; the Zuñis, Pusha-iankia; and the Jemez probably, Pest-ia So-de. It is needless to add that he is the figure around whom the Montezuma tales have gathered in later years. How far the statement that Pushaya built the pueblos in the Chaca is originally Indian, I am unable to decide.

There are pueblo ruins southwest of the Chaca group, one of which Mr. Lummis has examined, called by the people of San Matéo "Pueblo Alto." He describes it as a rectangular house, measuring "some two hundred feet long north and south, and one hundred feet wide from east to west. It evidently faced west." The walls on the west side are said to be still "thirty, forty, and forty-five feet" high. He adds: "Just in the centre of this side is the distinctive wonder of

<sup>1</sup> Simpson (*Report of an Expedition into the Navajo Country*, pp. 77 and 83). The same was told by a Navajo chief named Sandoval, "that the Navajos and all the other Indians were once but one people, and lived in the vicinity of the Silver Mountain; that this mountain is about one hundred miles north of the Chaco ruins; that the Pueblo Indians separated from them (the Navajos), and built towns on the Rio Grande and its tributaries." The same Navajo asserted that the pueblos on the Chaca "were built by Montezuma."

the whole pueblo, a great tower, square outside, round within, with portions of its fifth story still standing. The walls still hold the crumbling ends of the beams of the successive stories, and the loopholes in the two lower stories are plainly visible." There are at present no traces of water in the vicinity of this ruin; and the pottery appears to be of the same kind as that in the Chaca ruins.<sup>1</sup>

It is a well known fact that the Indian is expert in closing springs. They have been discovered in places where for decades they have been sought in vain; and invariably they have been found to be filled and every trace of them on the surface obliterated in the most skilful manner. Possibly this may be the case at the Pueblo Alto.

South of the ruin just mentioned, and in a direct line about fifteen miles north-northeast of Grant's Station on the Atlantic and Pacific Railroad, lies the settlement of San Matéo. The first attempts at colonization were made there in the latter half of the past century.<sup>2</sup>

San Matéo lies at an altitude of 7,323 feet, and southeast of it, not ten miles distant, rises the extinct volcano called Sierra de San Matéo, or Mount Taylor, and by the Queres of Acoma, Spi-nat. The summit of this mountain cluster is 11,391 feet high. The valley of San Matéo is a narrow basin along the wooded northern slopes of the sierra. Bare hills extend to the north of it, and to the east lies a bleak

<sup>1</sup> Mr. Lummis has published a description and sketches of this ruin in the San Francisco Sunday Chronicle of January 27, 1889, under the title, *Mysterious Ruins, a Visit to the Pueblo Alto*, from which I quote.

<sup>2</sup> Pedro Fermin de Mendinueta, *Merced del Ojo de San Mathlo*, 1768, MS. There were a number of Navajos settled at the time at Cebolleta, and near the San Matéo springs. Unsuccessful attempts to establish a mission among these had been made previously. A church was built, but the mission did not prosper and was given up. Joaquín Codallos y Rabal, *Consulta sobre Misiones de Navaja*, 1744, MS. *Despacho del Exno Sr. Conde de Fuenclara, Virey, etc. En Orden d el Estabito y Fundacion de Cuatro Misiones en la Proovia de Navajo*, 1746, MS. *Documentos Tocantes d las Misiones de Encinal y de Cebolleta*, MS.

pass in the direction of the eastern Rio Puerco. Not far from the town, on the road leading to that stream, rises a sharp columnar rock of great height, so steep as to be inaccessible and completely isolated, the Alesna, or "awl," a designation very characteristic of its form. Hidden springs, called by the people "Sumideros," are scattered on both sides of the road both west and east of San Matéo, and he who is not thoroughly acquainted with the country should be very careful not to leave the beaten path. Nothing on the surface (unless it be the carcass of some animal which has perished in the treacherous mud-sinks) indicates impending danger, and the unsuspecting wanderer suddenly finds himself engulfed in liquid mire. The soil at San Matéo is fertile; wood is near at hand, and a diminutive stream, the Arroyo de San Matéo, furnishes the water supply

On a bleak slope near the town the ruins of a stone pueblo have been discovered by the Hon. Amado Chavez. The excavations which he caused to be made have revealed a stone building of the pueblo type. The work on the wall, like that on the Chaca and farther north, is well executed. One room was twenty feet by twelve feet, and the tall and perfect walls show traces of a second story. I have uncovered doors in this pueblo not more than three feet high and eighteen inches wide. I copy these statements of Mr. Lummis rather than give my own hasty impressions, gathered during a visit at San Matéo made under most unfavorable circumstances, since it snowed and rained incessantly for two days, and I could only cast a glance at the ruins. Still, that visit satisfied me of the correctness of these statements; it was evidently a compact pueblo of moderate size.

I was greatly surprised, however, at seeing the specimens of pottery which the excavations had yielded. I can safely assert that, in beauty and originality of decoration,

they surpass anything which I have seen north, west, and east of it in the Rio Grande valley, and around the Salines. There were among them bowls of indented pottery, one half of their exterior being smooth and handsomely painted and decorated with combinations of the well known symbols of Pueblo Indian worship. On another specimen I noticed handles in the shape of animal heads. Such specimens are quite rare. The shape of the vessels did not differ from those which other ruins and even the pueblos of to-day afford. It was only the decoration, and especially the painting, that attracted my attention. Among the other remains, there was nothing to indicate a culture different from that of the sedentary Indian of the Southwest in general. The beauty of the pottery is therefore only another instance of the influence of environment upon one particular branch of primitive industry. Mr. Lummis speaks of other objects found at this pueblo ruin, — "shell-beads, stone axes, hammers, metates, and arrow-heads." The skeleton of a woman, whose long black hair was still perfect, and a lot of bones, were also taken out of the same room.

Between these ruins and his house Mr. Chavez made an interesting discovery, which Mr. Lummis reports as follows:—

"In crossing a barren plain west of his home at San Matéo, and near some undistinguishable ruins, he noticed that a bit of ground 'gave' under his horse's feet. Dismounting to investigate, he found that a small area seemed elastic and moved up and down when he jumped. Being of an inquiring turn of mind, he took men out to dig there. They removed about a foot of earth over a place some ten feet square, and came to a deep layer of long strips of cedar bark. Below this was a floor of pine logs, then another thick layer of bark, and so on down for several feet. Below the last layer they found a little spring of clear running water, which has re-

sumed running since they dug it out after centuries of enforced idleness. So thorough had the ancient owners been in their work that they had even obliterated the long, shallow gallery through which the waters of the spring used to escape."<sup>1</sup>

The Indian, when he evacuates a place at leisure, "kills" his household pottery by perforating and breaking it. He also "kills" the spring of water that furnished his daily supply by closing its issue. If the spring which Mr. Chavez discovered belonged to the pueblo which he has excavated, it would be an indication that the inhabitants had ample time for its evacuation. Still, Mr. Lummis noticed that the beans had been destroyed by fire.

I know of no tradition connected with the San Matéo ruins; but there is no doubt that they are prehistoric, since only one pueblo, Acoma, existed in that vicinity in the sixteenth century. Many small houses lie both west and east of San Matéo, none of which, however, was I able to investigate. The small-house type of architecture, in isolated buildings as well as in groups forming villages, is quite numerous represented, not only in the San Matéo district, but all along the line of the Atlantic and Pacific Railroad, from Cerros Mohinos on the eastern Rio Puerco, to the Little Colorado River in Arizona. The line of that railroad I now propose to follow as far as the western boundary of New Mexico, for two reasons. First, I have examined personally most of the belt through which it runs. Secondly, in that belt are found the only ruins in Western New Mexico about which some definite historical knowledge can be had, and I wish to dispose of these before turning to the exclusively prehistoric remains in the area covered by this chapter.

<sup>1</sup> I copy this from the newspaper article before quoted, page 305, note 1.

The plateau or mesa lying between the Rio Grande valley and the Rio Puerco of the east is, as far as I know, destitute of aboriginal remains. It is waterless, bleak, and bare. The banks of the Puerco are sandy, and traces of ruins are said to be rare along its upper course. The stream sinks usually thirty miles above its junction with the Rio Grandē, and above that point the volume of water is not always adequate for the needs of a small population.

At Cerros Mohinos the Rio Puerco is still far from being a permanent stream. On its eastern side the soil is exceedingly fertile, and primitive crops grow there without irrigation. It is saturated with oxide or hydroxide of iron. On the west bank volcanic hills rise abruptly and in picturesque clusters. Their height above the river I estimated at over three hundred, probably four hundred feet. They culminate in several protuberances of dark gray trap, and over the ridges leading to these peaks and in the hollows between them are scattered the remains of a small-house village. I counted eleven buildings at distances from one another varying between 4 and 130 meters (11 and 426 feet). The peculiarity of these buildings is that they are quite narrow in proportion to their length. They are built of irregular pieces or blocks of trap, and what remained of the walls seemed to be piled up without the usual binding of adobe mud, as if the structures had been very hastily erected. Still it is possible that, as the houses are much exposed to wind and weather, the crude mortar may have disintegrated, and that I may have overlooked traces of it still remaining. I failed to notice any obsidian about the premises, but flint chips were not uncommon. The pottery was strictly of the older type,—red and black, red outside with black decorations inside on white ground; but not a trace of indented, corrugated, or of glazed potsherds. The situation

of this settlement was very favorable for defence; from all sides the approach is steep, and an enemy could only achieve a surprise by creeping into one of the depressions between the summits. Against an Indian foe the place was almost impregnable.

I could not ascertain anything concerning the water supply of this cluster of abodes, and the presumption is against there being springs in trap rock. But the Puerco hugs the eastern side of Cerros closely, and it is not impossible that tanks may have supplied the inhabitants of the cliffs with water in the dry time, while during the rainy season it was furnished by the river. That stream grows remarkably during the months of July, August, and September. Its tendency is to wear away the west side until it strikes some very hard ledge, by which it is deflected again to the east. The water question, therefore, presents no insurmountable obstacle. The houses could not have been more than one story in height, and consequently not much building timber was needed, and there are enough scrubby conifers within reasonable distance to supply the small number of inhabitants with firewood.

On the east side of the Puerco, about a mile and a half from the present Mexican settlement, and on the open plain, are the ruins of a regular pueblo. They are reduced to mere mounds of red earth, and only here and there were the lines of walls of adobe traceable along the surface, showing the ordinary thickness. One mound measured about 75 by 16 meters (245 by 52 feet); another contiguous one, about 22 meters (98 feet) square. It was therefore a regular large-house community. Much obsidian appeared on the surface, and in unusually large fragments; also flint, broken metates, and the prismatic grinders used on them. The pottery was of the coarsely glazed kind, and the colors uncommonly

brilliant; shades of chocolate, crimson, brown, and cream-yellow were frequent. Although the decorative patterns were not at all different from those of Pueblo pottery in general, the ware was thinner and appeared to be of a better make than that usually found. The abundance of iron ochre, which, when mixed with the other ingredients of Indian paint, gives the tints of red, brown, black, and intermediate shades, may account for its exceptionally fine appearance. Combined with the still unknown glazing material, it may also have contributed to produce greenish and other uncommon hues shown in the glazed decorative lines.

There is no visible spring in the vicinity, so that the Puerco seems to have been their only resource for water; but, as I have already stated, that cannot be relied upon except at certain seasons. They may have had tanks, but there are no traces of any, neither are there any estufas visible. Fierce winds blow over the bleak plateau from time to time, which rapidly fill up hollows if they are not kept clear from rubbish. There is also a possibility of there being springs, artificially closed. For fertility of soil and for scope of view the situation of the "Pueblito" at Los Cerros is admirable, and wood was not too far distant, so that the inducements for occupation, leaving aside those furnished by compulsion and religious influence, were therefore considerable.

Fifteen miles north of Cerros, on the Mesa Colorada, a large ruin is said to exist, with pottery similar to that on the summits of the latter. There may be still others between the Puerco and the pueblo of Laguna, but I know nothing of them. Their number cannot be very great, as in that section the water supply is limited to a few springs. Around Laguna there are numerous ruins within one mile west and three miles south of the pueblo. I could not ascertain in what connection these remains stood to the

modern pueblo, and so turned my attention mostly to the surroundings of the remarkable village of Acoma, the foundation of which antedates the first appearance of Europeans in New Mexico, and where consequently there was some hope of finding a clue to the past of ruins scattered through its neighborhood.

An exceptional situation, a site isolated and impregnable to Indian warfare, is the formidable cliff on which Acoma stands. The fragment of the Queres stock which peopled the rock chanced to drift towards it gradually, and at last came to rest on its summit, where they are known to have resided for the past four centuries, if not longer.<sup>1</sup> Acoma is, therefore, in point of site, not only the most remarkable, but also the most ancient of the New Mexican pueblos of to-day.

The fragments of Acoma tradition which I was able to gather speak of the north as the direction whence that branch of the Queres originally came, and also of the pueblo of Cia on the Jemez River as the place where they separated from the other Queres. One Indian stated to me that at "Teguay-ouqué," in the distant north, a Queres Indian by the name of "Hua-toro" told the mother of mankind (who is supposed to live at the bottom of the lagune of Shi-pap-u) that he was going to Acoma to live. He went as far as Cia, and there was joined by his younger brother, called "Ojero" or "Hua Estéva" (?), and together they proceeded to the vicinity of Acoma. I call attention to the Spanish tinge in the above

<sup>1</sup> Acoma existed in 1540; for the year previous Fray Marcos de Nizza had heard of it, under the name of Hacus, from an aged Zuñi Indian, who had fled to the Sobaypuris of the San Pedro River in Arizona years before. It is therefore nearly certain that the pueblo was standing on the top of the cliff at the close of the fifteenth century. All the other pueblos (possibly with the exception of Cia) have more or less changed their position since 1598. Isleta stands very near the place of old Isleta, but that pueblo was abandoned for thirty-seven years, whereas Acoma never was for any length of time.

names. This is still more prominent in the rest of the tradition, which states that Huatoro was the first to settle near Acoma; that after him came "Jeronza," then José Popé, both of whom came from Cia; and lastly Catité, from the direction of Santa Ana. In Jeronza we easily recognize Don Domingo Jironza Petriz de Cruzate, the Spanish Governor who issued to the Pueblos their so called land titles in 1689; Popé is the well known medicine-man and instigator of the rebellion of 1680; and Catité was the Queres half-breed from Santo Domingo who led the Queres Indians in the uprising, and for some time afterwards. In the above traditions, consequently, the events of 1680 and later are mingled with a small percentage of recollections of primitive times. Many so called traditions which the Indians volunteer to give must be received with caution. Nevertheless, so far as I am able to judge, the gist of Acoma folk-lore assigns the origin of the tribe to a separation for some cause or other from the tribe of Cia. Thence they drifted to the southwest, across the bleak and unprepossessing valley of the Rio Puerco, and, dividing into two bands, established themselves in pueblos of small size to the right and left of the Cañada de la Cruz, and on the mesa above Acomita, twelve miles north of their present village. How many and which of these pueblos were simultaneously occupied is not known, nor is it positive that thence they moved directly to the cliff. According to a folk-lore tale obtained by Mr. C. P. Lummis, the last settlement of the Acomas preceding the one on the historic rock was made on the so called Mesa Encantada, a towering isolated mesa with vertical sides several hundred feet in height, utterly inaccessible, which stands nearly in the centre of the oblong basin in the southwestern corner of which the "rock of Acoma" is situated. It is one of the most imposing cliffs in that portion of the Southwest, and it is claimed by the Acoma In-

dians that, while the top of the mesa is to-day utterly beyond reach, it was accessible many centuries ago by an easy trail, and that their forefathers had built a pueblo on it after the manner of their present village. At last dangerous fissures appeared in the rocks on which the trail ascended, and a portion of the tribe retired to the bottom for safety. While some of the inhabitants still occupied the mesa, a part of it fell suddenly, and the unfortunates on the summit, unable to descend, while those below were equally unable to come to their assistance, perished from hunger.

Whatever may be true in this folk-tale about the rock of Katzim-a, (as the Mesa Encantada is called by the Acomas,) it is certain that its appearance and the amount of detritus accumulated around its base give some color to the legend. Together with the other tales of which I have spoken, it indicates that the Acomas successively occupied several villages between San Matéo and their present location. All the ruins in that section of the country, therefore, do not belong to a period antedating the traditions of still existing Pueblo tribes.

Nine miles northeast of the pueblo of Laguna, and fourteen north of Acoma, the little town of Cubero stands in the corner of a plain that extends along the southern base of the dark mesas above which the Sierra de San Matéo rises as from a pedestal. This plain is fertile, and about fifteen miles long from west to east, and five to six broad. In its northeastern corner the Picacho stands up like a black tusk.

There are a number of ruins on the plain around Cubero, the largest one of which is represented on Plate I. Figure 30. It was a pueblo capable of sheltering a few hundred souls, with pottery of the coarsely glazed kind, some corrugated and indented ware, and a sprinkling of the ancient black and white and red and black. Excavations have revealed cells of

the usual size and form, and more pottery. Whether this ruin, which seems to belong to the class of those on the Rio Grande and about the Salines, is claimed by the people of Acoma as one of their former pueblos or not, I am unable to say.

Remains of detached houses, all built of stones, are common on the Cubero plain, and the pottery with which these ruins are covered is of the distinctively ancient type. At the Riconada de San José, on the western extremity of the plain, at the foot of a mesa the eastern front of which bends around in a semicircle, I found fifteen of these dwellings, similar in size and in arrangement to the clusters which I have already described in the vicinity of Socorro and of Abó, and with the same kinds of potsherds. In most cases the walls of the houses could easily be traced. There my attention was for the first time directed to this class of ruins, and my suspicions awakened that they might represent a peculiar type, and were not, as I at first supposed, ancient summer-houses of the inhabitants of communal buildings.

Between the basin of Acoma and the railroad extends a high mesa, mostly covered with scrubby wood, on which are several ruins of small pueblos, only one of which I examined. It may have sheltered as many as one hundred people, and there is hardly any pottery to be found in it. The walls are of stone, and it lies on the brink of a little gorge called the Cañoncito, and the water supply was derived from the bottom of that shallow rocky trench. Not far to the north of this ruin the mesa breaks off abruptly above the fertile bottom of the Agua-azul, or Blue-water Creek, and in that bottom are situated the fields of the Indians of Acoma, at Acomita and the Pueblito, twelve miles in a direct line north of the pueblo. I cannot determine whether the fields were cultivated in 1582, when Espejo visited Acoma. The distance

indicated by him, two leagues, does not agree; but since he adds, "on a middle-sized river whose water they hold up to irrigate," I infer that their fields were on some point along the course of the Blue-water.<sup>1</sup> On both sides of the Cañada de la Cruz, towards Laguna, the mesas bear ruins of pueblos, which the Acomas claim for their ancestors. As the size of these ruins is small, it gives color to their tradition, that they drifted into this region in several bands, which at first settled apart from one another, and ultimately consolidated, and established themselves first on the Mesa Encantada, and finally on the cliff of Acoma, where they have remained ever since.

Due south of Acoma I examined an isolated cliff-house, the walls of which were perfect with their coating of yellow clay. The doorway is higher than those of ancient pueblos, with lintels of wood, and the stone-work well executed. Hardly any pottery was found about this ruin, which stands on a rocky shelf above a steep declivity, and in a recess formed by the rocks, which in that vicinity are mostly perpendicular, though somewhat weatherworn. Along the base of these rocks there were caves, and nearly every one of them showed traces of partition walls. Rock paintings in various colors, and very rude carvings on large detached blocks of stone, are to be seen not far from the ruins, which lie about two miles south of Acoma. The Indians of this village of course denied any knowledge of the origin of these buildings, as well as of the pictographs and carvings, except that they were the work of people who had moved southward previous to the coming of their ancestors. This is quite probable as far as the buildings are concerned, but the paintings are remarkably fresh in color, and a boy who guided me to the spot attributed them to the Koshare, or delight-makers, of Acoma.

<sup>1</sup> *Relacion*, p. 179.

Indeed, the cavity in which they are painted contained plume-sticks of various colors and size, showing that it was a sacrificial place still in actual use.

Small houses are occasionally met with southwest of Acoma, but there seems to be no important ruin in that direction nearer than Cebollita, almost due south of the settlement of San Raphael, or Old Fort Wingate. The last place lies northwest of Acoma, so that Cebollita is due west of that pueblo.

In my mention of the plain of Cubero and of the ruins which are strewn over its surface, I got as far as the Rinconada de San José. Thence on to the northwest, as far as Grant's Station, the plateaux of the San Matéo range hug the railroad track on the north. In the direction of San Matéo there are said to be no ruins except those at the last named settlement, but near the railroad, between McCarthy's and Grant's Stations, are interesting localities. The track follows the curves of a flow of black lava, which has ploughed through the eroded gorges of the sandstone rock without penetrating to any considerable depth. It is of comparatively modern origin, and I have been informed, since my visit to that portion of New Mexico, that ruins of small houses have been discovered somewhere along the course of the stream of lava, partly covered by it. The tale of the "year of fire," current among the Indians of Laguna, seems to have some connection with such statements as these, as there is at least one extinct crater in the neighborhood of that pueblo. If the reported great display of fire is not to be explained as an auroral exhibition of unusual brilliancy, we may suspect it to have been some volcanic eruption, and the presence of relatively recent lava-flows gives still further color to it. But the region previous to the foundation of Laguna was in more or less constant intercourse with the Rio Grande valley, and

some record of such a phenomenon might be expected to exist in Spanish documents of the seventeenth century. Yet the same objections prevail as in regard to the earthquake hypothesis about Quivira. There is a possibility that volcanic eruptions may have occurred, of which the Spanish records are lost or undiscovered; and there is also a possibility that they took place previous to the establishment of permanent missions at Acoma and at Zúñi, in 1629.

A few miles northwest of McCarthy's, and a short distance south of the railroad track and of the lava stream, rises an elliptical mesa of small extent, called the *Mesita Redonda*. Its height above the surrounding level is thirty-five meters (115 feet), of which the uppermost three meters are vertical. The rock is sandstone, the top flat, and mostly overgrown with junipers and cedars. It measures seventy-six meters from west to east, and forty-five transversely. Ten meters from its western brink begins a structure consisting of nineteen rectangular cells, built on three sides, around what may have been a circular watch-tower, the diameter of which is 5.1 meters (nearly thirty feet). The walls are of stone, and their thickness shows nothing unusual. The pottery is of the ancient type, red and black prevailing.

I copy what follows from my journal of May 22, 1882: "Looking down from the *Mesita* on the south side, I was surprised to see extensive ruins below. After collecting whatever pottery caught my eye, I clambered down through a fissure and surveyed the ruins. It strikes me that in this instance the communal house is smaller, that a greater number of buildings compose the pueblo, and that the rooms are sometimes larger. . . . Among the pottery I also found several specimens which are glossy, but the gloss is less bright, or rather less resinous, than that of the old Rio Grande pottery. The color of these pieces is red. . . . The objects

which I found besides were only flakes and some rude mallets, all of lava and trap; obsidian is very scarce, not transparent, and of a pitchy gloss." This is the ruin which, together with the one on the summit of the Mesita Redonda, I have represented on Plate I. Figure 31.

All appearances favor the presumption that the remains on the top of the little butte, and the more extensive ones at its foot, formed but one settlement. Whether all the structures were in use at the same time it is of course not possible to establish; in every pueblo of to-day there are abandoned houses or portions of houses by the side of occupied ones. It may be that the circular edifice was a watch-tower, or it may have been the estufa belonging to the people who occupied the nineteen cells built around it. Below, there is at least one estufa, and also a large round depression, 12.5 meters (41 feet) in diameter, which may have been a tank.

The ground around the Mesita Redonda is fertile; there is water along the lava-flow, and the Blue-water Creek runs close by. It was an exceedingly favorable spot for an aboriginal settlement; for, in addition to its agricultural advantages and the proximity of wood, the Mesita afforded an excellent point for observation, and a place of refuge in case of dire necessity.

It would be tedious to refer in detail to every trace of ancient habitation in the vicinity of McCarthy's and Grant's. The small-house type prevails, in isolated buildings as well as in clusters. Of pueblos proper, beyond the one at the Mesita Redonda, I know nothing, but this does not exclude the possibility of their existence. Still, the country is not, like the Rio Grande valley, the Chaca, the extreme northwest, and the Salines, favorable for the support of numerous aggregations of people. Extensive mesas cut up by steep trenches cover the greatest portions of it, and springs do not abound. I

should therefore not be surprised to learn that between San Matéo and the Mesita Redonda no structures of the joint tenement kind have been discovered except those on the plain of Cubero. Also that, south of the ruin at the Mesita, the line of pueblos scattered between Acoma and the Zufi country are the nearest specimens of that class of ancient architecture.

The country west of Acoma is mostly bleak and arid. Wooded mesas, largely of sandstone and of volcanic rocks, alternate with bare levels. Springs occur in places, and near those springs aboriginal remains have been found. But there are also ruins where no water has been discovered; in such instances, some hidden source may be looked for, or the existence of reservoirs is presumable. It is sometimes difficult to distinguish between a small tank and a large estufa.

My investigations were made from McCarthy's Station, and directed first to the plain of the Ventanas, about ten miles southwest from that place, and separated from the railroad line by wooded mesas. On these mesas I noticed two small houses of the usual kind. On the eastern extremity of the grassy basin called Las Ventanas stands a rock forming a natural arch, and from this freak of nature the vale derives its Spanish appellation. The basin is about two miles long, and bordered by high mesas in the north and east, by a steep ridge in the south-southwest, and in the west by an extensive flow of black lava. I counted at least twenty-five small houses scattered along the border of the basin, on the slope of wooded foothills, whereas the centre appears devoid of ruins. The pottery, while of the old black and white kind, is thicker than usual. Of water I only noticed one pool, to which access is possible through the natural arch mentioned. Ventanas is a lovely valley, well sheltered on all sides, and with fertile soil, and the most interesting ruins stand on

the edge of the lava-flow, or malpais. A circular depression, 2.6 m. (8 feet) deep in the centre and 16.8 m. (55 feet) in diameter, first attracted my attention. It has a wall of stones, and at each of the four cardinal points a small square cell is built against that wall. Near this structure I saw half a dozen disks of sandstone, shaped like mill-burrs, 0.61 m. (2 feet) across and 0.18 to 0.20 m. (7 to 8 inches) thick, two of which were superposed. They were nearly circular. On the face of one of them the figure of a lizard, or water-salamander, on another the print of a foot, was carved. It is my impression that the depression was a tank, it being too large and deep for an estufa. What the object of the stone disks may have been I cannot imagine. The carvings, now much obliterated and originally not deep, may have been made subsequently to the abandonment of the place. I add a sketch of these enigmatical contrivances.



CARVED DISKS, LAS VENTANAS.

Not far from this supposed tank lies a large rubbish pile, indicating the ruins of some structure, and over two hundred meters northwest of it is the main ruin, — a house built on a slope descending from west to east, and of which the western wall was still standing in 1882, to the height of three meters (10 feet). Its width is 0.81 m. (2 feet 8 inches). Both faces appear straight and vertical. I made the following entry in my Journal, May 24, 1882: "The stones are thin plates of reddish sandstone with their natural cleavage, but the outside face, while not hewn, is still smooth, though not polished. There was much pottery about, mostly of the gray and black

and of the corrugated kinds, with some red and black also. The chips are of lava, and there is a very little obsidian of the dark opaque kind."

This ruin appears to have consisted of three tiers, not superposed but built so as to lie one higher than another, successively, on the ascending slope.<sup>1</sup> The partition and side walls on the north, south, and east were about half as thick as those on the west, where the ground is highest. "It looks as if there were three rows, each of one story, and higher than the preceding one, from east to west." The western tier may have been two stories high.

The ruins at Ventanas might have accommodated, small and large buildings included, about six hundred people. Thence on south to Cebollita I noticed no vestiges whatever. The picturesque cañon is wooded, and the bleak level beyond, with its magnificent rim of smooth walls of sandstone several hundred feet high and, absolutely perpendicular, is equally devoid of ancient remains. There is a small natural cave in the rocks on the southeast of that plain with partition walls 0.27 m. (11 inches) thick, of stones, and well plastered. The interior of the cavity shows traces of fire.

The ruins at Cebollita deserve closer attention. The spot itself is a beautiful one, well watered, with woods and shrubbery more dense and varied than anywhere else except in the cañones of Santa Clara and of the Jemez region. I noticed chestnut trees. On the southeastern border of the wooded basin forming this vale, hidden from below by thickets of oak, cactus, and other plants, stand the remains of a small pueblo. I doubt whether this pueblo was more than one

<sup>1</sup> Compare Figure 495, page 477, "Section illustrating Evolution of Flat Roof and Terrace," in Cushing's *Pueblo Pottery* (Report of Bureau of Ethnology, 1882-83).

story high. It presents in fact the appearance of an intermediate form between the large joint-tenement and the detached house villages. What is most remarkable, however, is the beauty of its stone-work. The walls are 0.45 m. (18 inches) in thickness, and made of blocks of red sandstone, very neatly formed and nearly square, almost all of equal size, 0.30 by 0.45 m. (12 by 18 in.), and so carefully worked as to suggest the idea of their having been dressed with some metallic instrument. But it must not be overlooked, that the sandstone consists of thin alternate layers of hard and soft material, and that the effect of wear and tear would be to erode the more friable spaces, leaving the harder seams intact, thus producing a very finely ribbed surface, which might at first glance create the impression of stone-dressing. Not only is the work on each stone extremely well done, but the surface of the walls has an unusually vertical appearance for an Indian construction; but they do not "break joints," and the mortar is plain adobe mud. The cells are small, and the doorways as narrow as in all other ancient pueblos. The outer buildings form a polygonal circumvallation, all the apartments opening into a court, in the centre of which stands an irregular cluster of houses, attached to each other at various angles, and with two, three, and four rows of cells of considerable uniformity in size, somewhat larger than the average chambers of pueblo ruins. No traces of estufas were visible. The circumvallation has only two entrances, the stone-work on the angles of which is surprisingly handsome. The pottery is characteristic of the small houses, and the same as at the Mesita Redonda.

The ruins at Cebollita have been thought to be those of a Spanish settlement, but there is no doubt about their Indian origin. They belong to a series of ruins, scattered at irregular distances along an ancient trail leading from Acoma

to Zuñi. It is not certain whether this trail, which was in regular use as late as the seventeenth century and is to-day visible in many places, dates from the time when the pueblos now in ruins were built. There are indications that it began to be used after Acoma had been founded, or at least the Acoma tribe established in that vicinity.

I received the impression that the pueblo might have been only a beginning, perhaps never finished, or only inhabited for a short time and then abruptly abandoned; but this is a mere conjecture. The site was certainly well chosen. Close by running water, with fine woods around it, and a fertile, well irrigated valley, it appears like a beautiful oasis in an arid country. For defence it was equally well adapted. On the side where the mountains rise behind the ruin, the circumvallation protects it, following the sinuosities of the rock, and the rise and fall of the ground. On the other side, it is open for a short space, but the rocky shelf on which it stands is cut off abruptly, allowing a free view over the little valley beneath, surrounded by abrupt mesas. Its width is hardly more than one mile, and the only level entrance to it is on the south side. Whether the ruin which I visited is the only one in that valley, or whether, as I have been told, there are two more, I had not time to ascertain.

The Acomas have a name for Cebollita, — Ka-uin-a; but they strenuously denied any knowledge as to who were its builders. That may be true, but I doubt it. More and more we are finding out that the Pueblos conceal much information, traditional and mythological, about the ruins in their vicinity, as well as not unfrequently about ruins situated a considerable distance from their villages. They regard such knowledge as specially sacred, — the privilege of special branches of their ritual organization.

Two roads now lie open to me by which to reach the

Zuñi country and the western boundary of New Mexico. One lies along the track of the Atlantic and Pacific Railroad, and I have followed it step by step almost as far as the frontier of Arizona. But with the exception of the ruins of small houses, isolated as well as in clusters, the vicinity of the railroad track offers to my knowledge not much of archæological interest as far as Fort Wingate. At a place three miles west of the station of Chavez, and not far from the ruins of several detached buildings, I examined a site where a spring, artificially concealed, had been discovered. The issue had first been choked with rubbish, on which a number of entire pieces of earthenware, black and white, had been placed, and the whole covered with a layer of clay filled with flint implements. A wooden idol or fetich was also exhumed, in the shape of a stick with the head of a serpent. When the discoverer asked the Navajos what that idol represented, they replied it was the "charm of the spring." A similar fetich, green, with a head painted red, was found by Mr. Cushing in sacrificial caves at Tule, in Arizona, and I heard of another find of the same nature at Mangus Springs, on the Upper Gila, in Southwestern New Mexico.

Leaving the consideration of the ruins about Fort Wingate for a later part of this chapter, I turn to the other route, which I have travelled but a very short distance. It is that ancient trail, already mentioned, which passes near Cebollita, and connects the pueblo of Acoma with the Zuñi region. We have documentary information about this trail from as early as the year 1540, when Hernando de Alvarado, accompanied by Fray Juan de Padilla, followed it from the village of Ha-ui-co to the "rock of Acuco," as Acoma is called by the chroniclers of Coronado's expedition.<sup>1</sup> The trail passes, after

<sup>1</sup> I refer here to the short but highly valuable document, *Relacion de lo que*

leaving Cebollita, to another "rancho," named Cebolla, and thence south of the famous "Inscription Rock" and of the head-waters of the Zuñi River at Pescado, and also of the Zuñi plain, in an almost straight line, to the Zuñi hot springs, where Haicu is situated. Some distance southeast of the Zuñi basin another trail diverges from it, which leads to Cia, also ancient, well known in the country, and noticed in 1540 by Alvarado. These trails indicate a regular intercourse between the most westerly group of Pueblos in New Mexico and some of the more central clusters at an early date; for three hundred and fifty years ago they were already well traced.

I have stated that Alvarado, when he was sent from Zuñi to Pecos, followed the trail from Haicu to Acoma. Coronado himself took a more southerly route, but the main body when it marched to the Rio Grande (towards the end of the year 1540) again took the old trail. The latter must therefore have had a number of watering places along its line, distributed at convenient intervals.<sup>1</sup> This would account for the number of ruins along that line; but the fact that the Spaniards marched several times over it without noticing anything but ruins, establishes beyond all doubt that there were

*Hernando de Alvarado y Fray Joan de Padilla descubrieron en demanda de la Mar del Sur* (Documentos de Indias, vol. iii. p. 511). Muñoz, from whose papers the document was copied, made a marginal note expressing his doubts as to the reliability of the document. He knew nothing of New Mexico, else he would certainly have recognized the importance of this report. In the index of the volume in which it is contained, the name of Alvarado is changed into De Soto. It was included by Buckingham Smith in his *Coleccion de Documentos*, p. 65.

<sup>1</sup> Castañeda, *Cibola*, p. 69. mentions no lack of water on the route followed by Alvarado, or (p. 81) on the route followed by the main body under Tristan de Arellano in December, which was the same, since it led the Spaniards through Acoma. But Coronado, when he took a more southerly direction, was two days and a half without any water (p. 76). I suppose that Coronado took a trail towards the Rito Quemado.

no inhabited pueblos at that time between the Zuñi country and Acoma.

I have learned from informants thoroughly acquainted with the country, and reliable, that ruins similar to those at Cebolita exist near Cebolla, but I am not certain as to intermediate points. Farther west the trail in question passes very near the "Cerro de la Cabra," one of several volcanic cones named collectively, after the well known geologist, Marcou Buttes. It leaves Inscription Rock and its important historic monuments to the right, and passes south of Thunder Mountain, as To-yo-a-lan-a, or the high mesa of Zuñi, is called by the Indians.

Hernando de Alvarado has left a description of the ruins on this trail, which is very accurate except so far as their size is concerned, which he has exaggerated. It appeared to him as if the sites had been abandoned but shortly previous.<sup>1</sup> According to the investigations of Mr. Cushing, they were villages of a branch of the Zuñis, known by the name of Mak-yat-a, or Mat-ya-ta. There is no doubt that this is the Marata of Fray Marcos of Nizza, and according to the story of a fugitive Zuñi Indian told to the monk on the San Pedro River in Arizona, Marata was at war with the remainder of the Zuñi tribe, and was rapidly yielding to the pressure which the "Seven Towns of Cibola" brought to bear upon it.<sup>2</sup> The abandonment of the ruins noticed by Alvarado in 1540 dates, therefore, from the beginning of the sixteenth century, or the close of the fifteenth.

I have not seen any of these ruins, but they are said to display unusual workmanship; I suspect that by this is meant a degree of accuracy similar to that found at Cebolita. The same has been said in regard to the ruins south

<sup>1</sup> *Relacion de lo que Hernando de Alvarado, etc.*, p. 511.

<sup>2</sup> *Descubrimiento de las Siete Ciudades, etc.*, p. 341.

of Fort Wingate, not far from Nutria, at a place also called "Cebolla."\*

In the eastern ramifications of the Sierra de Zuñi, between San Raphael and the source of the Zuñi River, aboriginal remains are comparatively scarce. There are two pueblos on the summit of the mesa of El Morro, or Inscription Rock. The Zuñis, as Mr. Cushing has ascertained, claim that they were two of their former villages, to which they give the name of Hesho-ta Yasht-ok. They were abandoned previous to the appearance of the Spaniards in New Mexico.

General Simpson has furnished a plan and description of one of these ruins, which description I insert here:—

"These ruins present, in plan, a rectangle two hundred and six by three hundred and seven feet, the sides conforming to the four cardinal points. The apartments seem to have been chiefly upon the contour of the rectangle, the heaps of rubbish within the court indicating that here there had been some also. There appear to have been two ranges of rooms on the north side, and two on the west. The other two sides are in so ruinous a condition as to make the partition walls indistinguishable. On the north side was found traceable a room seven feet four inches by eight and a half feet; and on the east side, one eight and a half by seven feet. There was one circular estufa apparent, thirty-one feet in diameter, just in rear of the middle of the north face. The main walls, which, except for a length of about twenty feet, were indistinguishable, appear from this remnant to have been originally well laid; the facing exposing a compact tabular sandstone varying from three to eight inches in thickness, and the backing a rubble kind of masonry cemented with mud mortar. The style of the masonry, though next, as far as our observation has extended, to that of the pueblos of Chaco, in the beauty of its details is far inferior.

Here, as usual, immense quantities of broken pottery lay scattered around, and of patterns different from any we have hitherto seen. . . . To the north of west, about three hundred yards distant, a deep cañon intervening, on the summit of the same massive rock upon which the inscriptions are found, we could see another ruined pueblo, in plan and size apparently similar to that I have just described."<sup>1</sup>

The situation of the ruins is a very good one for defence and for observation, since they are perched on a plateau over two hundred feet in height, the sides of which are everywhere steep, and absolutely vertical on the north, and nearly so on the east. The pottery is largely of the kind with glazed ornamentation, but the glaze seems to be less coarse than that of historic ruins, and the ornamentation, while after strictly Pueblo Indian patterns, is better executed. Similar pottery accompanies the ruins of Hesho-ta U-thla and Hesho-ta Mimquoshk-kuin, two other Zuñi ruins.

The chief interest of the place consists in the numerous inscriptions with which the faces of a spur projecting eastward from the mesa are covered. In 1849 it was observed that "the greater portion of these inscriptions are in Spanish, with some little sprinkling of what appeared to be an attempt at Latin, and the remainder in hieroglyphics, doubtless of Indian origin."<sup>2</sup> To-day the Spanish inscriptions are in the minority, modern names have been added in profusion, and in some instances the ancient and historically valuable memorials scraped off, in order to secure room for modern ones. Fortunately General Simpson recorded nearly all he could discover, and although the translations given in his report are sometimes defective, and the copies in many cases

<sup>1</sup> *Journal of a Military Reconnoissance*, p. 121 (Senate Ex. Doc., 1850, No. 64).

<sup>2</sup> *Ibid.*, p. 120. For the pottery of Inscription Rock, see Plate No. 64 of the same book.

show that the reading was imperfect, dates and names have been preserved by him that now are no longer to be found.

The oldest inscription which is positively established commemorates the return of Juan de Oñate from his wonderful journey to the Gulf of California. It bears date April 16, 1605.<sup>1</sup>

The next in date, according to General Simpson, is of the year 1619.<sup>2</sup> I could not find it when I copied the inscriptions two years ago. A very well executed inscription commemorates the passage at the Morro of the Governor Don Francisco de Sylvia Nieto in 1629, and another his return from the Zuñi pueblos, after having pacified them again and established the permanent missions.<sup>3</sup> There were, forty years

<sup>1</sup> General Simpson has 1606. And there are indications that the "5" has been changed into a "6." The inscription reads, "Pasó por aquí el Adelantado Don Ju de Oñate del descubrimiento de la Mar del Sur á 15 de Abril, 1605." It cannot have been 1606, since, according to Zárate-Salmeron, (*Relaciones de todas las cosas*, par. 44,) Oñate left San Gabriel on October 7, 1604, returning again (par. 57) on April 25, 1605. That Father Zárate has made no mistake in the year is proved by the document entitled *Peticion de los Pobladores de la Villa de San Gabriel de la Nueva México, á Don Cristóbal de Oñate tocante al destierro de Juan Lopez Holguin*, 1604, MS. Cristóbal de Oñate declares in the *Mandamiento*, on the 2d of December of 1604, "asta tanto el Excelltísimo Sr. Don Jua de Oñate Govr Capitan General y Adelantado su Padre y Sr. benga de la Jornada de la Mar del Sur."

<sup>2</sup> *Military Reconnoissance*, Plate 69. There is no name with the date.

<sup>3</sup> Both are on the northern wall. I give them here from my Journal. with translation: "Aquí [effaced] nador Don Francisco . . . anuel de Silva Nieto [effaced] que lo ympucible tiene y á sujeto su braco yndubitable su balor con los carros del Rei nro Señor cosa que solo el puso en este efecto. . . . De Abgosto y seis cientos beinte y nueue que [illegible] á Cvññi pase y la Fé lleue." Translation: "Through here passed the Governor Francis Manuel de Sylva Nieto, whose valor and unflinching arm have overcome the impossible, with the carts of the King our Lord which he alone put in this state. . . . August and six hundred and twenty-nine . . . to Zuñi passed and carried the faith thither."

The other inscription reads: "El Capn Genl de las Pro: del Nuevo México por el Rey nro Sr pasó por aquí de buelta de los Pueblos de Zuñi á los 29 de Julio del año de 1629, y los puso en paz á su pedimto pidiendole su fabor como basallos de su magd y de nuevo dieron la obidiencia todo lo qe hiso con el agasaxe selo y prudencia como tan christianisimo . . . tan par

ago, inscriptions of 1632, 1636, 1641, and 1667. Only those of 1629 and 1636 remain.<sup>1</sup> The passage of Diego de Vargas (1692) is also recorded.<sup>2</sup> The Spanish names and dates of the past century are quite numerous.<sup>3</sup> For the history of the Spanish domination previous to 1680, Inscription Rock affords a certain number of data that are the more valuable since we possess very few documents of that period.

Mr. Cushing wrote to me that, after I had left him at the Morro in 1888, he had discovered the name of Francisco Sanchez Chamuscado. It is not impossible, although I did not see it myself. Chamuscado certainly went to Zuñi with his eight men, and returned, but did not visit Acoma. Hence

titular y gallardo soldado de inacabable y loada memo." Translation: "The Captain General of the Provinces of New Mexico for the King our Lord, passed through here on his return from the pueblos of Zuñi on the 29th of July of the year 1629, and put them in peace at their request, begging him for his favor as vassals of his Majesty, and again they pledged obedience; all of which he performed with the zeal, gentleness, and prudence as so Christian . . . particular and gallant soldier of unending . . ."

Don Francisco Manuel de Sylva Nieto was Governor of New Mexico in 1629. Vetancurt, *Crónica*, p. 300. The journey to Zuñi referred to in this inscription was manifestly for the purpose of establishing permanent missions there. According to Vetancurt (*Menologio*, p. 53), Fray Francisco Letrado was the first missionary. The inscriptions are confused in regard to the dates of going and coming, if the first refers to the journey to Zuñi, which is not clear. In the year following, the Zuñis revolted and killed the missionary. Vetancurt (*Menologio*, p. 53) places this event in 1632, but I doubt the correctness of the date.

<sup>1</sup> Of 1636 there is the following: "Pasamos por aquí el Sargento Mayor y el Capitan Jua de Archuleta y el Aiudante Diego Martin . . . 1636." Simpson completes the rest, which has since been obliterated, "Barba." The rest of the copy given by him is unintelligible. Diego Martin Barba was Secretary to the Governor Francisco Martinez Baeza in 1636. *Autos sobre Quexas contra los Religiosos del Nuevo México*, MS., 1636. The Sargento Mayor mentioned in the inscription was probably Francisco Gomez. The other inscriptions are simply names and dates.

<sup>2</sup> The month and day of the passage of Diego de Vargas are not given. Vargas was at the Morro on the 8th of November and 1st of December, 1692. *Autos de Guerra de la Primera Campaña*, fol. 166 and 206.

<sup>3</sup> Juan de Uribarri, 1701; Juan Paez Hurtado, 1736; Governor Felix Martinez, in 1716; Bishop Martin de Elizacochea, 1737; and many others.

it is quite possible that he may have passed Inscription Rock, and been the first to record his presence.<sup>1</sup>

There is another inscription which may also be of 1580, but it is too indistinct to justify the assertion.<sup>2</sup> That Coronado did not, in all likelihood, pass by Inscription Rock, but took a more southerly route, I have already stated; neither did Espejo in 1582. In the year following, it is possible that the latter may have taken the northern trail, when he returned from Zuñi to the Rio Grande.<sup>3</sup> There are indications that Oñate passed near or at the Morro in 1598, but he has left no memorial of his passage.<sup>4</sup>

General Simpson states that there was a spring at Inscription Rock forty years ago,<sup>5</sup> but to-day it has been sought for

<sup>1</sup> That Chamuscabo visited the Zuñi pueblos in 1580 admits of no doubt, although in the *Testimonio Dado* it is called "Cami."

<sup>2</sup> The date is either 1580 or 1580; the name is Pedro Romero. I cannot find it in the *Relacion Breve y Verdadera*, or in Villagran, *Historia de la Nueva Mexico*, fol. 35. The latter gives only seven names besides that of Chamuscado, although it is certain that there were eight.

<sup>3</sup> He does not mention Acoma in his narrative of the return trip.

<sup>4</sup> It may be that the rock near where Villagran at last found water, when he had lost his way in search of Oñate, was the Morro. Oñate's camp was not far from the place. *Historia*, fol. 170:

"Hasta que por gran suerte fuy llegando,  
Al pié de vnos peñascos lebandados,  
En cuio asiento y puesto vi que estava  
Vn apazible estanque de agua fria."

From the itinerary of Oñate in *Discurso de las Jornadas* (p. 273), it is not quite clear.

<sup>5</sup> *Military Reconnaissance*, page 120, with a plat of the rock: "So, taking him as our guide, we went around to the south face of the wall, along which we continued until we came to an angle, thus: [sketch] where, canopied by some magnificent rocks, and shaded by a few pine trees, the whole forming an exquisite picture, we found a cool and capacious spring." According to Simpson the spring lies in the very corner where the southern wall of the projecting spur touches the main body of the mesa, but I can certify to the fact that there is no longer any trace of it on the surface. Vargas, in 1692, found only water in a tank, and no spring. *Autos de Guerra*, p. 166: "Que es vn peñol muy grande y dilatado á cuyo pie ay vn concauo á manera de vna naranja y en el se recoxen las aguas llobedizas."

in vain. Water-holes have been met with, but they are not permanent. Either the spring has disappeared recently, or all surface traces of it have been purposely obliterated.

Between Inscription Rock and Pescado, where the Zuñi River rises, extends a bleak and waterless plain, upon which I know of no remains. The Zuñi mountains sweep around it from southeast to northwest, densely pine-clad. On the south rise the black volcanic cones, with extinct craters, which bear the name of Marcou Buttes. In the west, low hills, clad in the sombre green of scrubby junipers and cedars, close the view. There is no water on this plain, which is about fifteen miles wide, but the western hills contain the sources of the Zuñi River, and in the very gateway where these abundant springs come to the surface stand the two circular, or rather polygonal ruins, called by the Zuñis Heshota Tzinan. Both are prehistoric, and they yield peculiar and handsome pottery.

The course of the Zuñi stream from Pescado to Arizona is dotted with ruins of villages of the Zuñis. Heshota Uthla, another polygonal pueblo, stands a few miles lower down, near the mouth of Nutria Creek. Still farther below is Heshota Thluc-tzinan, a rectangular ruin. Neither of the two is large. The pottery of the first one is similar to that near Inscription Rock. For a ground plan of Heshota Uthla see Plate I. Figure 32. The pottery of the other ruin I have not examined.

At Heshota Uthla Mr. Cushing and I noticed skulls lying on the surface, showing signs of having been fractured by some blunt instrument. Now it may be that these skulls had been disinterred and thrown about afterwards, or possibly the village was surprised and sacked by enemies, and they are the broken and mutilated vestiges of an Indian slaughter.

Three miles from Zuñi, the muddy rivulet of that name

emerges from the valley and enters the basin, or Zuñi valley proper. To the left or south rises To-yo-a-lan-a, or Thunder Mountain, over nine hundred feet above the plain, in precipitous crags and vertical walls of variegated sandstone. Ascent is possible on four trails only, one of which can be trodden by horses, though the rider must dismount; the other trails are of frightful dizziness. The mesa is four miles long in a north and south direction, and from one to two miles wide. The top is partly covered with low woods; there is tillable soil, and permanent water in tanks, so that it could afford both room and subsistence for a moderate Indian population; we accordingly find on it the ruins of six small villages.

Mr. S. I. Bigelow, C. E., of San Francisco, has drawn for Mr. Cushing a plan which the latter has published in the "Comptes Rendus" of the International Society of Americanists,<sup>1</sup> presenting the arrangement of the ruins. The houses were not over three stories in height, mostly two, of stone, and showing sometimes the marks of hasty construction. To these ruins the name of "Old Zuñi" has been applied by modern investigators.

That designation is far from correct. The buildings in question date from between the years 1680 and 1692, probably from a few years only previous to the latter date. They were erected by the Zuñis, during the absence of the Spaniards from New Mexico after the Pueblo rebellion, when the Navajos threatened to destroy the tribe. Abandoning their villages on the plain, they retired to the summit of Toyoalana for safety. There Diego de Vargas found them in 1692.<sup>2</sup>

<sup>1</sup> Congrès. Berlin, 1888, p. 164, Plate IV; a complete map showing the position of the more important ruins near Zuñi is given in Mr. Fewkes's "Journal of American Ethnology and Archæology," vol. i. p. 95.

<sup>2</sup> *Autos de Guerra de la Primera Campaña*, fol. 167 et seq. *Auto de Remission*, MS., fol. 243: "En cuya dilatada messa demas de dos leguas se hallan viuir los

It is known that they remained on the mesa for several years, and returned to it in 1703, after having killed four Spaniards in revenge for many excesses committed by the latter at the pueblo.<sup>1</sup> They finally returned to the site of their present village of Hal-onan in the spring of 1705.<sup>2</sup>

The flight of the Zuñis to the Great Mesa after 1680 was not the first instance of that kind in the annals of the tribe. Toyoalana is mentioned in 1540 as a place of refuge to which the Zuñis retired in case of danger.<sup>3</sup> It may be, therefore, that traces of a more ancient temporary occupation may yet be discovered. In 1629, the Zuñi missions had been established, and Fray Francisco Letrado left at one of the pueblos as resident priest. The year after, on the 22d of February, he was killed by the people, who thereupon fled to the summit of Thunder Mountain,<sup>4</sup> where they remained

naturales de dicha nazione Zuñis de sus zinco pueblos, hayandolos despoblado por los Apaches sus enemigos."

<sup>1</sup> The massacre took place in church, on the 4th of March, 1703. Escalante, *Relacion*, p. 182: "Sobre el Levantamiento de los Zuñis."

<sup>2</sup> *Ibid.*, p. 190. The date was April 8.

<sup>3</sup> *Traslado de las Nuevas y Noticias que Dieron sobre el Descubrimiento de una Ciudad que Llamaron de Cibola situada en la Tierra Nueva* (Doc. de Indias, vol. xix. p. 532): "Y que a xix del mes de Julio pasado, fue quatro leguas de esta ciudad á ver vn Peñol, donde le dixeron que los Yndios desta provincia se hacian fuertes." But the so called "Twin Buttes" of Zuñi lie nearer to Hauicu, from which place the Spaniards started for the trip to the rock, than Thunder Mountain, and they are equally steep and high; but their surface is much smaller, and I never heard that they had been used as a place of refuge. I therefore believe that the "Peñol" mentioned was Thunder Mountain.

<sup>4</sup> The year of the death of Fray Francisco Letrado is given by Vetancurt as 1632 (*Menologio*, p. 53). I believe, however, that it was 1630. That the Zuñis thereupon fled to the summit of the mesa is stated in *Autos sobre restablecer las Misiones en los pueblos de los Zuñis*, 1636, MS. The Custodian of New Mexico says: "Digo qe pcr quanto los Yndios del Peñol de Caquima de la Prouycia de Çuni qe se abian alsado en tiempo del gouro Don Franco de Silua los quales Yndios." Also: "Y como los Yndios de la prouycia de Zuñi qe se alzaron y mataron á su ministro en tiempo de Dn Franco de Silva, los quales Yndios deo de paz Don Franco de la Mora que sucedió en el gouerno y de poco tiempo á esta parte se ban reduziendo á sus pueblos." This is the event, in all probability at least, to which the Cabildo of Santa Fé referred in 1680 (*Diario de la Retirada*,

until 1635.<sup>1</sup> A residence of several years could not be possible without the construction of durable abodes.

Sacrificial caves in actual use, and spots sacred on other accounts to the Indian, are quite numerous on and about Thunder Mountain, and a host of legends and folk-tales cluster around the towering table rock. It is not strange that such should be the case, but since these tales have as yet been only imperfectly published, out of the vast collection made by Mr. Cushing, I reserve references to them for a future section of my Report. When Coronado made his first entrance into New Mexico, in 1540, Toyoalana was not occupied; the Zuñi villages were all at the foot of the imposing mesa and along the Zuñi River as far as Hauicu, fifteen miles southwest of the Zuñi of to-day.

I will not dwell here on the identification of the Zuñi country with Cibola, and of certain Zuñi pueblos with the "Seven Cities" of Fray Marcos of Nizza.<sup>2</sup> In the Zuñi basin, the following seven ruins are known to have been occupied within historic times.

Matzaki lies at the foot of the northwestern corner of Thunder Mountain. It was a large pueblo in 1540, was probably polygonal, and dwindled down to a mere hamlet until 1680. Between that year and 1692 it was abandoned, the people moving to the mesa. As the Zuñis afterwards

fol. 71): "Y aunque es verdad que en diferentes ocasiones han intentado el alzamiento y desobediencia los Indios alzados del Nuevo México, ha sido en diferentes pueblos, y naciones, como fué los Zuñis, en el Peñol de Caquima."

<sup>1</sup> *Autos sobre restablecer las Misiones*, MS.: "Desde qe enbio el dho Don Franco de la Mora al mro de campo Thomas de Albizu y subieron los rreliogiosos qe yvan con el dho mro de campo al Peñol con algunos soldados los quales Yndios, tengo noticia qe se ban poblando en sus pueblo de un año á esta parte."

<sup>2</sup> I have treated of this matter extensively in my *Contributions to the History of the Southwestern Portion of the United States*, published by the Institute in No. V. of the American Series, and by the late Hemenway Expedition, in whose archives is also a manuscript bearing the title of *Documentary History of Zuñi*, upon the same subject.

concentrated and settled in one village, Matzaki was never again occupied.<sup>1</sup>

Kiakima is at the foot of the southwestern corner of Thunder Mountain. The ruins lie in a niche and on a ridge formed by débris, and the pueblo does not appear to have been a large one. Here, so Zuñi tradition states, the negro Estevan was killed in 1539. Kiakima shared the fate of Matzaki.<sup>2</sup>

Halona, on the site of the present pueblo, was occupied until after 1680.<sup>3</sup> When the Zuñis descended from the Mesa, they selected the site of Halona for their future residence; but it would appear that the Halona, which antedates the Spanish occupation, lay mostly on the south side of the Zuñi River, while the present village lies exclusively on the north bank. The excavations which Mr. Cushing made on the older site revealed a number of very interesting features, principally in the modes of burial. As I was associated with the late Hemenway Archæological Expedition, of which Mr. Cushing was Director, I do not consider myself justified in anticipating the publications of the results of that enterprise.

<sup>1</sup> Matzaki is the "Maçaque" of the original of Castañeda's report, which the careless translation of Ternaux-Compans makes "Muzaque," *Cibola*, p. 163: "Le plus grand se nomme Muzaque; les maisons du pays ont ordinairement quatre étages; mais à muzaque il y en a qui en ont jusqu'à sept." It is probably Matzaki, of which the same author speaks (p. 80), and which he describes as "un village, le plus beau le meilleur et le plus grand de la province, on y trouva des maisons de sept étages." As far as I could see, the pueblo was polygonal in shape, but only excavations could establish the true form and original size of the pueblo. Matzaki appears again in the *Obediencia y Vasallaje de los Indios de Agusobi* (Doc. de Indias, vol. xvi. p. 133) as "Macaquia." In 1680 it is mentioned by Vetancurt in *Crónica*, p. 320, as one of the two "aldeas de visita, que cada qual tenía su pequeña iglesia" of the mission of Alona.

<sup>2</sup> Kiakima also is mentioned in the *Obediencia* above quoted, under the name of "Coaquera." It was inhabited at the time of the great uprising, but had also dwindled down to a mere hamlet.

<sup>3</sup> "Halonagu" (Halona Kuin) in *Obediencia de Agusobi*, p. 133. It became the mission of "La Purificacion de la Virgen de Alona." In 1680 the people of the pueblo murdered Fray Juan del Bal, their priest.

Pin-aua, which appears to have been a comparatively small pueblo, lies a short distance to the west-southwest of Halona. It appears to have been abandoned between 1626 and 1680. The ruins indicate quite a compact pueblo.<sup>1</sup>

Hauicu (see Plate I. Figure 34) is an elongated polygon, on a rocky promontory overlooking the plains that stretch out on the south side of the Zuñi River, and about fifteen miles southwest of the present Zuñi. This was the village first seen by Coronado, and which he had to take by storm.<sup>2</sup> Hauicu was occupied till 1672, when the Navajos surprised it, killing the resident missionary, Fray Pedro de Avila y Ayala, on the 7th of October.<sup>3</sup> The ruins of the church, built mostly of adobe, stand at the foot of the eminence on which the pueblo was erected.

Chyan-a-hue, two miles from Hauicu, on a partly wooded mesa, was occupied until after 1630, and abandoned previous to the catastrophe of Hauicu.<sup>4</sup> Here are ruins of a

<sup>1</sup> It is probably the "Aquinsa" of the *Obediencia*. In 1598 that document mentions six villages; in 1604 there were still six left; and the same number existed in 1626, for Fray Zárate-Salmeron says (*Relaciones*, par. 44), "Son 6 pueblos." Benavides (*Memorial*, p. 35) mentions eleven or twelve, with more than ten thousand inhabitants; but this author usually exaggerates, or else he counted the summer villages also. In 1680 there were only four; Pinaua must therefore have been abandoned between 1626 and 1680.

<sup>2</sup> Hauicu is the first Zuñi village the name of which is mentioned. It is the "Ahacus" of Fray Marcos of Nizza. Coronado stormed it in July, 1540. It appears as Aquico in Espejo's *Relacion del Viage*, p. 118. The corrupt relation in Hakluyt omits that name. Oñate in *Obediencia*, p. 133, calls it "Aguscobi." Fray Zárate, *Relaciones (ut supra)*, calls it "Havico," and says "El pueblo mayor, y caveza de todos es el pueblo de Cibola que en su lengua se llama Havico, tiene 110 casas," thus identifying it specifically with the Cibola of Coronado.

<sup>3</sup> Vetancurt places the massacre at Hauicu in 1670; but a contemporaneous document fixes the date on the 7th of October, 1672. *Parecer del Fiscal*, September 5, 1676 (MS.): "Y lo que es mas que despues de haber muerto muchos christianos sin reserbar á los Parbulos pasaron á dar muerte al Pe Fr. Pedro de Ayala, ministro en el pueblo de Auuico en el dia 7 de Octubre del año passado de 672."

<sup>4</sup> It was the "Canabi" of the *Obediencia*. Since there was a church at Chyan-

well preserved chapel, built of stone. The pueblo was considerable.

There are doubts concerning the seventh pueblo of the Cibola cluster. *Kya-kuina*, west of the present *Zuñi*, may have been that village, but there are also indications pointing to *Ketchip-a-uan*, near *Hauicu*. Suffice it to say, that at least seven out of the ruins scattered over the *Zuñi* range, from *Matzaki* to the Arizona frontier, cannot lay claim to great antiquity.

There are other ruins of *Zuñi* origin, which should not be classified with the prehistoric ones. During the past century the *Zuñi* tribe again spread out in smaller pueblos in different directions. Most of these were summer villages; still the houses were so durably constructed as to leave *débris* which to the inexperienced appear like ancient vestiges. The pottery of all these ruins is characteristic *Zuñi* pottery, and there are glazed fragments among it; also corrugated and indented ware, black and white, and red and black. Other remains are so closely connected with the present ethnology of *Zuñi* as to render detailed reference to them superfluous.

In a west direction, there is a ruin at the *Ojos Bonitos*, the ground plan of which I have given on Plate I. Figure 35. The ruins are much disfigured, and they merely show that it was a pueblo of the compact kind. In the *Cañada del Venado*, on bare rocks, are numerous pictographs, and on the wooded ridges that border the gorge, isolated small houses accompanied by characteristic potsherds occur frequently.

Not far from the *Ojos Bonitos* lies the small-house village represented in Plate I. Figure 33. It is very characteristic, as well as its pottery. Several circular depressions are found

*ahue*, of which I have satisfied myself by ocular inspection of the ruins, the pueblo cannot have been abandoned previous to 1629; probably only after 1636. The chapel was small, and its walls are still standing.

near the houses. Some of the latter have as many as sixteen rooms, and none can have been higher than one story. I counted eight dwellings, and three circular depressions. One of these last may have been a tank, the others were probably estufas.

Turning now to the region north of the Zuñi River, and within the boundaries of New Mexico, I ascend the Nutria Creek as far as Nutria, where the village of "To-y-a" represents probably the only specimen of a polygonal one-house pueblo which is still inhabited, although not permanently. A few miles from it lie the important ruins of Heshota Imkuosh-kuin, or Mim-kuosh-kuin, in a very fertile and well irrigated valley, surrounded by woods and in an admirable situation for Indian agricultural purposes. It is also a polygon and similar to Heshota Uthla in plan, only larger. The pottery shows the handsome shades and nice workmanship of that at Inscription Rock, with glazed decorations. It was, like Toya, a Zuñi village, but abandoned previous to the sixteenth century, as far as I was able to ascertain from Mr. Cushing. Near this ruin, and between it and the Mormon settlements at Rama, others occur; also at Cebolla, where the stone walls show a degree of workmanship equal to that displayed at Cebollita near Acoma. The form of the ruins is said to be polygonal also.

The prevalence of this type of pueblo architecture in the Zuñi region is rather surprising. Including the historic Cibola villages, I know of at least ten ruins of this class on the range which the Zuñi tribe claims to have once held. This kind of construction implies a circumvallation of a polygonal shape, with one or more gateways. The circumvallation forms a building with a number of cells, the entrances to which were from the inside, while the outer front was probably not otherwise perforated than with loopholes. This polygonal house

enclosed an open space containing estufas, and sometimes a cluster of other buildings, so that the whole consists of a central group surrounded by a ring of many-storied edifices, forming a defensive wall. The idea is fundamentally the same as that of the one-house pueblo with its central square or courtyard, but it denotes progress in the adoption of a form nearly round, and therefore better adapted to purposes of defence. The round pueblo required always a level, while the rectangular type, easily decomposed into isolated buildings, could be preserved, after breaking up the original large house into several, by separating the angles. The prevalence of the polygonal pueblo in the Zuñi country must therefore be ascribed to other than physical influences, and it seems as if a protracted state of insecurity might be regarded as the immediate cause of it. The Navajos (whom the Zuñis call A-pa-chu, whence the name of Apaches) from time immemorial have been a constant threat to them, and it is not impossible that the neighborhood of these warlike hordes determined the adoption of an architecture which, while preserving the accommodations required by the social organization of the people, at the same time presented an improved defensive plan.

In addition to the specimens of small houses mentioned and figured in these pages, the Zuñi country contains a number of others which are so similar that I need enter into no detail concerning them. According to Zuñi tradition, they dwelt in such villages previous to resorting to the joint-tenement pueblo houses. Certain it is, also, that when the Spaniards came into New Mexico they found no small houses inhabited, unless the Jumanos dwelt in buildings of that class, and that the Pueblo Indians all occupied large communal dwellings.

Of the interesting ruins south of Zuñi, near the salt lagunes

and the Carrizo, I can only speak from hearsay. They are said to be in a fair state of preservation, and belong to the specifically Pueblo type. The salt deposits were known to the Spaniards at an early day, and were certainly visited by them in 1598.<sup>1</sup> The fact that the vicinity of these Salines was uninhabited at the time shows that the abandonment of the ruins antedates 1540, if not the sixteenth century.

Interesting ruins are visible on the road leading from Manuelito on the Atlantic and Pacific Railroad to Zufi. They partly crown the rocky sides of a cañon, and the walls, which are still visible to the height of at least two stories, display very good workmanship. Loopholes and small windows appear in them, and there are also natural cavities partitioned for dwelling.

The same perfection in the stone-work is said to be displayed in the ruins at Navajo Springs, farther northwest, which I have not visited.

<sup>1</sup> The earliest information about these Salines was obtained by Captain Melchor Diaz, whom Don Antonio de Mendoza sent, after the return of Fray Marcos of Nizza, to inquire into the truth of the friar's statements. Diaz left Culiacan on November 17, 1539, with only fifteen men, on horseback; but the cold was so intense that, after penetrating to Southern Arizona, he was obliged to retrace his steps. Among the many matters of interest which he heard concerning Cibola, he learned that the people of the "Seven Towns" used salt, which they drew from a lake situated two days' journey from Cibola. Antonio de Mendoza, *Deuxième Lettre à l'Empereur Charles V.* (Appendix to *Cibola*, p. 295). In a direct line the distance is about forty-five miles, so that the information was quite accurate. The next statement is from Villagran (*Historia*, fol. 164). While Oñate was at Zufi, in November, 1598, he sent Captain Farfan to explore the salt lakes.

"Que fuesse á descubrir ciertas salinas,  
De que grande noticia se tenia  
Y poniendo por obra aquel mandato,  
Con presta diligencia, y buen cuidado.  
En brebe dio la buelta y dixo dellas  
Que eran tan caudalosas y tan grandes,  
Que por espacio de vna legua larga,  
Mostraua toda aquella sal, de grueso.  
Vna muy larga pica bien tendida."

Before leaving the Zuñi country, I must allude to the ruins in the neighborhood of Fort Wingate. What I examined of these belong exclusively to the small-house class. North of the post, on the northern banks of the Rio Puerco, are the vestiges of a settlement. The houses lie at considerable distances from each other, and the number of circular depressions in their vicinity is quite considerable. One of these was doubtless an artificial tank, the others may have been estufas. The largest of the buildings, the one close to which the tank was constructed, contains as many as forty-two cells on the ground-plan. The walls were of sandstone, and, as far as discernible, 0.25 m. (10 inches) thick. Much pottery accompanied these ruins, which was corrugated, indented, and the kind of painted ware peculiar to small-house ruins.

At the foot of the bald ridge over which these ruins are scattered, the traces of an old irrigating ditch were visible, its width nowhere exceeding two meters (6½ feet). This ditch runs parallel to the Eastern Rio Puerco, one of the confluents of the Little Colorado. It may be that the ditch belonged to the ancient settlement, but this is not absolutely certain, as the Navajo Indians irrigate to-day, and it was stated in 1630 that, while their habitations were the same perishable structures in which they dwell at present, they raised fair crops.<sup>1</sup> I therefore leave the question undecided. My friend Dr. Matthews will doubtlessly, sooner or later, be able to gather reliable information on the subject from the Navajos themselves.

There are a few small houses scattered through and about Horse-Pen Valley, near Fort Wingate. In the same valley a round tower, partly ruined, was shown to me by Dr. Matthews. One side of the structure was completely broken

<sup>1</sup> Benavides, *Memorial*, p. 59: "Y estos de Nauajo son muy grandes labradores, que esso significa Nauajo, sementeras grandes."

down, but on the other half of the circumference two and three stories were still standing. The diameter of the structure inside was 4.3 meters (14 feet); the walls of the first story (which was 2.7 meters or 7 feet high) were 1.07 meters (42 inches) thick. The second story measured eight feet in height, and the thickness of its walls only 0.45 m. (18 inches). The uppermost tier I could not reach, but estimated its thickness at 0.30 m. (one foot), so that the walls of the tower were built in steps or terraces receding from below upwards, like the stories of pueblo houses. The stone-work is fairly executed, and the ceiling of the second story was still partly discernible in the spring of 1883. A transverse beam supported the free ends of a number of poles, like spokes of a wheel resting loose on the axle. The other ends were of course imbedded in the walls, and it is presumable that the poles supported the usual layers of brush and earth. I had examined two-storied watch-towers of stone in the vicinity of Zuñi which were square instead of round, and their analogy with this round structure in size was striking. But I failed to find in the latter the contrivance for ascending to the upper tier which the square ones exhibit, — a stone staircase built outside from the ground, leading to a small doorway in the upper story. At Horse-Pen Valley there were some projecting stones in the walls, which might have facilitated ascent from the outside, but they were at irregular distances.

Such tower-like constructions are not always to be looked upon as strictly military. Square towers are common around Zuñi, built for guarding the crops, and not for the use of a small garrison. The one at Horse-Pen Valley appears to have belonged to this class. It stands in a beautiful situation, for the vale is fertile, and there is permanent water in sufficient quantity for the household purposes of a small

Indian population. Nevertheless, every one of the small buildings which I examined, one of which had sixteen cells, had contiguous to it a circular depression, which the Navajos say was a tank. They are rather small for such a purpose, measuring only from three to five meters across (10 to 16 feet); I therefore suspect them to have been estufas. The ground was wet in each of these depressions, and one of them had a wall around it, which, like the walls of the adjacent house, was 0.28 m. (11 inches) in thickness.

The houses are much scattered, and small square constructions are quite numerous, so that the whole has the appearance of a small farming community. If there were in the neighborhood any ruins of larger pueblos with the same distinctive kind of pottery, I should unhesitatingly admit that the ruins at Horse-Pen Valley are those of summer ranches of their inhabitants. As it is, I know of none, and must therefore abandon all explanations based upon such a theory. There are no traditions known to me concerning the origin of the ruins; they are not only prehistoric, but beyond the scope of tradition.

Cliff-houses, and more round towers, are said to exist north and west of Fort Wingate, but they were too remote for me to visit. The remarkable study of the Zuñis made by Mr. Cushing, and the equally thorough investigations of Dr. Matthews among the Navajos, relieve me from the necessity of giving more than a superficial notice of the antiquities in those portions of the Southwest.

South of the Zuñi country extends a region comparatively unknown, and to which I can but briefly refer from hearsay. There are probably ruins around the forbidding mountain chains of the Escudilla and Sierra del Datil,<sup>1</sup> and there are

<sup>1</sup> The Escudilla is properly in Arizona; its height above the sea level is 10,691 feet; the elevation of the western peak of the Datil is 9,440 feet.

certainly ruins along the course of the San Francisco, and near Clifton in Arizona. There are also ruins farther north, about the Rito Quemado, but the plains of San Agustin seem to be devoid of aboriginal remains. East of this break the Magdalena Mountains hug the Rio Grande valley, and it is well known that pueblos of considerable size are found there, within forty miles west of Socorro, one of which was mentioned as early as 1692 by Diego de Vargas.<sup>1</sup> The accounts which I received concerning these ruins are too indefinite to warrant their reproduction here. Specimens of pottery coming from them are curious in shape, but still typical Pueblo pottery. Of the builders I know nothing.

The same may be said of ruins in that wild and intricate mountain region bordering the course of the Gila on the north, and called by the collective name of Mogollones. That it contains ancient remains is well known, but beyond this, and an occasional notice of cave dwellings and of cliff-houses, I am not informed. The last two types of building attract more attention than the common pueblo or the small-house village, because they are better preserved, and the objects which they contain are also in a better condition.

I have previously stated that the latitude of San Marcial (or about  $33\frac{1}{2}^{\circ}$ ) is the southern limit to which the joint-tenement or Pueblo house architecture extended on the Rio Grande and east of it. It seems that this holds good also for the western portions of the territory, for on the few confluents of the Rio Grande, known as the Cañada Alamosa, Palomas, and Cuchillo Negro, the ruins, from concurrent reports, appear to be small buildings, either scattered or in

<sup>1</sup> Escalante, *Relacion*, p. 137: "Anduvo cinco leguas costeando la sierra de la Magdalena, en cuya falda occidental, están ruinas de un pueblo antiguo grande. Medio cuarto [ó uno] de legua, al Surueste de dichas ruinas, está entre unos carrizales altos, un venero de agua mediano."

clusters. The same occurs on the Upper Rio Gila, north of the thirty-third parallel. Into the region of the sources of the Gila I penetrated in the winter of 1883-84 from the southeast, taking the station of Rincon (on the Atchison, Topeka, and Santa Fé road) for my point of departure. Before going to the Gila and Mimbres streams, however, I cast a glance at the Rio Grande valley about Rincon and farther south, and I have purposely delayed until now giving an account of the remains which I noticed there. I repeat here what I wrote to the Institute on the 2d of February, 1884, about the ruins at the Cerro de San Diego: "My examination of the ruins at the foot of the Cerro San Diego, nine miles south of Rincon, has given ground plans of small houses of rubble, without connection of the groups or single buildings by contiguous walls of enclosures. The pottery not only shows bright colors, but a much more carefully executed pattern, often composed of fine lines forming geometrical designs of great regularity, indented and corrugated pottery, painted like that of the ruins at Fort Apache in Eastern Arizona, flint and basalt chips, and metates of lava, comprise what industrial products remain on the surface."<sup>1</sup>

The village was small, and it stands on a low promontory below the picturesque cliff to which the name of San Diego was given as early as the seventeenth century.<sup>2</sup> The valley of the Rio Grande, fertile, partially wooded, but subject to overflow, stretches to the foot of the ruins, and the site was well selected. I have been informed that there are ruins as far south as Fort Selden, and even as Doña Ana, from which the distance to El Paso del Norte is about fifty miles; but I have not been able to obtain any information

<sup>1</sup> *Fifth Annual Report*, p. 89.

<sup>2</sup> *Autos de Guerra de la Segunda Campaña*, fol. 10.

concerning the existence of ancient remains near Las Cruces, Mesilla, and as far as the mouth of the Pass. The Rio Grande bottom is quite fertile, but trees, except cottonwood groves, are scarce and distant. On the west side perfectly bleak plains expand, above which in the distance project isolated cones. To the east, the arid and gravelly slopes rise in dismal perspective to the foot of mountain chains equally arid, and so rugged that their picturesque profiles become an ornament to the otherwise dreary landscape.

If subsequent investigations confirm the absence of aboriginal remains in the Rio Grande valley between Doña Ana and the "Pass of the North," it becomes an interesting question why that bottom, so fertile and open, should have been unoccupied by the sedentary Indians. One reason may be that the river bottoms which are favorable for agriculture were too densely wooded in former times; or that, on account of the periodical droughts and consequent fluctuations in the volume of water of the river, tribes who irrigated found it unprofitable to settle; or it may be that the openness of the country afforded insufficient protection against surprises by enemies. It is certain, however, that not only Pueblo architecture, but also the small-house type, seem to be lacking on the stretch of less than fifty miles between the vicinity of Doña Ana and the narrow pass from which El Paso derives its name.

In 1726 it is stated that at a place thirteen leagues (35 miles) south of San Diego, the Mansos lived until 1659, when Fray Garcia de San Francisco persuaded them to remove to El Paso del Norte.<sup>1</sup> Thirty-five miles south of San Diego

<sup>1</sup> Rivera, *Diario y Derrotero*, p. 26: "Haziendo alto en vn parage, junto al Rio que llaman Ráncheria; por haver sido la mas frequente habitacion de los Yndios Mansos, antes de estar reducidos á pueblo." See Part I., page 165.

would be in the Mesilla valley, somewhere near the present station of Mezquite. It is well to remember this, as the finding of Indian remains there need not be taken as evidence of a former establishment of sedentary natives. The Mansos were less nomadic than the Apaches, but they still did not dwell in permanent abodes. It is doubtful whether they made pottery previous to their colonization by the church at El Paso del Norte.

I have not heard of any vestiges beyond the Cordillera that skirts the Rio Grande on the east. But near Rincon, in the approaches to the Perrillo, or the ascent to the plateau of the Jornada del Muerto, I found traces of former habitations; they are, however, scant and much obliterated. In the Jornada proper nothing is to be found, for there is no water, but I have heard of vestiges in the Sierra de San Andrés, about thirty miles east of the river. On the west side of the Rio Grande, barren levels expand as far as the foot of Cook's Peak. Beyond that chain flows the Rio Mimbres, a stream the head-waters of which lie near those of the Gila, but which runs southwards, while the Gila turns to the west. The Mimbres belongs to an interesting inland drainage system, which is independent both of that of the Pacific and of the Gulf of Mexico.

In close proximity, therefore, on a three-fold water-shed, between the parallels of  $33^{\circ}$  and  $34^{\circ}$  and along the 108th meridian, are the sources of the Gila, which send their waters to the Gulf of California; the numerous rivulets flowing towards the Rio Grande between Fort Craig and Rincon opposite the Jornada del Muerto, which belong to the drainage system of the Gulf of Mexico; and the Mimbres, emptying into the inland basin, without visible outlet, of which the northern lagunes of Mexico, the lagunes of Palomas, Guzman, and Santa Maria, form the centre.

The pottery of the ruins along the Mimbres, as well as on the Upper Gila, is like that which I found on the Rio Grande at San Diego. It is different from any on that river higher up, different from the pottery of the Salines, and also different from the potsherds accompanying ruins in the northwest, except in some localities, such as San Matéo, and perhaps Tzé-yi. It has a marked resemblance to potsherds from Eastern Arizona, and especially to those from the Sierra Madre and Casas Grandes in Chihuahua. Although the architecture along the Mimbres is of a different type from that at San Matéo, Fort Apache, and in Chihuahua, the pottery is similar; and although better in material and more elaborately decorated, with a greater variety of shades, the same fundamental patterns underlie that decoration as in Utah, in Colorado, in Northern New Mexico, in the Rio Grande valley, in short, everywhere where pueblos are found. It is Pueblo pottery in the widest sense of the term, as well as in its narrowest acceptance. The basis for the decoration is always the well known religious symbols of Pueblo ritual, only more elaborately and tastefully combined and modified. We recognize the Clouds, the Earth, Rain, Lightning, the double line of "life," but there is a progress in execution as well as in combination of the figures. The corrugated and indented ware also has undergone a transformation. The crude concentric ribs are less abundant, nicely indented surfaces take their place, and these are painted, not unfrequently, as at Fort Apache, with symbolic designs, applied to the indentations and corrugations without regard to the pattern of the latter. There is in this feature something very characteristic of Indian art before the sixteenth century. It shows that it had not everywhere attained the conception of harmony between the plastic design and color. At San Matéo, however, as well as at

Casas Grandes, two localities separated by five degrees of latitude, the painting was adapted to the plastic ornamentation, while at intermediate points I did not find any evidence of this. This does not, of course, exclude the possibility of the existence of such specimens, but they must be rare, and it shows how much perfection or imperfection in Indian art is a purely local feature. The crudest specimens of this class are found in the northwest, and they display a certain original and peculiar development among the ancient Tehua ruins north of Santa Fé. Along the Rio Grande, and east of it, the types become primitive again, as if that class of work had been neglected, or superseded by the coarsely glazed variety. A gradual and steady development, however, shows itself in the direction of the south through Western New Mexico, spreading out both to the southeast as far as the Rio Grande near Rincon, and thence to El Paso, and to the southwest into Arizona.

Other manufactured objects do not seem to display the same change. The stone and flint implements are neither better nor worse than any in the north; stone axes from Northern New Mexico even show a degree of finish which I have looked for in vain in Chihuahua. It is the material which, in the case of this implement, has determined the improvement. The actinolite accessible to the Northern Tehuas, and especially to the Taos, takes a beautiful polish.<sup>1</sup> But southern stone axes display one peculiarity. The groove is cut only on three sides, while the bottom of the axe is flat, and sometimes polished. The stone axe of Southwestern New Mexico, Arizona, and Northwestern Chihuahua, has more the shape of a celt, and in this respect it

<sup>1</sup> Beautiful colored plates representing axes and hammers from Northern New Mexico are contained in volume vii. of *Report upon U. S. Geographical Surveys west of the 100th Meridian* (Wheeler), Plates XVII., XVIII., and XIX.

approaches the same kind of implement from Central Mexico and Central America.<sup>1</sup>

Only near Casas Grandes do we find a decided improvement in the form of the hand-mills or Metates. Those on the Mimbres and its vicinity are as rude as any farther north. The same may be said of mortars and pestles, which are sometimes decorated with attempts at the carving of animal forms. Trinkets and fetiches seem to be the same everywhere as far as latitude 29°. Of textile fabrics, cotton has not been found on the Upper Gila, as far as I know, but the yucca has played a great rôle in dress and in fictile work. Mats of yucca, plaited kilts of the same material, resembling those described as worn by the Zuñis three centuries ago, sandals and yucca thread (Pita), have been found in sheltered ruins. In a cave village on the Upper Gila I noticed a piece of rabbit fur twisted around a core of yucca threads. Of such strips the rabbit mantles of the Moquis, which Fray Marcos heard of and was of course unable to understand, were made and are made at this day.<sup>2</sup>

Turquoise beads and ear-pendants are not unfrequently met with, associated with shell beads. Further on I shall mention interesting finds of this nature at Casas Grandes. But however much I searched and inquired for metallic implements or trinkets, I was unable to hear of any, at least in the ruins around the inland drainage region. In Central Arizona copper objects have been found on the upper and lower Rio Salado, as will appear in the course of this report.

It is quite strange that no traces of copper implements

<sup>1</sup> The celt is the usual form of the axe in Central and Southern Mexico. There have been found, however, some highly ornamented axes with notches and grooves. A handsome specimen is represented on page 64 of *Mexico à Travers des Siècles*, vol. i. In 1881 I brought a number of stone celts from Mexico.

<sup>2</sup> See my *Contributions to the History of the Southwestern Portion of the United States*, p. 140.

should be met with in the Mimbres region, for native copper occurs in the mines of Santa Rita, near Silver City, and at other localities. But it is not nearly so common as in the Lake Superior copper region, and masses of it do not crop out as they do there. The Indian would have been compelled to mine, and it was not worth his while to do this so long as he had on the surface rocks with which he had been acquainted from time immemorial. The absence of copper tools is not to be regarded so much as a mark of lack of mechanical skill, as a result of the peculiar conditions in which the raw material occurs.

I have heard of burial places, and have seen on the Mimbres localities where skeletons had been exhumed. I also saw a skull which was flattened at the occiput. Mr. Cushing has called attention to the probability of such artificial distortions being due to the mode of burial, and not always to a peculiar method of shaping the skull during the lifetime of the individual. The skeletons found on the Mimbres lay extended, and at a small depth below the surface. They were not protected by any solid encasing whatever. The pressure upon the occiput, incident upon their lying on the ground, may have been sufficient to deform the skull.

I have been thus explicit in regard to the more perishable remains of the Mimbres and Upper Gila region, because, as will soon be seen, we meet there for the first time in New Mexico a kind of architecture distinct, at least as a variety, from anything found north of the 34th degree of latitude. I have also extended my remarks to the artificial products of regions lying outside of New Mexico, both to the south and the west. In thus anticipating what geographically belongs to distant parts of the Southwest, I desired to indicate beforehand certain analogies in ethnological details.

The ground plans given on Plate I., Figures 60 to 69 in-

clusive, give an idea of the arrangement and relative size of the most prominent of the Mimbres and Upper Gila ruins which I have investigated. From information received, I conclude that whatever ruins occur in the Sierra Mimbres proper, in the Mogollones, and along the watercourses emptying into the Rio Grande, present the same type, which I have described as follows: —

“Not only are the single buildings connected with enclosures, but these enclosures themselves so meet each other that the settlement forms a checker-board of irregularly alternating houses and courts. The houses are easily discernible from the fact of little rubbish mounds having accumulated on their site, around which the foundations of rubble still appear, or in which parts of the walls are yet to be found. The courts sometimes appear not only as much larger spaces, but they are free from rubbish, and thus seem flat, or even depressed. These pueblos are thus virtually closed on all sides, either by the walls of a house or by those of yards; and they are very defensible, as there are but one or two entrances, and these either through a narrow passage between two buildings, or through a still narrower one, with re-entering angles, between two court walls. Each village contains one or more open spaces of large size; but they are irregularly located, the tendency being to cut up the whole plat into as many small squares as possible.”<sup>1</sup>

When I wrote this, I had not yet visited Southwestern New Mexico, and I was not acquainted with the character of the ruins there, and consequently not aware that, while the type above described is manifestly a combination of small houses and courts in one group, I should find on the Mimbres and Upper Gila an intermediate form, representing that combination on a more imperfect scale. The dwellings are all small,

<sup>1</sup> *Fifth Annual Report*, p. 63.

and only one story in height, but the rooms are usually larger than in northern ruins, measuring on an average 4.5 by 4 meters (14½ by 13 feet). On the Gila of Arizona, the Upper Salado, and the Lower Verde, the average for the same type of buildings was 5.1 by 4.5 meters. I will repeat here what I wrote to the Institute in 1884, concerning the ruins on the Mimbres and the Upper Gila. The reason why I prefer to transcribe these statements rather than present the same facts in a new form is, that what follows was written under fresh impressions of the remains and of their surroundings, whereas seven years have elapsed since, during which I have passed only once through the country, and hurriedly at that.

“West of the Rio Grande, and opposite the mountain chains skirting the Jornada del Muerto, the ground rises gradually, in broken mesas crossed by vales with streamlets, to the base of the Sierra Mimbres, recently called the ‘Black Range.’ These mountains run from north to south, are heavily timbered, and their slopes on both sides bear ruins of the detached family-house type, with enclosures or courts, remains of round towers, and circular tanks. On the east flank these vestiges follow the course of the numerous arroyos, like the Cañada Alamosa (which, rising in the Sierra Luera, a northeastern spur of the Mimbres, passing between the Negrita and Southern San Matéo ranges,<sup>1</sup> empties into the Rio Grande in the latitude of the Ojo del Muerto), the Cuchillo Negro, the Rio Palomas, and the Rio Frio; the last three descending directly from the east flank of the Black Range. The ruins are situated on the upper course of the arroyos, and they disappear where the latter sink, to re-

<sup>1</sup> There are two mountain ranges in New Mexico which bear this name. The one to which I refer here lies west of Fort Craig and San Marcial, and appears like a continuation of the Magdalena Mountains; its altitude is given at 10,209 feet.

appear again on a narrow strip along the river itself. This I have gathered from numerous reports, as well as from a few personal observations.

“The western slope of the Black Range is very steep. It descends abruptly into the fine valley of the Rio Mimbres. That stream, rising south of the western Sierra Blanca of New Mexico, runs thence with frequent interruptions through sand and gravel accumulations, in a deep valley, as far as twelve miles south of Brockmann's Mills, where it sinks, except in the rainy season; its dry bed continuing, past Deming and Carizalillo Springs, to the Laguna Palomas in Mexico. Its course is due north and south, and it is the only northern feeder of an inland water basin lying between the Sierra Madre and the Rio Grande. This basin, situated in the State of Chihuahua, has no outlet. Several lagunes, like the Palomas and Guzman Blanca, are scattered over its surface; the eastern flank of the Sierra Madre drains into it from the west, the Rio Casas Grandes from the south.

“Towards this centre of drainage the aboriginal villages on the Rio Mimbres have gravitated as far south nearly as the flow of water is now permanent. They are very abundant on both sides of the stream, wherever the high overhanging plateaux have left any habitable and tillable space; they do not seem to extend east as far as Cook's Range, but have penetrated into the Sierra Mimbres farther north, as far as twenty miles from the river eastward. Similar in disposition, size of rooms, and material of construction to those of the eastern declivity, and to those around Globe, Arizona, and in the Arroyo Pinal, running into the Upper Rio Salado, they are still distinguished from these Arizona ruins by the lack of connected courtyards, which there consolidate the different groups of buildings and enclosures. Consequently they seem to lack all defensive character, unless approximation into

groups of small clusters might be regarded as such. In each cluster a little mound designates the site of the building, and I have not found, among the twenty-five ruins surveyed, more than two in the same assemblage of ruined walls connected together. The total number of ruins scattered as far north as Hicks's Ranch, on a stretch of about thirty miles along the Mimbres in the valley proper, I estimate at about sixty. This includes, of course, isolated houses, and possibly also watch-houses.

"I have not seen a village whose population I should estimate at over one hundred, and the majority contained less. They were built of rubble in mud or adobe mortar, the walls usually thin, with doorways, and a fireplace in one corner, formed by a recess bulging out of the wall. Towards the lower end of the permanent watercourse, the ruins are said to be somewhat more extensive. It is very evident from the amount of material still extant, from what has been used in building modern constructions, and from the size of the foundations, that whatever houses existed were not over one story high.

"In addition to courtyards connected with the edifices proper, there are frequently enclosed spaces without any rubbish indicating houses, and these are sometimes on an inclined plane, at such a slope as would not permit the erection of buildings. The purpose of these enclosed spaces, the largest single one of which measured about 13 by 7 meters, is difficult to establish, unless they were, as the Pima tradition states of the Arizona ruins, garden beds, rudely terraced, like the 'Andenes' of Peru. Remains of acequias in the bottoms prove that they used the latter for cultivation, so that garden beds in the neighborhood of dwellings, and above the line of irrigation even by arroyos, could only be regarded as measures of precaution in time of danger. The

Mimbres overflows its banks about once annually, but the waters subside after two or three days; the danger could only be from enemies prowling around the bottoms, but exposed to detection if they ventured near the dwelling, as the latter are invariably on treeless, if not always on elevated expanses." <sup>1</sup>

That the enclosures above mentioned were garden plots seems certain. I refer to the account given of such enclosed areas at Ojo Caliente of Joseph, and at the Rito Colorado in Northern New Mexico, and to what I shall further have to say on the subject.

"The valley of the Mimbres is fertile, with a very pleasant climate; but it is very unhealthy in the lower sections. Malaria is telling severely on its population to-day, and there is no reason to believe that it did not act with even greater severity on the aborigines. The insalubrity of this region may have had more to do with its abandonment in former times than any hostilities on the part of other tribes. The lack of provisions for defence is rather conspicuous; still the relatively large proportion of uninjured pottery found seems to indicate a hasty abandonment, under pressure of danger from enemies." <sup>2</sup>

For illustration of the peculiar type of construction of the houses, as well as of the courtyards, for defensive purposes, the ruins two miles south of Brockmann's, near the ranch of Hermann Grünwald, are characteristic. They are represented on Plate I. Figure 62. It will be seen that they consist of five distinct groups, clustering on the brow and slope of a gravelly promontory that overlooks the narrow bottom of the Mimbres. Most of the other ruins lie either on the first tier of hills, or, as is the case at Brockmann's, in the bottom itself.

<sup>1</sup> *Fifth Annual Report*, p. 90 et seq.

<sup>2</sup> *Ibid.*, p. 94.

I ascended the course of the Mimbres to very near its source, and then turned to the west into the drainage system of the Gila.

“Ascending the Mimbres to about nine miles north of the mining works, the ruins drop off gradually, and a scattered forest of tall yellow pines covers the bottoms. Thence turning nearly westward, the great Continental Divide; probably here a spur of the Pinos Altos, is traversed, and the headwaters of the Rio Sapillo, a tributary of the Upper Gila, are reached. The Divide was probably uninhabited, so that there is a break of several miles between the ruins of the Mimbres and those on the Sapillo. But this break is geographical only; in every other way, the villages are alike on both streams; and the pottery, of which the cache on Gatton's Ranch has afforded complete specimens, the axes, arrow-heads, etc., are identical. But the settlements on the Sapillo are even smaller, — a fact easily accounted for by the nature of the ground, and the limited area of soil fit for cultivation.

“The Sapillo, or rather its bed, joins the Gila about twenty miles below the Ojos Calientes; but the intervening country is not merely uninhabitable, it is impassable except in a few directions. It may be said that eighteen miles of wooded and craggy waste, very picturesque, divide the two watercourses between Brannan's Ranch and the Ojos Calientes; and the name of Sierra Diablo, given it on some maps, is not at all inappropriate. On the Gila the same conditions are repeated as on the Sapillo, though on a grander scale of height and ruggedness of the mountains, and consequent depth and gloominess of the gorges. The water supply is permanently much more abundant; nevertheless, the open air settlements are identical in every respect. They are as numerous as the steep elevations of the ground and the narrowness of the bottoms permit, and along or between them natural cavities

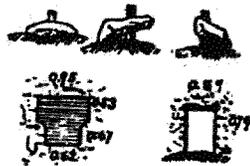
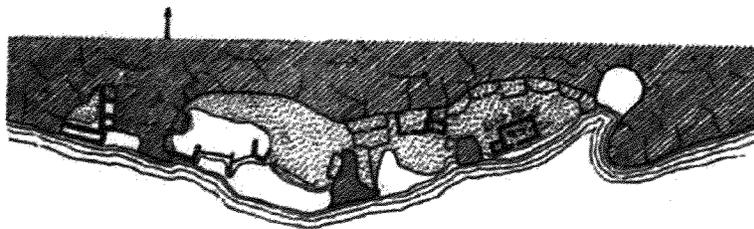
harbor dwellings of stone, well preserved, sometimes single, again in groups or small villages.

“These cave dwellings are properly but one story high, but the compulsory adaptation to the configuration of the ground has caused an accidental approach to two stories. They are instructive for the study of the development of the terraced house of the Pueblo Indian. Perfectly sheltered, and therefore quite well preserved, the cave villages are perhaps larger than the open air ruins, compactness compensating for the limitation in space. But they illustrate the fact that the foundations remaining of villages built in the open air are frequently only those of courts or enclosures, the mounds alone indicating the site of buildings. Of the twenty-six compartments contained in the caves on Diamond Creek, only nine were clearly elevated structures, as the doorways show; the rest are in many cases courts of small dimensions, encompassed by low and still perfect enclosures. The roofs are of the pueblo pattern, well defined; but in one cave the trouble of building them was spared by completely walling up the entrance, with two apertures for admission. The fire-place was a rectangular hearth, as I found it at Pecos, and placed in the centre of the room.”<sup>1</sup>

The partition walls are all of stone, and laid in adobe mud. Some of them still preserve their outer coating of yellowish clay. Their thickness is 0.30 m., and the roofs were entire on some of the rooms. Round beams, with the bark peeled off, were in a good state of preservation. The diameter of these beams varied between 0.07 and 0.24 m. (3 to 9½ inches). The roof which these beams supported was of the ordinary pueblo pattern, and 0.23 m. (9 inches) thick. The doorways were nearly square, and low. Air-holes, T-shaped and of unusual size (0.95 by 1 meter), opened upon the outside in several places. (See the plan annexed.)

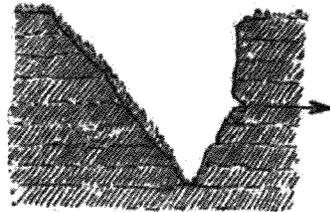
<sup>1</sup> *Fifth Annual Report*, p. 94 *et seq.*

These buildings occupy four caverns, the second of which towards the east is ten meters high. The western cave communicates with the others only from the outside, while the three eastern ones are separated by huge pillars, behind which are natural passages from one cave to the other. The height of the floor above the bed of the creek is fifty-five



Doorway.

Window.



Section of Gorge and Cave.

SKETCH OF CAVE DWELLINGS ON THE UPPER RIO GILA.

meters, and the ascent is steep, in some places barely possible. To one coming from the mouth of the cleft, the caves become visible only after he has passed them, so that they are well concealed. But while it would be difficult for an Indian foe to take the place by storm, its inhabitants could easily be cut off from water or starved. The southern slope, fronting the caves, is steep, but covered with forests, and the cleft is so narrow that a handful of men, armed with bows and arrows and posted behind the tall pines, could effectively blockade the cave dwellings. With all its natural advantages, therefore, this cave village was still extremely vulnerable.

Among the many objects taken from these ruins, I mention particularly sandals made of strips of the yucca. It may be remembered that similar foot-gear was found at the Tzé-yi. I have been informed that the Tarahumares of Southwestern Chihuahua still wear the same kind of sandals. In addition, I saw many baskets or fragments of baskets; also prayer-plumes and plume-sticks. Such remains indicate that their makers were in no manner different from the Pueblo Indians in general culture.

Higher up the several branches through whose union the Gila River is formed, cave houses and cave villages are not uncommon. Mr. Henshaw has published the description of one situated on Diamond Creek, to which description I refer.<sup>1</sup> As the gorges become wilder and the expanses of tillable land disappear, the rocks and cliffs were resorted to as retreats and refuges. Whether the cave dwellings and cliff-houses were occupied previous to the open air villages along the Mimbres, or whether they were the last refuges of tribes driven from their homes in the valley, it is of course not possible to surmise, for in regard to the sedentary aboriginal population of Southwestern New Mexico we have not even the light of tradition to illuminate us. It may be that the Apaches, who were occupants of the country in the sixteenth century and before, have preserved some dim recollections; yet it is not impossible that even the Apaches did not find any settlers when they first drifted into the country. At the present stage of our knowledge we must consider the ancient culture of the districts under consideration as one of quite early date, the extinction of which has so far left no trace in the memory of existing stocks.

Between the valley of the Mimbres and that of the Arroyo

<sup>1</sup> H. W. Henshaw, *Cliff-house and Cave on Diamond Creek, New Mexico*, in vol. vii. of Report upon U. S. Geographical Surveys (Wheeler), p. 370.

de San Vicente, on which the town of Silver City stands, the distance by air line is not much over twenty-five miles. The town lies several hundred feet above the bed of the Mimbres,<sup>1</sup> and the country intervening is partly mountainous. It is the well known mining region of the Southwest, with valuable copper deposits and abundance of silver ore, mostly of inferior grades. From the Mimbres to Georgetown the ascent is over one thousand feet in three miles,<sup>2</sup> "through a narrow gorge or winding cañada; the slopes, very rocky, are covered with low woods."<sup>3</sup> Georgetown itself lies in a deep cleft, and the steep declivities are clothed with oak and conifers; yucca appears in profusion. Beyond Georgetown an elevated plateau expands, — cold, wooded, rocky, and waterless. The yucca becomes arboriferous, and the mezcal agave appears in small clusters. I was not able to find any remains of ancient abodes. After crossing the divide, the Santa Rita valley opens to view, with its copper mines established at the foot of high picturesque crags.<sup>4</sup> There is no water, however, and whenever I inquired concerning ruins I always received a negative answer. The Mimbres Mountains, Cook's Peak, and, after reaching Whitewater, the Sierra de la Burra in the southwest, outline the horizon with bold and striking silhouettes. In the northwest the Pinos Altos range looms up. Thence on, the country is bleak, there are no permanent watercourses, and yucca is the dominant plant. I heard of considerable ruins near Fort Bayard,

<sup>1</sup> The altitude of Silver City is 5,796 feet (U. S. Signal Office); that of the Mimbres is about 5,000 feet.

<sup>2</sup> Georgetown lies 6 455 feet above the sea level.

<sup>3</sup> From my Journal of January 24, 1884.

<sup>4</sup> The elevation of Santa Rita copper mines is 6,161 feet. The discovery of this important copper deposit is due to the Mexican Lieutenant-Colonel Manuel Carrasco. About the date of the discovery I am not certain; I heard it variously stated as 1801 and 1810. See Garcia-Conde, *Ensayo estadístico sobre el Estado de Chihuahua*, fol. 62.

and at Silver City there existed in 1884 two ruins on bald hillocks in the northern outskirts of the town. Figures 68 and 69 of Plate I. are intended to give an idea of their arrangement and relative size. They were much deteriorated when I saw them, and some excavations had been made, although I could not find out by whom. The pottery and stone axes, however, had drifted into other hands, and they were all characteristic of the southwestern ruins of New Mexico in general. Silver City has no permanent water except at a short distance below the town, where the San Vicente Creek comes to the surface. The ruins were well situated for defence, and as posts of observation. As for agricultural purposes, I judge that the wide valley may have afforded some favorable spots.

The country west of Silver City presents a singularly bleak appearance. It is a high level gradually rising to Stein's Pass, near the Arizona frontier, where the Peloncillo terminates, and the Pyramid range begins south of it. The banks of the Gila River and the mountains to the north of it contain vestiges of antiquity. Towards the southwestern corner of New Mexico the plain expands in dismal perspective, and the mountains along and across the Mexican boundary line rise in sharp profile. I have heard of ruins in these ranges, but know nothing of their character or appearance.

From Silver City the dry bed of the San Vicente Creek continues towards Deming. This important railroad station lies on a barren plain, above which towers the craggy Sierra Florida.<sup>1</sup> I was repeatedly assured that no traces of ruins had been noticed around Deming. Whether there are any in the Sierra Florida or not, I am unable to state. The barren plain that extends between Deming and the Mexican frontier is destitute of ancient vestiges, as far as I know. Not even at

<sup>1</sup> The altitude is 7,261 feet.

Carizalillo, where valuable springs come to the surface, the volume of which has considerably increased since the earthquake shock of May, 1887, was I able to find anything. The same holds good for the Sierra de la Boca Grande and the Sierra de la Hacha, which divide the United States from Mexico. They are dismal mountain clusters, with rocky slopes covered by a scrubby and thorny vegetation. Only the summits are crowned by groves of stunted oaks.

With this review of the antiquities of Western New Mexico I close my report on the work done by me in that Territory. It was very fragmentary, but circumstances, and not my own will, prevented me from doing better. The same may be said of my investigations in Arizona, to which I shall now turn.

## VIII.

### NORTHERN ARIZONA.

UNDER this heading I include that part of the Territory of Arizona lying north of the line of the Atlantic and Pacific Railroad. I have not visited it, and therefore can refer but briefly to its antiquities. Of the numerous ruins in the Tzé-yi (Cañon de Chelly) I have spoken already.

Ethnologic interest in this country centres in two places: the cluster of pueblos inhabited by the Shi-nu-mo, or Mo-qui, and in the Grand Cañon of the Colorado, where the Havasu-pay, or Cosninos, have their home. There is historic information of an early date concerning the Moquis; and the Cosninos also were known to the Spaniards in the seventeenth century. This documentary information casts a certain light upon conditions anterior to the historical period, and for this reason I shall refer to it somewhat in detail.

The earliest information concerning the Moqui country is that transmitted to us by Fray Marcos of Nizza in 1539, and subsequently confirmed by Melchor Diaz. As far south as the heart of Sonora the Franciscan explorer heard of a cluster of towns, or "province," called "Totontec," which he ascertained lay to the west of Cibola.<sup>1</sup> In the same year Diaz reported: —

<sup>1</sup> Not having the original version of Fray Marcos's *Descubrimiento de las Siete Ciudades* (volume iii. of *Documentos de Indias*) at my command, I quote from the French translation in *Cibola, Relacion de Frère Marcos de Nizza*, p. 270: "Il m'a rapporté que dans la direction de l'ouest on trouve le royaume nommé Totontec."

"I have learned that Totontecac was at seven short journeys from the province of Cibola; that the appearance of the country is the same as that of Cibola, as well as the houses and the inhabitants. They told me that cotton grew there, but I doubt it, for it is a cold country. They reported to me that Totontecac was composed of twelve towns, each of which is more considerable than the largest of Cibola.

"One day's march from the latter province, there exists a town the natives of which are at war with the others. The houses, the people, and their relations towards one another, are alike. They affirmed to me that this town is the largest of all."<sup>1</sup>

The last paragraph seems to apply to Hauicu, the most westerly of the Zufi villages.

It seems strange that in the year following Coronado heard nothing of Totontecac, although some of his men visited a group of seven pueblos situated in the same direction and at the same distance from Cibola (Zufi), which he calls "Tusayan."<sup>2</sup> The origin of the latter name is traced back to the Zufi word "Usaya," "Usayan" being the possessive; "Usaya," or "Usaya Kue," is an ancient name by which the Zufis designated some of the Moqui Pueblos. This original Zufi word for the Moquis appears more distinct yet in the reports on the explorations made by Francisco Sanchez Chamuscado in 1580, as "Osay" and "Asay."<sup>3</sup> The geographical evidence in favor of the identity of Tusayan with the Moquis is, besides, quite conclusive.

<sup>1</sup> Mendoza, *Deuxième Lettre à l'Empereur*, p. 296.

<sup>2</sup> *Cibola*, part ii., chap. iii., p. 165: "À vingt lieues vers le nord-ouest est une autre province qui contient sept villages; les habitants portent le même costume, ont les mêmes mœurs et la même religion que ceux de Cibola." In the heading to part i., chap. xi., Castañeda says, "Tusayan ou Tutaliaco." This is another name which I am unable to explain. Jaramillo (*Relation*, p. 370) has Tucayan.

<sup>3</sup> *Testimonio dado*, pp. 86 and 93.

Mr. Cushing has ascertained that Topin-teua or Topin-keua was a Zúñi name for a cluster of Moqui pueblos, some of which have been in ruins for centuries. If I have correctly understood Mr. Cushing's statements, the historical Moqui pueblos formed a part of the original Topin-keua. It seems likely that Totontec is a corruption of that name, and is a reminiscence of conditions previous to the sixteenth century. Whatever Fray Marcos and Melchior Diaz reported was from hearsay only, and from the talk of Indians who, while certainly acquainted with the country and tribes north of the Gila River, still had only imperfect information.

The pueblos of Topin-keua are said to lie south and south-east of the present Moqui cluster; there are also pueblo ruins quite near to the villages and on the same system of mesas. But the ruin which has attracted greater attention is that of the pueblo of Ahua-tuy-ba, or Aua-tu-ui, called Tallahogandi by the Navajos, situated on a branch of the Little Colorado River. Captain Bourke has given the following description of the ruins:—

“These ruins are at least a quarter of a mile square, and walls are still standing ten feet high and five feet thick. These walls are of two kinds: of adobe, mixed with hay and cut straw, laid in mud, with an intervening stratum of small fragments of pottery between every two courses of adobe; and of natural rubble, averaging five inches square by three inches thick. The Moquis tell the story that this town was destroyed by the people of Mushang-newy (one of the Moqui villages), who came over in the night, got on the top of the roofs, and tossed bundles of straw down upon the people inside and stifled them.

“They explain this attack by saying that the town was full of ‘singing men,’ whom the Moquis did not like.

“The portion of the ruin still standing will represent

perhaps as many as forty or fifty houses, with rooms of varying dimensions, twenty feet by ten being the more usual size." <sup>1</sup>

Captain Bourke rightly supposes that these ruins are those of the historical pueblo of Aguatubi. Aguato is first mentioned, in 1583, by Antonio de Espejo, who visited it with only nine men, starting from the Zuñi pueblos for that purpose.<sup>2</sup> It is not mentioned by Juan de Oñate when the Indians of Moqui, on the 15th of November, 1598, pledged themselves to allegiance to the Spanish Crown.<sup>3</sup> I am unable to give any particulars concerning the pueblo until the 10th of August, 1680, when its inhabitants, together with the other Pueblo Indians, rising in arms against the Spaniards, murdered Fray José de Figueroa, their priest, and burnt the church, which was dedicated to San Bernardino. The village was at the time credited with eight hundred inhabitants.<sup>4</sup> Twelve years later, Diego de Vargas appeared before Ahuatuyba with his small force on the 19th of November, and was

<sup>1</sup> *The Snake Dance of the Moquis of Arizona*, p. 90.

<sup>2</sup> *Relacion*, p. 118. *El Viaje* (page 11) in Hakluyt has "Zaguato."

<sup>3</sup> *Obediencia y Vasallaje á su Magestad por los Indios de la Provincia de Mohoqui* (page 137) has only four pueblos: "Naybi [Orambe], Xumupani [subsequently Mishongopavi], Cuanrabi [?], and Esperiez [?]."

<sup>4</sup> Fray Francisco de Ayeta, *Carta al exmo Señor Virrey de la Nueva España*, September 11, 1680 (MS.): "En el convento de Aguatubi el P. Fr. José de Figueroa, hijo de la santa Provincia del Santo Evangelio, natural de la ciudad de México, entró de misionero el año pasado de 1674." Vetancurt, *Menologio*, p. 275. *Crónica*, p. 321: "San Bernahdino de Ahuatobi, en la provincia de Moqui, veintiseis leguas de la de Zuñi, está en un alto el pueblo que ocupan ochocientas personas; conversion que hizo el venerable Padre Fray Francisco de Porras, cuya vida está en el Menologio, á 28 de Junio. Beben agua de cisterna algo salobre. Hay piedra pomez en cantidad, y piedras que sirven de carbon: aunque el humo es nocivo por fuerte. Allí en el rebellion mataron al Padre Fray José de Figueroa, alias de la Concepcion, Mexicano de esta provincia, y el templo acabó en llamas." Captain Bourke says of the situation of the ruins (*Snake Dance*, p. 88): "A hundred yards or more beyond the Navajo 'hogans' we had the satisfaction of discerning the ruins we were seeking, on the point of a promontory, a mile and a half away."

met by a number of Indians in arms, some of whom were on horseback. Vargas prudently avoided the impending conflict, and negotiated with such dexterity that the Moquis returned to their allegiance and suffered the missionaries accompanying the troop to baptize such of the children as had been born during the past twelve years.<sup>1</sup>

Of the other Moqui pueblos Oraybi was the only village that did not receive the visit of Vargas; not because there was any opposition to his entering the place, but because the horses of the Spaniards were exhausted from the long and rapid journey. Vargas left the Moquis apparently in the most favorable disposition.<sup>2</sup>

The Pueblo outbreak of 1693 affected the Moquis also. They had no occasion to participate in it directly, as the seat of war was too remote from their homes; but fugitives from the rebellious villages, chiefly Tehuas and Jemez, quartered themselves among them, and kindled again the spirit of hatred against the whites. It is also likely that the submission to Vargas had been merely an act of temporary

<sup>1</sup> Escalante, *Relacion*, p. 134: "Como la caballada no había venido á satisfaccion de Zuñi, iba muy maltratada, y así en los mejores caballos se adelantó, aunque poco el gobernador con 30 hombres, y una legua antes de llegar al pueblo dicho, en la subida de una mesa le salieron al encuentro de 700 á 800 Moquinos bien armados de á pié y de á caballo, con demostraciones de guerra y provocando el rompimiento; iba conteniendo y con buen orden dando tiempo á que la demas gente llegase, y con persuasiones pacíficas contuvo á estos rebeldes, que por mas de una hora repugnaron recibirlo. Pero logró entrar en el pueblo mediante inclinacion que manifestaba el indio capitan de el, nombrado Miguel. Por el cual el dia siguiente diéron la obediencia, y fuéron absueltos de la apostasia todos los de Aguatuvi, y fuéron bautizados 122 criaturas de ambos sexos. Concluido esto se regresaron el gobernador, los padres y demas al aguaje, en que habían determinado pasar la noche: el cual está una legua hácia al Norte del pueblo." I copy the latter part of the quotation, since it gives the location of the water near the ruins. Escalante gives in the above a *résumé* of Vargas's Journal, *Autos de Guerra*, 1692, fol. 176 to 198.

<sup>2</sup> Escalante, *Relacion*, p. 135: "No pasó el gobernador á Oraibe porque le informaron que aun distaba nueve leguas (no hay mas que dos ó dos y media desde Jongopavi) y ya estaba imposibilitada la caballada."

policy, to which they were prompted by the remarkable success of his bold movements, and that as soon as the Spaniards disappeared the Moquis considered themselves released from their pledges. The Tehua outbreak of 1696 made matters worse, in furnishing new accessions to the colony of Tehua refugees. They founded a pueblo of their own, between Ahua-tuyba and the other Moqui towns, but in closer proximity to the latter. Geographically Ahua-tuyba occupied a rather isolated position in relation to the others. Its relations towards the Zuñi tribe were more intimate and also more friendly. When, therefore, Fray Juan de Garaycoechea reopened the mission at Halona in 1699,<sup>1</sup> the Moquis (possibly at the instigation of the inhabitants of Ahua-tuyba) voluntarily offered to return to Christianity, rebuild the churches, and receive missionaries.<sup>2</sup> In consequence of this Father Garaycoechea went to Ahua-tuyba on the 28th of May, 1700, and found that the convent had been rebuilt or repaired by its Indians, who were glad to see their mission re-established. But the other Moquis, while outwardly friendly, still dissuaded the missionary from visiting their homes.<sup>3</sup> This was the first indication of a treacherous disposition, — one which was soon to display itself in a most cruel and unjustifiable action.

On the 11th of October of the same year one of the leading chiefs of Oraybe appeared at Santa Fé with twenty other delegates, and presented themselves to the Governor, Pedro Rodriguez Cubero, as a formal embassy from the Moquis, not as subjects and vassals of the Crown, but as delegates of

<sup>1</sup> Escalante (*Relacion*, p. 177) says, "El año de 1700 pasó á Zuñi el Padre Fray Juan de Garaycoechea"; but the *Libro de Entierros de la Misión de Nuestra Señora de Guadalupe de Zuñi* (MS.) begins in 1699 with entries in the handwriting of Father Garaycoechea.

<sup>2</sup> *Relacion*, p. 177.

<sup>3</sup> Fray Juan de Garaycoechea, *Carta al Gobernador* (*Relacion*, p. 178).

a foreign power sent to conclude a treaty of peace and amity. This Cubero could not entertain; still he negotiated with them for a long while, until finally the Moquis, seeing that the Governor would not recede from his position, seemingly yielded consent to everything that was asked. With these false promises they were suffered to return, and Cubero indulged the hope that he had completely gained his point.<sup>1</sup>

In the mean time Ahua-tuyba had virtually become again a Christianized pueblo. In the last days of the year 1700, or in the beginning of 1701, the Moquis of the other pueblos fell upon the unsuspecting village at night. The men were mostly killed, stifled in their estufas, it is said; the women and children were dragged into captivity, and the houses were burnt. The exact date of this butchery I have not been able to find, as nearly all the papers concerning the administration of Cubero have disappeared from the archives at Santa Fé; but enough is left to establish the fact of the occurrence, and to prove the probable accuracy of the Moqui version, which Captain Bourke has preserved.<sup>2</sup> Since that time Ahua-tuyba has belonged to the class of ruined historical pueblos.

<sup>1</sup> *Relacion*, p. 179. The proposition was such an original one that I cannot resist copying the text: "Respondió Espeleta, que él venia á nombre de todos los Moquinos, y que estos en consulta general, habían resuelto admitir que entrasen los religiosos á bautizar los párvulos de cada pueblo de la provincia; sucesivamente en seis años, entrando el primer año al primer pueblo, y regresandose concluidos los bautismos, y el siguiente año al segundo pueblo, y de este modo entrando y saliendo hasta llegar á Oraibe y completar los dichos seis años, y concluidos estos del modo dicho se rendirian todos los Moquinos y admitirian de asiento á los ministros." It must be remembered that the Moquis had given their allegiance to Spain anew, in 1692; that consequently Cubero could not regard them in any other light than as vassals and subjects, and that consequently he could not entertain such proposals on their part.

<sup>2</sup> The only document which I found, in which detailed reference is made to the slaughter of Ahuatuyba is a *Parecer* of the clergy of New Mexico, bearing date 1722. In it the destruction of Ahuatuyba is explicitly stated. There existed at Santa Fé, in 1713, a collection of testimonies taken on the occurrence, and described as follows: "*Yten en Quaderno de autos sobre la notisia de lo susedido en*

The pottery of Ahua-tuyba is remarkably handsome in ornamentation, and good in quality. Mr. Cushing writes concerning this feature:—

“Before discussing the origin of other forms, it may be well to consider briefly some influences, more or less local, which, in addition to the general effect of gourd-forms in suggesting basket-types and of the latter in shaping earthenware, had considerable bearing on the development of ceramic art in the Southwest, pushing it to higher degrees of perfection and diversity in some parts than in others.

“Perhaps first in importance among these influences was the mineral character of a locality. Where clay occurred of a fine tough texture, easily mined and manipulated, the work in *terra-cotta* became proportionately more elaborate in variety and finer in quality. . . .

“An example in point is the ruined pueblo of *A'wat u i* or *Aguatobi*, as it was known to the Spaniards at the time of the conquest, when it was the leading city of the Province of Tusayan, near Moki. Over the entire extent of this ruin, and to a considerable distance around it, fragments of the greatest variety in color, shape, size, and finish of ware occur in abundance. In the immediate neighborhood, however, are extensive, readily accessible formations producing several kinds of clay, and nearly all the color minerals used in the Pueblo potter's art.”<sup>1</sup>

I saw a flat urn from Ahua-tuyba which had the figures of two birds painted upon its surface, that from their color, and especially from the shape of their beaks, created the im-

*el puo de Aguatubi de la proa de Moqui autorizadas de Pedro de Morales en 63 fojas.*” It is mentioned in *Ymbentario de los Papeles que se hallan en el Archivo del Cabildo justitia reximiento de esta villa de Santa Fé*, 1713, MS.

The “singing men,” of whom Mr. Bourke speaks, were, as he justly supposed, priests; but there was no priest at Ahuatuyba at the time of the massacre. The reference to them applies to the visit made by Father Garaycochea in 1700.

<sup>1</sup> *Pueblo Pottery* (Report of the Bureau of Ethnology, 1882-83), p. 493.

pression that they might be intended for rude representations of the red macaw, or aras, of the American tropics. Granting that this was the design of the maker, the fact that Ahuatuyba was occupied until the beginning of the eighteenth century, and that a mission was in existence there until 1680, might readily explain how the Moqui Indians could have obtained an idea of such a bird. The vessel in question could therefore not be cited in evidence of a hypothetical ancient communication of the Pueblos with tropical America.

Of other ruins in the Moqui country I can only say that such exist, and have been described in the Reports of the Bureau of Ethnology and of Captain Bourke.<sup>1</sup>

<sup>1</sup> *Annual Report of the Bureau of Ethnology*, 1883-84, p. xxiii: "The work of this party for the field season was concluded by an examination of two distinct classes of ancient ruins in Arizona, one about ten miles northeast, the other about fifteen miles southeast of Flagstaff. The former consisted of sixty or more cave dwellings, situated on the summit of a round lava-capped hill. The dwellings are close together, and were carved out beneath the hard shelter rock of lava, under which the material was rather loose, readily yielding to the rude stone implements used in making the excavations. In these dwellings fragments of ornamented pottery were discovered resembling somewhat the ancient pottery so abundant in many portions of Arizona, and specimens of it were collected. Other objects, such as metates, stone axes, mullers, and corn-cobs, were found in the excavations, and the seeds of several species of small grain were scattered through them. Fragments of several kinds of bone were also found, representing the elk, deer, wolf, badger, rabbit, and some other animals. The ruins about fifteen miles southeast of Flagstaff are similar to those in the Cañon de Chelly. These ruins are extensive, and built on terraces in the side of Walnut Cañon. They differ, however, from the cliff dwellings of Cañon de Chelly in construction. The doors are large, and extend from the ground up to a sufficient height to admit a man without stooping. The rooms are large and the walls are two to four feet thick. The fireplaces are in one corner of the room on an elevated rock, and the smoke can only escape through the door. The masonry compares favorably with any employed in the construction of the best villages in Cañon de Chelly. Many objects of interest were found in the débris around and in these houses. Matting, sandals, spindle whorls, and stone implements of various kinds abound."

Mr. Victor Mindeleff also examined a ruin which the Navajos call Kintiel, twenty-four miles south of Pueblo Colorado, Arizona. A circular doorway was noticed "made of a single slab of sandstone pierced by a large round hole."

Of the ruins in the cañones of the great Colorado River of the West Major Powell has given descriptions. They were small houses, partly of the cliff-house type, and either isolated dwellings, or in groups of from two to six together. Pottery, arrow-heads, and metates accompanied them, and trails had been partly scraped out of the steep rocks to permit access from below.<sup>1</sup> It appears as if these buildings had been the work of sedentary Indians seeking refuge from impending danger.

It has been suggested that some of these remains date from the historical period, being due to Pueblo Indians who sought safety from the approach of the Spaniards in the frightful clefts of the Colorado River of the West. It consequently becomes of interest to investigate what the early Spanish explorers knew of the greatest river of the Southwest; how they came to know it; which were the tribes inhabiting its upper course in the sixteenth century, and what Indians dwelt or roamed between the Great Colorado and the Moqui country; and, finally, what were the relations of the Spaniards to those tribes.

Another ruin, small, and called Kinna Zinde by the Navajos, was also examined. "Its position on the edge of a long valley on an elevated belt of rock suggests its use in connection with agriculture." Several other small ruins occur in that vicinity.

Bourke, *Snake Dance*, p. 86: "Fourteen miles from the Moqui Agency are the ruins of a pueblo still standing two and even three feet above the surface. It has so often been mistaken for the ruin of which we were in quest, that it has received the name of the False Tolli-hogandi, but while it does not deserve much mention in the same chapter with the true ruin, it is nevertheless an interesting monument of good area, made of rubble of all sizes of sandstone and basalt gathered in the immediate vicinity. . . . The situation of this old pueblo is peculiar in this, that close at hand is a marked depression of not less than one hundred acres in area, which there are reasons for believing was once a reservoir for storing water from melted snow and rain." Other ruins are mentioned on p. 317.

Many other quotations might be added from other sources, but I prefer to limit myself to the above.

<sup>1</sup> *Exploration of the Colorado River of the West and its Tributaries*, pp. 69, 77, 87, 90, and 125.

While it is not quite certain, there is still some indication that the Spaniards heard of the mouth of the Colorado as early as 1529.<sup>1</sup> In 1540, however, Spanish explorers not only reached the mouth and ascended the stream for some distance, but Captain Garcia Lopez de Cardenas, with twelve men, started from the Moqui villages with guides furnished by the Moquis, and reached the great cañones of the Colorado, after traversing for twenty days a completely deserted country.

"After these twenty days' march," says Castañeda, "they indeed reached that river, the banks of which are so high that the Spaniards thought them to be three or four leagues up in the air. The country is covered with small and scrubby pines; it is open to the north, and the cold is so intense that, although it was in summer, they could hardly stand it. The Spaniards marched for three days along these mountains in hopes of finding a place where they might descend to the river, which from above hardly seemed to be one fathom in width, whereas, according to the Indians, it was more than half a league wide; but it proved impossible to reach it. When, two or three days later, they arrived at a place where the descent seemed easier, Captain Melgosa, Juan Galeras, and another soldier, who were the most agile of the troop, decided to make an attempt. They climbed down so far that those who remained above lost sight of them altogether. About four o'clock in the afternoon they returned, and reported that they had met so many difficulties that they had

<sup>1</sup> *Segunda Relacion anónima de la Jornada de Nuño de Guzman* (Documentos para la Historia de México, vol. ii. p. 303): "La demanda que llevábamos cuando salimos á descubrir este rio era las Siete Cibdades, porque el Gobernador Nuño de Guzman tenía noticia dellas, é de un rio que salia á la Mar del Sur, é que auía quatro ó cinco leguas en ancho, é los Indios tenían una cadena de hierro que atravesaba el rio para detener las canoas é balsas que por él viniésen, é que era gente muy belicosa. é hallamos lo que tengo dicho." The Spaniards had then already reached the Yaqui River.

been unable to reach the bottom, for what from above seemed easy became very difficult as soon as they came to it. They added that they had descended about one third of the depth, and that from there the river already looked very wide, which confirmed what the Indians had told. They asserted that some cliffs that were visible from above and appeared to be of the height of a man, were higher than the tower of the cathedral of Sevilla. The Spaniards gave up following the cliffs that lined the river because there was no water, which until then they had been compelled every night to go a league or two inland to find."

Beyond that place a distance of four days' march, the Indian guides said that it was impossible to proceed, as no water would be found for four days. So further exploration was given up, and the Spaniards returned to Cibola.<sup>1</sup>

No mention is made of any inhabitants; the country explored by Garcia Lopez de Cardenas appears to have been a desert.

The next Spaniard who penetrated to the west of the Moquis was Antonio de Espejo, in 1583. He travelled forty-five leagues towards the Colorado River, without however reaching its banks. Along his route he met Indians who wore crosses in their hair made of wood, and he heard of Indian villages; but whether these were built of solid material, or were simply gatherings of frail huts, does not appear from his report.<sup>2</sup>

Definite and detailed information concerning the tribes of a part of Northwestern Arizona was furnished for the first time by Juan de Oñate, upon his return from the remarkable expedition which, with only thirty men, he accomplished from Chamita on the Rio Grande to the mouth of the Great Colorado River and back, in the years 1604 and 1605. Oñate

<sup>1</sup> *Cibola*, p. 62 et seq.

<sup>2</sup> *Relacion*, p. 121.

went from Zuñi to the Moquis, and thence must have taken a southwesterly direction to the Colorado, which he struck below the deep cañones.

It is difficult to establish with accuracy the route taken by Oñate, since the itinerary at my command is not the official one, which, if it exists, is not accessible to me. Ten leagues west of the Moquis the Colorado River was reached, and the name was given to it on account of its turbid waters of a red or reddish color. This must have been the Little Colorado, and not the main stream. Thence they travelled along the Sierra de San Francisco, or perhaps crossed it. The Rio de San Antonio, which is spoken of as flowing past the southern or western slopes of that elevated chain, appears to be Cedar Creek, one of the main branches of Cataract Creek, and the next one (both of which contained very little water) may have been Partridge Creek. I suppose that at all events they passed north of Prescott, reaching the banks of the Great Colorado about Fort Mojave, or at The Needles. The Amavas, or Mojaves, dwelt a short distance higher up the stream. On the whole journey from Moqui to the Colorado River only one Indian tribe was met with. These were nomads, lived by hunting, and dwelt in huts of straw. These Indians were called the Cruzados by the Spaniards, on account of small wooden crosses which they were wont to tie to their forelocks whenever they presented themselves to the whites. This custom was attributed to the teachings of a Franciscan missionary, who, it was understood, had visited these parts of Arizona years previously.<sup>1</sup>

<sup>1</sup> The only somewhat detailed report on the trip of Oñate to the mouth of the Colorado at my disposal is contained in Father Zárate's *Relaciones de todas las cosas*, so often quoted. It is contained in paragraphs 44 to 57 inclusive. In paragraph 46 he says: "Salieron de Moqui, y á 10 leguas hácia el Poniente llegaron al rio Colorado, llamaronlo assi porque es el agua casi colorada. Corre este rio sueste-norueste, despues da buelta al Poniente, y dicen que entra en la California." This is a very good description of the course of the Little

Espejo had no priest with him when he penetrated to Moqui and to the west of it; whether Garcia Lopez de Cardenas was accompanied by a priest in 1540, I have not been able to determine. It is possible that the Cruzados, having heard of the great veneration which the whites had for the symbol, adorned their bodies with it to secure the friendship of the strangers. Who the Cruzados were is equally indefinite, although they may possibly, from the locality in which they were found, have been the Yavipais.<sup>1</sup> Oñate had no conflict whatever with the natives, but found them without exception friendly, and gave them no cause for abandoning their homes. Of cliff dwellers or cave dwellers, or sedentary natives in general, the Spaniards heard nothing in the countries west of the Moqui villages.

Colorado. The mountain chain, "Desde este rio caminaron al Poniente atravesando una serrania de pinales que tenia ocho leguas de travesía, por cuyas faldas por la parte del Sur corre el Rio de San Antonio dista 17 leguas de Sn José que es el Colorado, corre Norte Sur por sierras acrias y peñas altisimas, é da poca agua," can only have been the San Francisco range, and the San Antonio either Cedar Creek or Cataract Creek, according as the Spaniards crossed the latter, or kept along its northern slopes; I favor the former assumption. Beyond the San Antonio "es tierra templada," which indicates that they did not proceed due west, but southwest. "Cinco leguas adelante hácia el Poniente está el rio de Sacramento, es de tanta agua como él de Sn Antonio, tiene su nacimiento onze leguas hácia el Poniente, corre Norueste Sueste por las faldas de unas mui altas sierras donde los Españoles sacaron mui buenos metales." This may have been Partridge Creek. That the "Amacavas" were the Mojaves needs, I believe, no further proof.

<sup>1</sup> The Yavipais belong to the Yuma stock; at present they live west of Prescott in Arizona. Fray Francisco Garcés, in 1776, locates the Yavipais to the northwest of the Colorado River. He mentions four branches: Yavipai Cajuala, Yavipai Cuercomache, Yavipai Jabesua, and Yavipai Muca Oraive. *Diario y Derrotero que siguió el M. R. P. Fr. Francisco Garcés en su viaje hecho desde Octubre de 1775 hasta 17 de Setiembre de 1776, al Rio Colorado para reconocer las naciones que habitan sus márgenes, y á los pueblos del Moqui del Nuevo México* (in Documentos para la Historia de México, segunda série, vol. i. p. 351). From his statements in regard to the various tribes and their relations with one another, however, I gather that the Yavipais were either much dispersed, or else that he employs the term in a sense similar to that now used for "Apaches" in Arizona, attaching it to the names of various other tribes entirely distinct from the Apaches proper, as Apache-Mojave, Apache-Yuma, Tonto-Apache, etc.

There is a mention of an expedition made in 1618 to the Colorado River by Vicente de Zaldivar with forty-seven men. The report upon it is brief, lacks detail, and comes from a suspicious source; still it may be authentic. No information is afforded about the ethnography of the country except that, after reaching the Colorado at the latitude of  $36\frac{1}{2}$  degrees and travelling upward along its banks for two days, they came to "a small settlement" where they obtained information concerning the regions farther north. This information bears chiefly upon a great lake, and nothing is stated concerning sedentary tribes.<sup>1</sup> Latitude  $36\frac{1}{2}^{\circ}$  corresponds about to latitude  $35^{\circ}$ , the average error at the time being  $1\frac{1}{2}$  degrees, or the latitude of Fort Mojave. The "settlement" in question appears therefore to be one of the Mojave Indians. If the document about this expedition is genuine, it shows that the intercourse with the natives was not such as to inspire any fear in them.

The knowledge which the Spaniards had of what lay west of the Moqui tribe does not appear to have been much in-

<sup>1</sup> The only document that pretends to give any details concerning the journey of Vicente de Zaldivar, which I have been able to consult, is published by Mr. John Gilmary Shea in his book on *Peñalosa*. Its title is *Noticia de otra Expedicion anterior por el Maestro de Campo Vicente de Saldivar*. If the authenticity of the journey rested on no other testimony than that of the document mentioned, I should, since it has been proved by Captain Don Césareo Fernandez Duro that the report of Peñalosa is, if not a complete fraud, at least a very suspicious document, be very loath to regard the expedition as anything else than a hoax. But there is additional testimony to the effect that Zaldivar really undertook the trip, and carried it out as far as the Colorado River of the West. Fray Gerónimo de Zárate-Salmeron says (*Relaciones de todas las cosas*, par. 109): "El Padre Fray Francisco de Velasco, religioso de las prendas que todos saben y arriba queda dicho, tratandole yo de estas noticias, me dijo como yendo en compañía del Maestre de Campo Dn Vicente de Saldivar á descubrir la mar del sur, cuando se volvieron al cabo de cuatro meses de peregrinacion, sin llegar al mar en una jornada." There is no clue to the date of this journey, which at all events must have been posterior to that of Oñate. The document published by Mr. Shea makes no mention of the presence of Father Velasco, and only mentions Fray Lázaro Ximenez; the whole subject is quite obscure.

creased during the seventeenth century; but Oñate met on his memorable journey to the Gulf of California many ruins of ancient buildings and of irrigating ditches. Such vestiges were found west of the Moqui district, and the Indians who were interrogated said it was an ancient tradition that many centuries ago people passed through those parts, moving southward, and that nobody knew what had become of them, — whether they were still alive, or whether they had disappeared.<sup>1</sup>

When the Zuñi missions were first established, the missionaries heard of a tribe living in Eastern Arizona who were called Zipias.<sup>2</sup> I requested Mr. Cushing to inquire concerning this tribe, and he obtained the information that the Tzip-ia Kue were well known to the Zuñis formerly; that they dwelt in Arizona and south of the Moquis; but that now they had lost track of them completely. Whether they were sedentary Indians or nomads I could not ascertain.

A reasonably clear *résumé* of what was known of the ethnography of Eastern Arizona is furnished in 1686 by Fray Alonzo de Posadas. In his memoir addressed to the King, I find among other tribes that of the Coninas mentioned. The Cipias are also alluded to, as living north of the boundaries of what was then Sonora, while the Coninas, or Cosninos,

<sup>1</sup> Zárate, *Relaciones de todas las cosas*, par. 104: "En aquella jornada se hallaron muchos edificios y ruinas antiguas, acequias que es como las había antiguamente, en México Azcapuzalco, y las granjas de los metales que beneficiaban. Esto se vió adelante de la provincia de Mooqui, y preguntando á los Indios qué ruinas eran aquellas, respondieron que era tradicion de los viejos, á quien oian contar que muchos siglos había que pasaron por allí gran numero de gente la cual había salida de la laguna de Copalla, aunque ellos la nombran por otro nombre porque es otra lengua que hablan, á poblar nuevos mundos, caminando hácia el Sur, y que fueron tan lejos que nunca se supo de ellos si eran vivos ó muertos."

<sup>2</sup> The Zipias must have dwelt west of the Zuñis. In 1630 or 1632 Fray Martin de Arvide intended to visit them, but was murdered five days after the Zuñis had killed Fray Francisco Letrado, their missionary. Vetancurt, *Menologio*, p. 76.

seem to have dwelt north of them, or perhaps southwest. The Cipias disappear from Spanish annals after the seventeenth century, but the Coninas or Cosninos continue to play a part in the ethnography of Arizona.<sup>1</sup> In 1776 Fray Francisco Garcés intimated that the Cuesninas or Cuismers might be the Mojaves, since that name was given to the latter by the Cocomaricopas.<sup>2</sup> In the same year Fray Silvestre Velez de Escalante visited the Cosninos at their homes, and found them to be agricultural Indians, with flocks and in possession of peach trees.<sup>3</sup> But already in 1686 it was stated that the tribe was sorely pressed by the Navajos.<sup>4</sup> To-day they dwell on the banks of the Colorado River, "less than seven miles due south of the Grand Cañon of the Colorado, and more than three thousand feet below the level of the surrounding plains. Here were found about thirty huts, occupied by two hundred and thirty-four Indians, men, women, and children."<sup>5</sup> These

<sup>1</sup> Fray Alonzo de Posadas, *Informe al Rey sobre las Tierras de Nuevo México, Quivira y Teguayo*: "Tiene dicha nacion Apache unas vegas y pedazos de tierra muy amenos y fertiles, en cuyo puesto hay cantidad de habitadores de esta nacion Apache, y está la Sierra Azultan nombrada de rica por haberse ensayado sus metales muchas vezes, pero nunca poseida por nuestra omision y tibieza, y por la mesma parte sustenia la guerra y aun hace muchos daños la misma nacion Apache en los Indios de la nacion Cipias, que la caen á la banda del Sur, y á la del Norte de las provincias de Sonora y Sinaloa. Desde dicho puesto de Nuestra Señora de Guadalupe habrá mas de 100 leguas hasta Oso del Cuartejejo, del cual prosigue la dicha nacion Apache por el dicho rumbo del Oriente al Poniente á la parte del Sur por la nacion que llaman Coninas." I find the Coninas or Cosninos mentioned again (among other authorities) in Rivera, (*Diario y Derrotero*, p. 33,) as one of the tribes hostile to the Spaniards.

<sup>2</sup> Garcés, *Diario y Derrotero*, p. 352: "En los nombres de las naciones pue-de y suele haber muchas variaciones, V. G. los Cocomaricopas y jalchedunes llaman á los jamajabs Cuesninas ó Cuismers, y los demas jamajabs."

<sup>3</sup> Escalante, *Diario y Derrotero de los Rr. Pp. Fr. Francisco Atanasio Dominguez y Fr. Silvestre Velez de Escalante, para descubrir el camino desde el Presidio de Santa Fé del Nuevo-México, al de Monterey, en la California Septentrional*. (Same volume as the report of Father Garcés, pp. 539, 541, 543.)

<sup>4</sup> Posadas, *Informe*: "Y esta nacion de los Coninas la tiene en el todo avallada la dicha nacion Apache."

<sup>5</sup> *Report of the Bureau of Ethnology*, 1881 and 1882, p. xviii. Shufeldt, *Some*

facts are due to Mr. Cushing, and it is greatly to be regretted that his investigations, linguistic as well as ethnological, have not as yet been made public. He informed me, however, that the dwellings were partly built of mud, consequently on a more durable plan than those of the other tribes of the Colorado River.

Mr. Gatschet classifies the Cosninos linguistically among the Yuma tribes.<sup>1</sup> Hence they cannot have been fugitives from the Moquis, who are Shoshonis according to the same authority. Furthermore, while other tribes of the Pueblos have taken refuge among the Moquis during the past three centuries, the latter have always, since 1692, successfully held their own, even to such an extent as to become aggressive against the Zuñis, who adhered to the Spanish cause. Of Spanish incursions into the country west of the Moquis, the most important in point of numbers was that by Zaldivar, and it seems that it made no impression, and was not intended for anything else than exploration; as such it proved not encouraging. The retreat of the Cosninos into the Colorado gorges was therefore due to other causes. The pressure exercised over them by the Navajos, and possibly by the Yutes, is much more likely to have occasioned it than any imagined panic created by the appearance of Spaniards in small numbers and at rare intervals.

Most, if not all, of the ruins scattered over the regions adjacent to the Colorado River, antedate the coming of the white man. Upon the causes of their abandonment it is

*Observations on the Havesu-pai Indians* (Proceedings U. S. National Museum, vol. xiv. p. 387).

<sup>1</sup> *Classification of Western Languages, etc.* (in volume vii. of the Reports of the U. S. Geographical Surveys west of the 100th Meridian, p. 415). He says: "A tribe inhabiting Cataract Creek, a southern affluent of Colorado River, and calling themselves Avesu-pai, 'people down below.' A locality called Konino Caves lies in the Tonto basin."

of course useless for me to speculate. Some of them may be those of Moqui villages, some those of Cosninos settlements. The former, with the exception of Ahua-tuyba, are prehistoric; but we may hope to obtain light upon their past in the traditions of the Moquis. As to the others there is a possibility that several of them were occupied not more than one hundred years ago. The remainder belong to the class of ruins that are not only prehistoric, but in regard to which there is a wide field of study open in the folk-lore of existing tribes.

About the archæology of the Apache reservation I can present at least some results of personal investigation.

IX.

THE UPPER COURSE OF THE LITTLE COLORADO RIVER, AND THE APACHE RESERVATION IN EASTERN ARIZONA.

THE Little Colorado River, or Colorado Chiquito, rises very near the boundary line of New Mexico and Arizona, on the eastern declivity of Green's Peak, one of the summits of the Sierra Blanca in Arizona.<sup>1</sup> It flows in a direction almost due north to the recent settlement of St. John's, and thence to the northwest in a muddy sluggish current, not wide, but sometimes with treacherous approaches. The district included in this chapter embraces the country lying between the parallels of  $33\frac{1}{2}^{\circ}$  and  $34\frac{1}{2}^{\circ}$ , and the 109th and 110th meridians, or between the junction of the Little Colorado and Zuffi streams in the north, and the southern limits of the Prieto plateau in the south. I entered this region from Zuffi, that is, from the northeast, and traversed it to the Gila River, branching off both to the right and the left as occasion required.

After we leave the Cañada del Venado, the country takes a dismal aspect. Dreary levels, interrupted by equally dreary hillocks and buttes, extend in almost every direction. Vegetation is scant and low. Nothing pleases the eye, unless it be the lofty Sierra Blanca in the distant south, and the outlines of the Sierra del Dátil and of the Escudilla in the southeast. There is no water between the Little Colorado and the cross-

<sup>1</sup> 10,093 feet above the sea level.

ing of the Zuñi stream. This is no country for Indian tillers of the soil, and no ruins may be looked for. St. John's lies on a flat, lined by gravelly slopes on one side and by volcanic humps and low cones on the other. In the bottom near the Colorado traces of ancient irrigating ditches have been detected, and on one of the hills of gravel I found very faint indications of former abodes, — so faint that I could not determine what kind of buildings had originally stood on the spot. The pottery fragments were white or gray, decorated with black lines, and plain gray ware.

I was informed at St. John's that the old acequias, which I have mentioned, had formerly been lined with some cement-like composition, every trace of which had vanished when I saw the place in 1883; but I believe that the statement is true, and my reasons will appear later.

The ruins in the country north of the Sierra Blanca lie along the few watercourses, and are separated from each other by expanses of varying widths and of singular bleakness and aridity. Twenty miles intervene between the small clusters about the Cañada del Venado and the indistinct ruins near St. John's; seventeen miles between the latter point and the Concho stream, with its caves and pueblos; fifteen to twenty miles separate St. John's from the ruins about the Valle Redondo and Springerville to the south; and the nearest point to the east where vestiges of sedentary occupation are found, Tule, lies at least twelve miles away. Along the streams tributary to the Little Colorado River the ruins appear sometimes isolated, again in groups and clusters, and two types of architecture are plainly distinguishable.

My investigations were first carried on at the place called Tule, fourteen miles east of St. John's. Tule and Tusas lie only a short distance from each other, and in the same gorge or narrow valley, which is irrigated by a stream of consid-

erable dimensions. **But** here, as well as everywhere else in the Southwest, this sinks at a certain distance from its mouth. Where I examined it in April, it ran quite rapidly. Tusas is a beautiful spot; the forests are not more than two miles off; the soil is fertile, and where it is not cultivated grass grows tall and abundant. Volcanic rocks jut out along the border of the valley, and the rim is formed by steep though not high mesas, which impart a picturesque aspect to the landscape. In one of these rocks a sacrificial cave was discovered by Mr. Cushing, from which many valuable objects have passed into private collections or into the National Museum at Washington.<sup>1</sup> I examined the narrow fissure in which most of the specimens were found, and obtained from it a number of plume-sticks (prayer-sticks), fragments of baskets, and a sandal made of yucca leaves and similar to those which were found in the Tzé-yi and on the Upper Gila. Near this cave is a small-house ruin, having a courtyard attached to the building. The pottery of all the ruins at Tule and Tusas is of the ancient kind, with much corrugated ware handsomely finished.

These small-house ruins are side by side with communal pueblos, and both kinds of architectural types are accompanied by the same class of potsherds. On Plate I., Figures 36 and 37, I have given ground plans of the pueblo ruins at Las Tusas. It will be seen that they belong to the most compact class, being composed of only one house in each case. The pueblo at Las Tusas is somewhat larger, and has been partially excavated, the Mexican inhabitants having opened the rooms of the old village, repaired them in a measure, and

<sup>1</sup> In this cave Mr. Cushing found a wooden fetich or idol in the shape of a snake, with the head painted red and the body green. In Chapter VII. (page 325) I have spoken of similar finds, one on the line of the Atlantic and Pacific Railroad between Coolidge and Fort Wingate, and the other in the caves at Mangus Springs on the Gila.

roofed and plastered them anew. In this ruin I noticed the traces of at least one circular estufa. Stone hatchets and axes were very abundant in this locality. The valley is so fertile and well watered that we need not be surprised to see at least three small communal villages along the course of the stream within three miles. None of them could have sheltered over two hundred inhabitants.

I had heard of ancient irrigating ditches in this locality said to be laid in cement, like the one at St. John's of which I have spoken. To my surprise, I saw, while passing through Tule, the remains of two of these "lined" canals, which are undoubtedly ancient, and the lining of which is undoubtedly artificial. One of them is a trough sunk in the ground, 0.25 m. deep, 0.76 m. wide, and lined with solid concrete varying in thickness between 0.08 and 0.12 m. This trough was not connected with any rock, but imbedded in movable soil, and the concrete resembled ferruginous sandstone, or limestone, and was apparently crystalline in parts. I brought two specimens of this concrete to the Peabody Museum at Cambridge, begging for an analysis of it, but I have not learned whether it has been made. The other channel is a flat trough, 1.30 m. wide and 0.20 m. thick, resting on partly decayed slabs of the rock cropping out in the vicinity, and laid on the ground. At first I supposed the channels were made of stones joined together in the common way, but had to come to the conclusion that it was some kind of artificial compound, sunk into the soil where the ground was too high, and laid on top of it wherever it was too much depressed, so as to avoid both cutting and filling. I append a sketch of these singular contrivances, adding that they were noticed long before me by members of the United States Geographical Surveys.<sup>1</sup> I also

<sup>1</sup> *Annual Report of the Chief of Engineers, 1879. Part III., Appendix O O (App. E), p. 2220.* Lieut. Rogers Birnie says: "A Mexican living at Tule Spring

heard that at Ahua-tuyba pipes and channels made in a similar manner had been found. There would be nothing strange in this, since Ahua-tuyba was a pueblo inhabited until 1700, and such an advance in contrivances for irrigating might be



ARTIFICIAL CHANNELS AT TULE.

attributed to Spanish influence, but the same reasons do not obtain at Tule. The ruins there are strictly prehistoric, perhaps even pre-traditional, and they were certainly abandoned previous to the sixteenth century.

Only an analysis of the concrete could give an accurate idea of the degree of progress which these artificial channels imply. The other artificial objects found with the ruins do not differ at all from Pueblo culture in general. The corrugated pottery is of handsomer make than that of more northern and extreme eastern ruins, but it cannot compare with that of San Matéo and of the Mimbres region. Stone implements are neither better nor worse than common, and the fictile work is of the same kind as that found in caves, inhabited or sacrificial, in various parts of the Southwest.

Dreary levels, grassy and bleak, separate Tule from the head-waters of the Rio Concho, and the distance is about seventeen miles. On these expanses no antiquities can be

is now using to irrigate his land a ditch of stone. The water used is derived from the Tule Spring, and the ditch has been so long in use that it is, so to speak, fossilized. The present owner knows nothing of who made it, and, with reason, attributes it to the old inhabitants. Lying on the surface of the ground near by are the remains of another ditch, the segments of trough-shaped stones being in position for one hundred yards or more." It is to be noted that the settlement at Tule is of quite recent origin.

expected. At the Concho settlement, however, several ruins and sacrificial caves exist, which, owing to the inclemency of the weather, I could not investigate. From what I heard, I infer that the ruins belong to the communal type; small houses are also reported as existing in that vicinity.

Between the sources of the Concho and the settlement of Show-low, on the northern confines of the Apache reservation of Arizona, the country is one of monotonous mesas of lava or trap, destitute of trees as well as of permanent water, except where, in its western sections, several streams flow towards the Little Colorado River. Antelopes roamed there a few years ago undisturbed. We long for the pine groves that loom up along the base of the Sierra Blanca, and the eye rests with pleasure on the sharp profile of the San Francisco Mountains in the distant northwest.

Ruins of pueblos or of small-house villages, also remains of ancient irrigating ditches, are said to exist in the vicinity of Round Valley and Springerville. The important ruins at Carrizo lie in close proximity to those of Tule, but can be merely mentioned here. In short, the mountain group of the Sierra Blanca contains, and is surrounded by, a number of ruins of aboriginal settlements of very ancient date, concerning which the Zuñi and Moqui traditions, those of the Pimas and perhaps of the Opatas also, and possibly the folk-lore of the Apaches, may afford some light.

In the first half of the sixteenth century the whole of Eastern Arizona, from the Sonora boundary as far north as the Moqui pueblos, was devoid of permanent Indian villages. Fray Marcos of Nizza visited the Sobaypuris, a branch of the Northern Pimas, in the San Pedro valley.<sup>1</sup> In a measure those Indians were sedentary; but their dwellings were not more permanent than those of the Pimas are to-day. North of the

<sup>1</sup> *Relation*, p. 269 *et seq.*

Gila a wilderness extended to the Moquis, and the friar does not speak of the Apaches as roaming over that region, whereas in the following year they were noticed by the members of the expedition of Coronado. Castañeda, speaking of the country along the Gila and north of it, says: "The inhabitants are the most barbarous nation as yet found in those regions. These Indians dwell in isolated huts, and subsist by hunting alone: all the rest of the country is deserted and covered with pine forests."<sup>1</sup>

It is therefore safe to look upon all the ruins of Indian villages in the section embraced by this chapter as prehistoric, and no clue exists to the tribes by whom they were built, or to the cause and manner of their abandonment.

Two distinct types of construction are represented in the Apache reservation, the compact pueblo village and the small house, the latter connected with a courtyard or enclosure of stone. The former type reaches only as far as the environs of Fort Apache, or a little north of  $33\frac{1}{2}^{\circ}$ , that is, the same latitude as San Marcial in the Rio Grande valley. It seems therefore that in Arizona as well as in New Mexico the area of communal structures is bounded in the south by the same parallel of latitude.

Extensive pine woods cover the flanks of the Sierra Blanca. In the north they begin at Show-low, or north of latitude  $34^{\circ}$ ; southward they extend to Rocky Cañon, or latitude  $33\frac{1}{2}^{\circ}$ . Their eastern limits I cannot define with accuracy; to the west, it is certain that they reach longitude  $110\frac{1}{2}^{\circ}$ . The highest summits, Thomas Peak<sup>2</sup> and Ord's Peak,<sup>3</sup> are bare of trees.<sup>4</sup> All this forest region is well watered by clear mountain brooks, the most northerly of which, like the

<sup>1</sup> *Cibola*, p. 162.

<sup>2</sup> 11,496 feet high.

<sup>3</sup> 10,266 feet high

<sup>4</sup> The forest line on the Sierra Blanca is 11,100 feet. Ord's Peak lies below it; still the summit is bald.

Colorado Chiquito, Show-low Creek, and the La Plata, belong to the drainage system of the Great Colorado; while the others, which on their main course run from east to west, like the Sierra Blanca rivers and the Rio Prieto, form the great Rio Salado, a tributary of the Gila; and those south of the Prieto, Eagle Creek, the Gila Bonita, Ash Creek, Sycamore Creek, all unimportant streamlets, flow directly into the Gila. The valleys are narrow, often with precipitous sides, fertile bottoms alternating with picturesque gorges. Woods are everywhere close at hand. The yucca plant, important to the natives both for food and for industrial uses, is very abundant. On the whole, it is a region extremely suitable for a sedentary Indian population. But the winters are cold, and snow falls often and in large quantities. The average elevation above sea level being over five thousand feet may explain why the specifically pueblo architecture was still adopted by some of its ancient inhabitants. But the beauty of the region, and its abundance of game and fish, also explains why it may have been coveted both by sedentary and roaming Indians, and in such a struggle the latter always ultimately prevail.

At Show-low the forest region covers the northerly spurs, and a little creek meanders through a valley which in its narrowness still presents a bleak appearance. On the south side of this arroyo stands the ruin, shown on Plate I. Figure 38, which is that of a communal pueblo consisting of two houses with one circular estufa. The walls are 0.20 m. thick, built of sandstone, and only the foundations remain. Situated on a rise above a fertile bottom, this pueblo occupied a good position both for agriculture and defence. Among the artificial objects I noticed nothing unusual except the pottery, which resembles that at Tule. There are specimens with glossy decorative lines, but the glaze is more carefully applied, the

designs are more perfectly executed, and the corrugated and indented pieces especially are of superior workmanship. Indented and corrugated specimens, painted red, and similar to those found at San Matéo and on the Rio Grande at San Diego, are quite common, and here I saw for the first time corrugated sherds, painted outside with patterns of a symbolic origin, the painted lines being applied without attempt at harmony with the plastic appearance of the surface. A quarter of a mile south of the dwellings of Mr. Huning and of Mr. C. E. Cooley, to both of whom I am greatly indebted for their courtesies and kind assistance, are small-house ruins, the rooms of which, while not numerous, are comparatively spacious, having a courtyard attached to them. The stone used in the construction of the houses is sandstone and lava rubble. Although these ruins are of a distinct type from those first mentioned, the pottery is identical; but the sherds appeared more deteriorated, as if the ruin was of an older date. Such may be the case, but the degree of decay alone is no criterion. Small ruins crumble and turn to rubbish more rapidly than large ones, and moreover the large pueblo has been frequently disturbed by relic hunters, and potsherds have been brought to the surface from below, thus presenting a better appearance.

While at Show-low I heard of ruins on the La Plata, not far away, but could not ascertain to what type of construction they belonged.

From Show-low I reached Fort Apache, the main military post of the reservation, situated in latitude  $33\frac{1}{2}^{\circ}$ , and at an altitude of five thousand feet above the Gulf of Mexico. I copy from my diary of April 19, 1883, the following description of the road which I had to follow: —

“We rose, from an altitude of 6,100 feet at Cooley’s through stately forests of pines, — splendid, straight trees,

all *Pinus ponderosa*. The road goes over high mountain ridges, wooded on all sides, and in the distance an occasional glimpse is caught of the snow-clad tops of the Sierra Blanca. The reservation begins about seven miles from Show-low, near Clark and Kinder's Ranch, and the wild, heavily wooded mountain scenery, with an occasional rivulet, closes in upon all sides. A new species of juniper appears as we near the highest point of the Mogollones, as this spur of the Sierra Blanca is called. The divide is 7,400 feet high, and the descent is steep and tortuous. All along, the soil is very good, and the wheel-tracks are deeply worn in a dark loam. But the lava scattered all over it makes the road very rough. The highest point is about seventeen miles from Show-low; thence we reach White River. The grass becomes fresh and green; oaks appear, leafless yet, and the evergreen 'encino,' in tall specimens. To the left of the road patches covered with excellent grass skirt the cañon of the river, which runs about east-northeast to west-southwest in a rocky cleft with vertical sides, the rock of which is hard black and gray lava. But on the right side of the road the slopes are often vertical buttresses of red sandstone, rising at least a thousand feet. Dark pines sweep up past perpendicular cliffs to the shaggy crest. Eight miles from Fort Apache lay the old ranch of Mr. Cooley. The river is at the foot of the cliffs, and at least four hundred feet beneath the road, and the forests are skirted in places by fertile bottoms, in one of which his house stood. The bottom is scarcely five feet above the river, grassy, with fine soil, and acequias run through it. Pueblo ruins [Plate I. Figure 39] stand close by the old house. They are built of whitish hard lava, and appear like a shapeless rubbish mass, about ten feet high. The pottery is finely corrugated, indented, and painted black and white, and gray and white. Some pieces are unusually thick,

and on others the corrugations are very delicate. It bears much resemblance to the pottery of the pueblos of Show-low, but the corrugated ware, which largely predominates, is of finer, more intricate design. There are the usual patterns of black on red, and there is black and red plain, but no glossy specimens. The ruin is evidently very old. It is in a well sheltered situation, and the sun shines into the bottom only from the south. . . . On the plateau above, about half a mile from the brink of the cañon and beneath trees, lies another ruin. Its appearance is about the same, also the pottery. Trees have grown in it, one of which is six feet six inches in diameter. The other trees are encinos, about nineteen inches to two feet in girth.

“Soon after leaving this spot, the valley opened and presented a most beautiful appearance. The grass is green, *Verbena communis* in bloom, and junipers and oaks in groves. The mountains around, rising to one thousand feet and higher, are clad with pine forests up to their rocky tops. The red sandstone gleams through the trees in precipitous cliffs. There is verdure and life everywhere, in beautiful contrast with the bold crags and the deep cleft of the cañon of White River, a roaring mountain torrent, with waters milky to-day, but generally clear and limpid.”

Fort Apache lies at the junction of the north and east forks of the White Mountain River, in a fine situation. High mesas line the valley, which bears luxuriant grass, tall yucca, junipers, and oak. In the west, a glimpse is caught of Kelly's Butte, a dome-shaped peak; in the east rise the summits of the Sierra Blanca. On both sides of the river for several miles, either on the banks or on flats extending some distance inland, stand aboriginal ruins of both types of architecture. One of them, a compact pueblo, is shown on Plate I. Figure 40. It lies about two miles east of the post, two hundred

meters south of the stream, and an embankment, denoting an old river bed, is visible between the ruin and the river. The pueblo forms a hollow rectangle, with no perceptible ingress on the ground floor. It was not over two stories high, and the cells are small, though larger than the majority of those in more northerly ruins.

The stone axes are of the kind peculiar to the southern parts of the Southwest, that is, with the groove only on three sides; the metates are rude and show no signs of particular workmanship, and the pottery displays the handsome ornamentation already noticed at Show-low. This latter feature cannot be due to local influences only. The material and the pigments, their greater variety and superior quality, depend of course upon the presence of mineral matter; but the delicate plastic ornamentation and the habit of painting the corrugated and indented surfaces, result from an advance distributed over a vast extent of territory.

One of the largest ruins, if not the largest in the Apache reservation, lies at the upper end of the Cañada del Carrizo. Its distance from the post I estimate at about five miles in a westerly direction. It stands on both sides of a dry torrent, in the bed of which pines are growing. Still it does not appear that, as at the Pueblo Largo in the Galisteo region, this arroyo has been excavated since the village was built. As at Abó, the arroyo was there before the pueblo was constructed. While it is not improbable that the buildings were contemporaneously inhabited on both sides of the torrent, it is by no means an absolute certainty.

The condition of the ruin was such as to leave me in doubt whether the houses were more than one story high. Some of them may have been two-storied, but it seemed that one story was the rule. On the whole it reminded me much of the pueblo at Cebollita near Acoma, but the stone-work was

not so handsome. The ruins on both sides of the arroyo are nearly equal in size; I computed the western one to have accommodated one hundred and six families, the eastern ninety-one, or from three to four hundred souls each. If the occupation was simultaneous, this would indicate an aggregate population of not more than eight hundred souls.

This village appeared to be a compact small-house settlement, and there are, outside of each of the two groups, scattered smaller buildings; but they are in too close proximity to the main clusters to suggest summer ranchos only. The wide vale on which the ruins are situated is without water for irrigation, and I did not observe any provision made for storing, nor did I notice estufas.

About ten miles to the west from these ruins, I was informed, there stood a watch-tower, and I was also told of an interesting ruin on the summit of some prominent butte. As to the mesas that line the valley in which Fort Apache is constructed contradictory reports reached me; but I think there can only be isolated buildings, and perhaps towers, or enclosures for retreat and observation. A serious injury to my left foot prevented me from attempting any climbing, or I should have made the ascent and satisfied myself of the exact condition of affairs.

East of the post, and several miles higher up the east fork of White Mountain River, the country becomes so rugged that no pueblos can be expected there. I diligently inquired for cliff-houses and cave dwellings, but obtained no satisfactory information. In the west, the river, after the meeting of its two branches, enters the deep cañones through which it flows to its junction with the Rio Prieto, or Black River, to form the Rio Salado. In these cañones cliff-houses, cliff burials, and partitioned caves have been examined and reported upon, to which I shall refer further on.

Before turning to the interesting remains on the Arroyo del Carrizo, I would remark that the description of the Apache reservation furnished by the chroniclers of Coronado is so clear as to permit the identification of all the main streams that flow through it, the Gila, strange to say, excepted. Even the Gila, if we consider the changing nature of its volume of water, can be identified by the statements of Juan Jaramillo; but the Rio Prieto, White Mountain River, and the streams about Show-low are clearly indicated.<sup>1</sup> This leads to the inference that Coronado marched very nearly on the present route from the Gila to Fort Apache. He, as well as Fray Marcos of Nizza, found no permanent Indian settlements, which corroborates the testimony of the ruins, that they are of quite ancient date.

The Carrizo lies about twenty-five miles north of west from Fort Apache. Its waters are tributary to the Rio Salado, and enter that stream below its formation by the junction of the Rio Prieto and the White Mountain. Passing east of the prominent height known as Kelly's Butte, the trail first winds between high wooded slopes occasionally crowned by crags. Vegetation is comparatively vigorous; the yuccas and opuntias grow in tall specimens, and one variety of plati-opuntia especially assumes large proportions. Towards Cedar Creek the valley narrows to a rent, cedars,

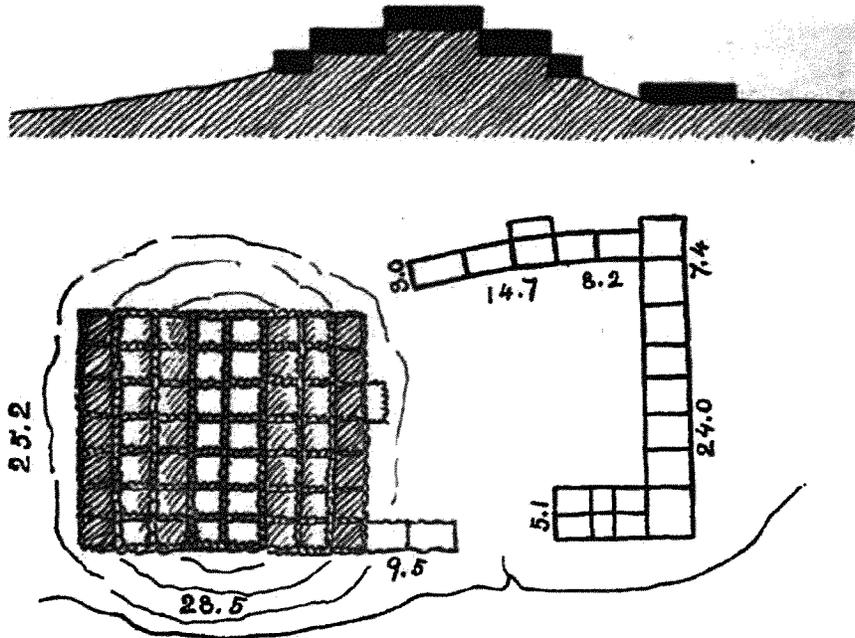
<sup>1</sup> Jaramillo, *Relation*, p. 368 *et seq.* The "Rio de las Balsas," which the Spaniards had to cross on rafts, must have been the Gila; but Jaramillo is the only chronicler of Coronado's expedition who mentions it. The "Rio de la Barranca" is clearly the Prieto; the "Rio Prieto," White Mountain River; and the "Ruisseaux Frais," or cool creeks, are the streamlets about Show-low, since he says that they were met with at the northern end of the extensive pine forests: "à l'extrémité de laquelle nous trouvâmes des ruisseaux frais." The next water-course was the "Rio Vermejo," so called on account of its reddish waters, which was two days' march from Hauicu. This corresponds to the distance from the Little Colorado to that village, if we consider that the Spaniards marched very slowly owing to the exhausted condition of their animals.

oaks, and encinos clustering about the trail, with tall pines interspersed. From the crest, which lies about eight miles from Fort Apache, a wide view is enjoyed. To the west a vast undulating basin stretches, bounded by a range of high mesas. The soil is fertile, groves appear, and in the centre rises a perfectly conical peak of black lava. East of it is a huge black lump (Mogote in Spanish) of the same rock. Mesas with cliffs of red sandstone border the basin in the north, northeast, and east. Almost through the centre runs Cedar Creek, a narrow trough, containing water, and groves of noble cottonwoods. Along the western border of this basin Carrizo Creek flows in a deep cañon, the fertile bottom of which is half a mile wide in places. Gorges run into it at right angles, with small brooks in them. Cedar Creek is the only water between White Mountain River and the Carrizo; and the descent into the bottom of the last is very steep.

On the morning of the 2d of May, 1883, when I glanced at the landscape as it appeared from the cottonwood groves along the Carrizo, it presented a charming appearance. A light haze hung over the grassy vales and wooded slopes, and for the first time in my Southwestern experience I was reminded somewhat of English scenery. But the only human beings that at rare intervals enlivened the picture were Apaches, and their half-globular huts and scanty corn patches could not compensate for the absence of higher cultivation.

On a natural platform, grassy, with a steep declivity to the south and a high hill rising above it in the east, near the junction of two creeks running into the Carrizo, I examined the pueblo ruin of which I annex a sketch. The Apaches have greatly injured its appearance by using the stones of its walls for the construction of their semicircular shelters

roofed over with boughs. An ancient acequia traverses the triangular bottom at the southern end of the ruin. The interest attached to this ruin consists in its being somewhat like an illustration of the theory of Mr. Cushing about the



PLAN AND SECTION OF RUIN ON CARRIZO CREEK.

origin of many-storied architecture in the Southwest.<sup>1</sup> The main house is built on a slope, and appears to be three stories high, but upon closer examination each row is only

<sup>1</sup> *Pueblo Pottery* (Report of the Bureau of Ethnology, 1882-83, p. 477). Mr. Cushing's views, however, require "the employment of rafters and the formation of the flat roof, as a means of supplying a level entrance-way and floor to rooms which, built above and to the rear of a first line of houses, yet extended partially over the latter." There is no trace of such overlapping at the Carrizo.

one-storied; since, as they are erected on both slopes, they rise successively, and thus present the appearance of three tiers superposed.

The number of persons which this ruin can have sheltered is small, not more than one hundred at most. The usual objects found are mortars of lava, and concave metates are quite common, but there is very little obsidian and flint; painted potsherds, like those found at the ruins near Fort Apache, are abundant, but corrugated and indented pottery is scarce.

About sixty meters west of the ruin stood an isolated small building measuring  $3\frac{1}{2}$  meters from east to west and 4 meters from north to south. It was open to the south, and appeared as if there had never been any roof on it. I was forcibly struck with the resemblance of this little structure to the so called "Sun-house" at the ruins of Matzaki in the Zuñi country, which is still in use for rude astronomical purposes, and the erect slab of sandstone standing in it has the circular face of the sun, with eyes and mouth carved on its surface. Stone fetiches consisting of natural concretions are arranged in front of the image. The building at the Carrizo is of course empty, but its appearance suggested to me the idea of its having possibly been a sun-house. But very probably it was merely a rectangular guard-house, although it was never over one story high. Its situation is well suited for a place of observation.

I am not informed in regard to ruins farther west, along the course of Cibicu Creek, a more westerly tributary of Upper Salt River. About the ruins reported to exist on the latter stream I have already made a short statement, and must defer further mention to another chapter of this report, and will only allude to the deposits of rock salt from which the river derives its name. They lie in a region not easily

accessible, and have been visited only by a few persons. The Spanish exploring party under Garcia Lopez de Cardenas, on their return from the journey to the Grand Cañon of the Colorado River, reported that "on their march they arrived at a cascade that fell from a rock; and the guides said that the white crystals hanging around it were of salt. A quantity of these were gathered and distributed at Cibola, where everything was told to the General."<sup>1</sup>

It is not clear whether the Spaniards returned by the way of Moqui, or whether they took a more southerly route. If the latter were the case, they may possibly have reached the rock-salt caves on the Upper Salado.

South of Fort Apache a high plateau extends as far as Rocky Cañon, beginning with the bare stretch of "Seven-mile Hill," through which runs Turkey Creek with a permanent water-flow. Beyond are the forests which line the course of the Rio Prieto, or Black River. This latter stream is evidently the "Rio de la Barranca" of Jaramillo.<sup>2</sup> It constitutes the main branch of Salt River, rushing and seething through a narrow cleft bordered by picturesque rocks, on which vegetation improves every possible foothold afforded either by slopes or by the river banks. This river has beautifully clear water, but the country is so mountainous and broken as to preclude all possibility of its occupation by agricultural aborigines except perhaps as a temporary refuge. I could not obtain any information regarding ruins between the Prieto and Rocky Cañon, and as the whole plateau is wooded I infer that there are none. Farther south, along the tributaries of the Gila, especially on Eagle Creek, ruins again appear. Cliff-houses, and, I am told, large pueblos also, have been examined on the latter. If the statement as to the pueblo ruins is correct, it would place the southern limit of

<sup>1</sup> *Cibola*, p. 64.

<sup>2</sup> *Relation*, p. 368.

the compact communal type of houses about half a degree of latitude farther south than I have allowed for this section of Arizona. But it is not impossible that these ruins belong to still another type, of which I shall speak in connection with the regions of the Gila and Salado Rivers. On the Gila Bonito, another tributary of the main Gila which runs almost parallel to Eagle Creek, cliff-houses are known to exist. I was unable to penetrate to these northern confluents of the great artery of Southern Arizona. My attention was directed to the peculiar culture, evidenced by a peculiar architecture, which the ruins along the Gila as well as those along the Salado denote. I therefore journeyed towards San Carlos as directly as possible. After I left the shade of the pine woods on the brink of Rocky Cañon, it appeared as if I were looking down upon another world, so different was the vegetation, so distinct the sky, from what the region which I was leaving had presented to me.

## X.

THE GILA, SALADO, AND LOWER VERDE RIVERS  
OF ARIZONA.

FROM the brink of Rocky Cañon the view to the south is of singular bleakness. An arid valley or basin lies below, and in it a line of scattered cottonwoods indicates the course of Ash Creek. Beyond, the ground rises to the bald crests of the Gila range. Bare peaks loom up in the west; denuded summits, dim with haze, in the east; in the south two towering mountains appear in the distance. A complete change takes place in vegetation. Cactuses and the mezcal agave dot the valley. On Ash Creek there are traces of small-house ruins, but so faint that I do not reproduce their outlines.

From Ash Creek Station to the former Apache subagency on the banks of the Gila the distance is a little over twenty miles, and the decrease in altitude amounts to more than three thousand feet. It is at least as great, if not greater, from Queen's Gap, which is only twelve miles from the Gila in an air line.<sup>1</sup> From that point on, the peculiar flora of Southern Arizona crowds the trail. Every shrub, every plant, is thorny and spiny. The thickets are composed of huge Echinocacti, monstrous *Opuntia*æ, *Fouquieria splendens*,<sup>2</sup> *Prosopis juliflora*, and zahuaros, gigantic columnar *Cerei* of

<sup>1</sup> The elevation of the springs near the brink of Rocky Cañon is given at 5,697 feet. The subagency lies 2,597 feet above the sea.

<sup>2</sup> Called Ocotilla in Spanish.

Arizona, which tower above the slopes and crests in the distance like telegraph poles. The change in a few hours from the pine forests of the north to this sub-tropical land is exceedingly striking. When, on the afternoon of the 9th of May, 1883, I began to descend the southern declivity of the Gila range, all this vegetation of uncouth plants was covered with the fairest blossoms. The Echinocacti were crowned with wreaths of white; the *Opuntia* displayed large flowers of pink, scarlet, orange, and white; the mezquite was loaded with drooping clusters of yellow; the *Fouquieria* blazed with tall spikes of crimson; the *zahuaro* was beginning to display its coronets of white blooms. It was a maze of flowering monsters, all very forbidding, not only in appearance, but on account of the dangerous spines and thorns with which they defy approach. I felt then that the animal life must be in harmony with this strange flora; that these jungles must be a fit home for the ugly mygale, the scolopendra, the scorpion, and the much dreaded though really harmless Gila monster.

No ancient remains are known to me in this region, except those along Ash Creek. In the cañones of the San Carlos stream, cliff-houses are said to exist; the slopes are too steep, too arid and rocky, for the dwellings of man.

After nightfall I camped on the Gila River under the shade of tall cottonwoods. The air was still, clear, and pleasantly warm. The front of Mount Turnbull loomed up in the moonlight like a huge phantom; camp-fires of Apaches glimmered along its base; and from the tree-tops the voice of the mocking-bird rose, clear and endlessly modulated in the stillness of the beautiful night.

The bottom of the Gila is not wide; arid mountains line it on both the north and the south. Two towering masses, Mount Turnbull and Mount Graham, rise abruptly on the

south side of the narrow valley, the latter to an elevation of 8,000 feet above the river.<sup>1</sup> Their slopes are partly perpendicular, and mesas jut out along their base. The valley is sandy, and the sunlight is reflected with a dazzling glare from the white ground. Even in May the thermometer mounts to one hundred degrees and above. When the wind sweeps through this trough, it raises formidable clouds of dust, which clothe the spiny vegetation and the cottonwoods with a grayish hue. Thus the Gila valley presents no prepossessing appearance; the mountains are arid and forbidding, the valley itself hot and dreary; yet it is fertile where irrigated, and the Gila stream has a sufficient volume of water. For an agricultural Indian population, it was a region worth living in, and worth holding on to as long as possible. But many portions of it are malarial, especially the vicinity of Fort Thomas, and it may be remembered that Fort Goodwin, which stood near the latter post, was at least partially abandoned on account of its unhealthy location.

Winters are very mild; snow falls occasionally, but never lasts. The general climatic conditions are such as to compel the native to afford more space and air for his abodes. The communal or honeycomb clusters of buildings would have been almost uninhabitable, at least in summer, and summers last long on the Gila. A new variety of buildings had to be devised to make the sedentary Indian comfortable.

I have already spoken of the ruins on Eagle Creek and other northern tributaries of the Gila, like the San Francisco River. I have not been able to visit San José del Pueblo Viejo and Solomonsville, but from descriptions I conclude that the architectural remains there are like those at San Carlos, and that at the former point there existed a comparatively extensive ancient settlement. Vestiges of acequias are

<sup>1</sup> The altitude of Mount Graham is 10,516 feet; Mount Turnbull is lower.

still visible, and the pottery resembles that from the vicinity of Fort Apache.

I regret my inability to explore these sites, but much more so that of the ruins at Fort Grant on the southern foot of Mount Graham. All I know about them is that they exist, and that the soil there is of a reddish color, and that pine forests begin in the vicinity. These are points of historical interest. When Coronado marched into Arizona from Sonora, he passed a place which he (or Fray Marcos of Nizza) called "Chichiltic-Calli," a word which in the Nahuatl language of Central Mexico signified "the red house." That ruined building has heretofore been identified with the well known aboriginal ruins of Casa Grande on the Gila, one degree of longitude farther west.

I have carefully studied all the original authorities upon Coronado's march, which have fallen within my reach, and I have also investigated those portions of Arizona through which Coronado may have passed, with the special object of solving if possible the question of his exact route.

In the preceding chapter I have stated that the Spaniards traversed the Apache reservation, at least from the Rio Prieto to Show-low, and thence reached the Little Colorado and Zufi streams. To get to the Rio Prieto without crossing the Gila is impossible for any one coming from the south; to reach the former from Casa Grande is possible, but only by excessively long detours, and through a country whose appearance by no means agrees with that described by the chroniclers of Coronado. Neither does the picture of Chichiltic-Calli and of its environs in the least conform to Casa Grande or its surroundings. Castañeda, who is the most explicit of all, speaks of Chichiltic-Calli in the following terms:—

"When the general had traversed all the inhabited country as far as Chichilticale, where the desert begins, and had seen

that there was nothing good in it, he could not resist a feeling of sadness, although many marvels were promised to him further on. Nobody had seen them except the Indians who had accompanied the negro, and it had already been found several times that they lied. He was particularly disappointed in seeing that Chichilticale, of which so much had been told, was nothing but a ruined house without roof, which, however, appeared to have been fortified. It could be seen that this house, built of red earth, was the work of people who were civilized and had come from afar."

Further on he writes: "The name of Chichilticale was formerly given to this place, because the priests found in the vicinity a house that had been inhabited for a long time by a people that came from Cibola. The soil of that region is red. The house was large, and appeared to have served as a fortress. It seems it was anciently destroyed by the inhabitants."

Again in another place: "At Chichilticale the country is no longer covered with thorny trees, and its aspect changes."<sup>1</sup>

The soil around Casa Grande is of a glaring white, vegetation is particularly thorny, and remains so for a long distance towards the north. The few mountains where Conifers grow are distant, and their aspect no different from that of ranges farther south. The description of Castañeda cannot, therefore, apply to Casa Grande.

Jaramillo is less detailed and more confused. Still it is clear, especially from his statements regarding the water-courses, that the Red House could not have been Casa Grande.<sup>2</sup> That ruin is perfectly white at present; it may have been once covered with a reddish paint, but I failed to

<sup>1</sup> *Cibola*, pp. 160-162.

<sup>2</sup> *Relation*, p. 368. He does not mention the ruin, but speaks of a mountain chain called "Chichiltic-Calli."

notice any trace of it on the outside. Part of the roof must have still been in existence in 1540, for I was informed that the Apaches burnt the last remnants of it.

It is certain that Coronado marched up the Sonora River very nearly to its source, and thence either across to the San Pedro valley, or else to the Santa Cruz. In case he chose the latter route, he would have had to contend with much greater difficulties in regard to water, and would besides have left the Indian settlements, which are what Castañeda means by "inhabited country," much sooner. The Sobaypuris had their villages within a short distance of Arivaypa Creek, and the latter flows not far from Fort Grant. Everything, in my opinion, points towards the latter place, or to some spot in its neighborhood, as the locality where Coronado passed, and where Chichiltic-Calli, the Red House, stood in 1540. As three centuries and a half have elapsed since, in a climate much more humid than that of the Gila, it is not improbable that the ruin may have become reduced, at the present day, to mere rubbish mounds.

At Fort Thomas I examined the ruins shown on Plate I. Figure 42. They are distinctly of the small-house type, and rows of stones indicating low enclosures connect the mounds that denote former buildings. There I received the first impression of the peculiar checker-board arrangement of which I have already spoken in Chapter VII. in connection with the ruins on the Mimbres and the Upper Gila of New Mexico. The remains about Fort Thomas are much decayed, so that it is almost impossible without excavation to re-establish the connecting lines. It struck me that the amount of stone rubbish lying about was quite inconsiderable, and that the mounds, though low, seemed to consist of compact earth. This suggested the thought that the houses, except their foundations, might have been of adobe. I was confirmed

in this supposition by descriptions which an old resident gave me of the ruins at Pueblo Viejo. The largest mound at Fort Thomas measured 14.7 by 13.2 meters (48 by 43 feet), and one of the sides of an enclosure was 22.5 meters (74 feet) long.

With these ruins there was an elliptical depression with a raised rim or border about six meters in width. The dimensions of the basin or hollow were  $34\frac{1}{2}$  by  $14\frac{3}{4}$  meters (190 by 48 feet); its depth was inconsiderable. This structure I can only suppose to have been a tank. The artificial objects bore the usual character, and the pottery was the same as at Fort Apache.

About eight miles to the east of Fort Thomas I investigated another ruin of the same type, and of nearly the same size. The enclosures have left but faint traces, but I found distinct remains of an old irrigating ditch running past the village, with branches entering its site. I followed this ditch for a length of 350 meters (1,150 feet), and found it to be on an average two meters wide, the extremes being  $1\frac{1}{2}$  and 3 meters. The sides were raised from 0.15 to 0.20 m. (6 to 8 inches) above the surface. The soil of the bottom through which this acequia runs, where the ruin is situated, is whitish, sandy, and movable, but appears to be very fertile.

The acequia runs almost at right angles with the course of the Gila River, and towards, not from it. It descends from the base of the foot-hills of Mount Graham, from which living streams issue, but sink at a distance of five or six miles from the river's edge. The ditch in question cannot have been made for the purpose of carrying the waters of the Gila up hill, and there is no visible source inland from which it could have been fed, nor is there any sign that formerly the arroyos flowed farther down than to-day. It was only long afterwards, in the neighborhood of Casa Grande, that I learned

the real object of these acequias, which descend from the mountain slopes to the low lands.

In the vicinity of Maricopa, the Maricopas Indians especially use such acequias to-day. They build them from the bare mountain slopes into the valleys where their fields are located, with the object of catching the mountain torrents which descend for a short time during and after every shower, and of leading them to their crops, which otherwise would not receive a drop of the moisture that falls almost daily on the high crest during the rainy season. The Gila River is very irregular in its volume of water, much more so than the Rio Grande, and it is lowest during those months when irrigation is most needed. Hence arose the device of using the mountain torrents for purposes of irrigation, of which the acequia east of Fort Thomas is probably an example.

All these remains are found on the south side of the Gila River, and on the opposite bank I have heard of at least three more. I also heard of one south of the last described ruin, and of vestiges near the site of old Fort Goodwin. But the settlements are all of small extent, hardly capable of sheltering a hundred people each, and generally are several miles apart. Their condition is very ruinous, and suggests, from the growth of mezquite trees in the rooms, and of very large mammillary cactuses, considerable age. Abrasion by floods from the mountains, as well as the climate, should also be taken into account as obliterating agencies.

The metates which I saw at the ruin last investigated were quite large, and made of black lava. Obsidian and arrowheads of flint appeared frequently, and I saw a convolute shell, perforated at the apex, which had been taken from one of the houses. A block of stone about 0.75 m. (30 inches) long, and roughly worked in a manner suggestive of an idol or fetich with human shape, was also shown to me.

Groves of cottowood line the banks of the Gila between Fort Thomas and San Carlos. The soil is of the usual dazzling whiteness; thorny plants are scattered over it, and bunches of grass. Where the road from Fort Apache crosses the river I found several small-house ruins, with connected enclosures. In these the difference between the building with its three rooms, and the enclosures or courts, was especially plain. Pottery and other objects show much decay. The walls of the house have a thickness of 0.61 m. (2 feet), and are made of two parallel rows of stones or rubble set on edge, with traces of a filling between them. Such foundations suggest that adobe was superposed to them.

The present Indian Agency of San Carlos is not on a prepossessing site; it is very hot in summer, and the shade of the trees on the river banks does not extend to the promontory on which large and commodious buildings are erected. But the site was a good one for an Indian village, inasmuch as there are fertile bottoms close by, and a clear view in every direction. The modern constructions stand on the ruins of a village of which I was only able to measure a part. The foundations are double in some places, in others single. The village, which must have covered much more ground than what I could survey, was therefore an aggregation of dwellings and enclosures. A mound 0.80 m. (32 inches) high, and 37 meters long by 16 broad (121 by 52½ feet), is connected with the other remains. Its surface is traversed by a double line of stone walls, showing that the rubbish mass once formed a house. This feature was new to me, and it suggested the existence of a larger central building, perhaps artificially elevated by means of an underlying platform, and connected with the rest of the settlement by walls of courts or squares. What few other buildings were visible were small houses rest-

ing on the level. The rooms of these are large in comparison with those farther north.

Soon after passing San Carlos the Gila enters a deep cañon, which extends with various interruptions nearly to the settlement of Riverside. The San Pedro stream joins the Gila in this narrow gorge, the walls of which are often perpendicular. I have heard that cliff dwellings only are found there, as the bottom is not wide enough for cultivation, or even for the construction of buildings. This information, which the appearance of the country corroborated, induced me to turn to the northwest, and to proceed towards Upper Salt River by way of Gilson's Flats and the mining district of Globe, with its vast deposits of copper ore.

I refer to Plate I. Figure 41, for the plat of the ruin five miles from San Carlos, in a bottom of similar appearance to all the flats or depressions along the Gila River. A tank measuring 23.4 meters (76 feet) across, and encased by a rim of stones, stands among the ruins. This feature seems to be common in that section of Arizona. The pottery is in all points similar to that of the other ruins.

After traversing quite dense forests for miles, Gilson's Ranch is reached,—a waterless valley bordered by dreary gravelly heights. In the west the Sierra Pinal rises aloft, covered with a fine growth of dark pines. All the rest of the mountain scenery is of forbidding ruggedness. Bare peaks stretch into the sky, and arid clefts and rents descend from their slopes. The only vegetation is that monstrous flora of cactus, mezquite, and ocotilla peculiar to the Southwest. To it must be added the "Palo verde," a leafless tree with green bark.<sup>1</sup> The smaller shrubs do not look so strange as the taller species, but they are equally well protected by thorns and spines.

<sup>1</sup> *Parkinsonia Torreyana*.

On the arid heights around Gilson's Ranch several small ruins are met with, forming in all probability a variety of the class represented about Fort Wingate. One of them contained as many as seventeen compartments, but I could not detect any traces of enclosures. The walls were all double and about two feet thick, and it seemed that the superstructure had been of adobe. In the same vicinity I found distinct traces of an acequia with its branches, lying at the foot of the gravelly bluffs on which stood the ruins, and apparently made for the same purpose as the one on the south side of the Gila, east of Fort Thomas. The branches of this ditch were slightly raised above the surface, but the main acequia was slightly depressed. Pottery and other objects need no description, owing to their similarity to those found elsewhere in the district.

Twelve miles of country of the same type as around Gilson's, though with more trees, separates that place from Globe and its extensive workings of copper ore. The total ascent from San Carlos to Globe is fifteen hundred feet in twenty-one miles. Globe lies in a cleft between the Pinal range in the south and lower but rugged ranges in the north which separate it from the basin in which stands the town of McMillenville, and agricultural soil is not plentiful around it. A little creek, the Aliso, runs at the bottom of the rent on both slopes of which the town is reared. It is a tributary of the Gila, and assumes upon approaching that stream the more pretentious name of San Carlos River. A short distance from Globe to the north lies the watershed between the Gila and the Upper Salado, and from it the Arroyo Pinal trickles down towards the latter.

I examined three sites of ruins in the vicinity of Globe. The one shown on Plate I., Figure 43, is the largest, and at the same time one of the best specimens of the checker-

board type that came under my observation. It will be seen that the central mound or ruin is wanting, but that the small buildings and connecting enclosures are numerous and well preserved. The walls were of stone, and none of the buildings seemed to have been higher than one story. No traces of estufas were visible, and I will remark that, after leaving the Little Colorado River, I nowhere saw the circular depression of comparatively small size which indicates that structure in more northern ruins. The village of which I am now speaking stands south of Globe, on a denuded promontory with rather abrupt slopes, in a good defensible position; but unless the courtyards were for the purpose of holding tillable soil, I found no space for fields. It may be, however, that at the foot of the hill on which the ruins stand some plantations existed.

The ruin next in size which I investigated is much smaller, and lies north of Globe, on a very steep, rocky projection of at least two hundred feet in height. Here the proportion between buildings and enclosures was converse to that at Globe, the enclosures being few. One central room had the walls entire to a certain height, composed of broken blocks of stone of the thickness of 0.86 m. (34 inches). A fallen beam of cedar stands in the ruin like a post. The pottery needs no special notice, except that the corrugated ware is very coarse. At the ruin first alluded to, I found the metates to be, instead of lava, of a material resembling syenite.

The region is strictly a mining country, and the narrow clefts which the valleys represent, although some of them harbor groves of cottonwood, afford no room for extensive cultivation. Scattered Indian villages with a small population, such as the ruins indicate, may have subsisted by means of small patches of corn, and of such nutritive plants as grow without irrigation; but it seems to have been the defensible

sites rather than the opportunities for subsistence, that induced the native to establish himself in these localities. In the Pinal range I was informed that there are no ruins, at least none of any consequence, and the steepness of its slopes as well as the forests lend probability to these statements. The immense deposits of copper and other ores were no inducement to the sedentary Indian of the Southwest. I diligently inquired about copper implements, but while some of my acquaintances had heard of such finds, no one had ever seen any. Native copper is not as common around Globe as are its different ores, which none but the people of Peru had attempted to reduce previous to the coming of Columbus.

While at Globe I was informed of ruins, with vestiges of large houses, said to exist along the course of the Arroyo Pinal, the little tributary of Salt River which takes its rise a few miles north of Globe. I therefore selected the northern route, with the view of examining the course of Upper Salt River and reaching the Rio Verde, and thence, after making a detour around a mountain region in which only a few places of refuge, like cliff-houses and cave dwellings, or cliff burials, might be expected, coming to the Lower Salado, and finally the Gila, below the deep cañones west of San Carlos. This determination caused me to follow the course of the Pinal a short distance beyond Wheatfields. Farther down I did not proceed, since a narrow gorge extends from there to its mouth in the rugged cañones of the Salado, in which I have stated that cliff-houses, and especially rock or cliff burials, had been discovered. The course of the Upper Salt River is almost without interruption through such clefts, and the impression was conveyed to me that it was generally uninhabitable for sedentary natives. A little west of the mouth of the Pinal, however, begins the beautiful valley of Upper

Salt River, and extends as far as the mouth of the Tonto, which stream the rugged Sierra Mas-a-sar divides from the Lower Rio Verde. South of Upper Salt River valley a mountain labyrinth stretches as far as the delta between the Salado and the Gila. North of Upper Salt River, the Sierra Ancha, a mountain cluster of no great elevation, but with very steep slopes and arid gorges, separates the valley from the Tonto basin. The latter contains many ruins, none of which, however, was I able to investigate.

"Wheatfields" (Los Trigos) is a pleasant flat in the gorge which the Arroyo Pinal traverses. The soil is fertile, and cottonwoods shade the banks of the stream; but it is only about a quarter of a mile wide. Gravelly embankments line it, and steep declivities descend from both the west and the east. On the west side of the Pinal I found the two ruins shown on Plate I. Figures 44 and 45. The distinctive feature of the larger ruin is a mound showing that it was a house with at least two, perhaps three, rows of rooms or cells. The height of this mound is 2.5 m. (8 feet), and the remainder of the ruins lie below it, like a trapezoid cut up into irregular quadrangles forming enclosures, with a few mounds that indicate smaller buildings. I had before me a complete specimen of the type noticed already at San Carlos, namely, the checker-board village, with a larger edifice. It was not possible to determine without excavations whether the mound rested on an artificial basis, or whether its height was due to the rubbish accumulated from the decay of a second story; neither was it possible to ascertain the thickness of the walls. All I could discern was that they were constructed of boulders or rubble, some of which had been roughly broken, while others were entire, and that adobe mud constituted the binding material. The pottery and household implements need no special description.

The smaller ruin is of the same type as the largest one at Globe, that is, a fair specimen of the plain checker-board village. But the artificial objects are of the same character, and there seems to be no difference in their age. It looked as if the two had been coeval, and their population small.

I was informed that seven miles from Globe and about four miles above Wheatfields a ruin existed which showed one hundred and thirty-eight divisions (houses and enclosures) on the surface of the ground. Two miles below Wheatfields the narrow gorge begins of which I have spoken, and the road to Salt River turns sharply to the south. On two steep promontories at this place stand ruins which I could not examine; but I noticed from below that one of them at least had a wall of circumvallation, or what seemed to be one, built along the brow of the hill. From the area which the top of each hill covered, the villages must have been small. Lower down the Pinal I did not travel, neither did I hear of any ruins in that direction except of caves and cliff dwellings along the Salado.

There were consequently at and near Wheatfields, within an extent of not over two miles, four aboriginal settlements. The question of their contemporaneousness cannot be decided, but, even under the assumption that all four were occupied simultaneously, they were so small that the population of the valley cannot have exceeded four or five hundred. The number was adapted to the nature of the spot, which seems to indicate a voluntary rather than a forced establishment. All the settlements stood on ground elevated above the level of the creek, which may have been necessary not only for defence against foes, but for protection against sudden risings of the stream which summer rains are liable to produce. The extent of arable soil is limited, but sufficient for the modest wants of a primitive people of

small numbers, and wood was furnished by the cottonwoods and by scrubby conifers higher up. Water is permanent, so that Wheatfields is a spot where sedentary aborigines would not fail to settle, provided there was no impediment arising from surrounding enemies or from the dictates of superstition.

After leaving the two ruins last mentioned, a sandy slope gradually leads up to the heights that overlook the gorge of the Pinal in the west. A thorny vegetation covers it, and craggy summits and crests loom up all around. This slope rises steadily for about six miles, then the view opens to the north, and Upper Salt River valley lies at our feet, green with cottonwoods and cultivated patches. Beyond it rises the Sierra Ancha, between whose sharp ridges yawn formidable cañones, bare and arid. The descent into the valley resembles very much that to the banks of the Gila from Green's Gap; but vegetation is more vigorous, though still more monstrous. Salt River is "a broad, blue, rushing stream, wider than the Gila, with clear and very alkaline waters." It is the finest large river in the Southwest. I noticed ruins near Kenton's Ranch, but they were so disturbed and also partly built over that I could only trace fragments of walls and enclosures. The foundations of what may have been houses consist of large boulders. Enough was left to satisfy me that the type was similar to that at Wheatfields, namely, the checker-board combination of houses and enclosures.

On the south side of the river I investigated successively five ruins of the same class within a stretch of about eight miles, but there are several more. I refer to Plate I., Figures 46, 47, and 48, for their general character, and for their relative size. On the same side I noticed no ruins with a central mound, unless perhaps the one at Kenton's Ranch belongs

to that type. All resembled the larger ruin at Globe and the smaller one at Wheatfields, and all could shelter but a small population. Thus the south side of Salt River valley was at one time dotted with a number of Indian settlements, erected at intervals of from a quarter to half a mile. Whether, in case they were all simultaneously occupied, their aggregate population amounted to over one thousand souls, appears to me doubtful.

In addition to those ruins that were plainly villages, there are some which were enclosures only. Instead of boulders or rubble, the lines indicating these enclosures consisted of stones set on edge, in single rows, and therefore incapable of supporting any superstructure. I was at a loss at first to account for these contrivances, as it seemed that the rows of stones had never been elevated more than a few inches above the ground. Afterwards, when I was informed that they had been garden beds, I recollected the similar devices of which I have given an account in the northern part of New Mexico.

In Sonora the Opata Indians told me that whenever a space of ground was enclosed with a rim of stones, and its surface cleared of the gravel and boulders with which it is usually covered, such space retained moisture much longer than any free expanse. The ruins in the Upper Salt River valley are always situated on the first or second tier of plateaux rising above the bottom, which is subject to overflow, the river rising sometimes suddenly and as much as ten feet above its usual level. That the homes of the aborigines should have been constructed on elevations is very natural; but at first sight it appears improbable that, with the fertile river bottom at their disposal, they should have resorted to the creation of artificial garden beds on the less fertile terraces above. Still, we must consider that, in the first place,

the settlements were small, and a little ground sufficed for their subsistence; that the temperature on Upper Salt River is high, and the summers long; and that more rain falls in proportion than on the Gila. Consequently they were not so dependent upon irrigation as those on the latter stream. Ancient irrigating ditches exist on the north side of Salt River in the same valley, but, with the limited number of people which each settlement could accommodate, it was scarcely worth while to undertake the work of digging canals. In consequence, therefore, of the positive testimony of existing Indian tribes, I prefer to adopt the view that such clusters of enclosures were really garden beds, the more willingly that in most cases there are one or two small buildings in close proximity to them. These buildings are mostly large enough to have accommodated a family; in other instances they are so small as to suggest that they were only guard-houses.

On the north side of Salt River, not far from the ranch and home of Mr. Armour, stands an important ruin, the peculiarity of which consists of the long mound that forms a part of the open polygon which the ruin represents. This mound has been partially excavated, and found to contain rooms at least 1.25 meters (4 feet) high, and probably more. One beam was still visible; the walls were of stone, laid lengthwise in the front and transversely in the partitions. The height of this mound is 3.3 meters (11 feet), and there are indications that the buildings rested on an artificial terrace. I doubt whether this village, which is one of the most important in Upper Salt River valley, could accommodate more than one hundred and fifty inhabitants.

Interesting finds were made here. I saw a piece of hammered copper that had been taken from the mound, and a copper rattle. There may be some doubt concerning the origin of the latter, although, in view of a similar find made

by Mr. Cushing in the Tempe valley, I am inclined to accept it as genuine, as native copper in laminæ occurs in the mining district of Globe. One of the most valuable objects extracted from these ruins is a sash with tassels, both made of yucca thread, which recalled forcibly the sashes of buckskin worn to-day by the members of the Order of Warriors among the Pueblo Indians in the scalp-dance. Of other objects I need not speak, as there is no difference between them and those of Globe, the Gila, and Fort Apache. The same degree of culture and the same taste in art appear to have prevailed, and the existence of copper implements in one or two localities does not justify the conclusion that any great advance had been achieved. That the Indians may have accidentally found out the malleability of a metal which occurs in their vicinity is not extraordinary. But the small number of such specimens indicates that the discovery had not had time to propagate itself, or that it was kept the property of a few, or exercised only as a matter of personal ingenuity or taste. It would therefore be inappropriate to designate the ancient inhabitants of Salt River valley as a people acquainted with the art of working copper in general.

Furthermore, we do not know whether the copper objects found near Armour's originated there as a product of home industry, or whether they had been imported. Curious objects sometimes travel immense distances among Indians. The instance of the copper rattle given in Central Texas to Alvar Nuñez Cabeza de Vaca and his companions should not be overlooked. That certainly was not made by the roving hordes among which it was found, neither did the Spaniards ascertain positively whence it had come.<sup>1</sup> Traffic

<sup>1</sup> Cabeza de Vaca, *Naufragios* (in Vedia, "Historiadores Primitivos de Indias," chap. xxix. p. 540): "Y entre otras cosas que nos dieron, houbo

or pillage in war causes such rare pieces to wander sometimes across a whole continent in the course of time. This may be the case also with figurines representing animal types from exotic regions. We need not, to explain their presence in other zones, resort to hypotheses of a geological character. So it is with metallic objects. On the coast of California a copper bead was found which has been pronounced by excellent authorities to be of undoubted aboriginal and primitive origin.<sup>1</sup> When Coronado visited the tribe that he calls Quiviras, in Northeastern Kansas, he found a piece of native copper suspended to the neck of one of the chiefs, and some copper rattles, and upon inquiry whence these objects had come no satisfactory answer could be obtained.<sup>2</sup> Where the general culture is so markedly indicative of a degree of industry limited in its materials to stone, clay, bone, and wood, the presence of a few objects of metal is not sufficient to warrant us in placing a higher estimate on the advance achieved by the people.

There is an ancient irrigating ditch running not far from

Andres Dorantes un cascabel gordo grande de cobre, y en él figurado un rostro, y esto mostraban ellos, que lo tenían en mucho; y les dijeron que lo habían habido de otros sus vecinos; y preguntandoles que donde habían habido aquello, dijeronles que lo habían traído de hácia el norte; y que allí había mucho, y era tenido en grande estima; y entendimos que do quiera que aquello había venido había fundición y se labraba de vacío." Oviedo, *Historia General*, vol. iii p. 606: "Aquestos dieron á los christianos un cascabel de laton é ciertas mantas de algodón, é decían que aquello venía de hácia el norte, atravesando la tierra hacia la Mar del Sur." This indicates that it came from the northeast.

<sup>1</sup> *Report on U. S. Geographical Survey* (Wheeler), vol. vii. pp. 264, 272.

<sup>2</sup> Coronado, *Troisième Lettre à l'Empereur Charles V.* (in Appendix to *Cibola*, p. 359): "Les naturels m'ont donné un morceau de cuivre qu'un de leurs chefs portait pendu au cou. C'est le seul métal que j'aie vu dans ce pays; je l'ai envoyé au Vice-roi de la Nouvelle Espagne. Ils me firent voir aussi quelques grelots de cuivre que je lui ai envoyés, et une très-petite quantité d'un métal qui ressemble à de l'or. Je n'ai pu savoir d'où il venait, mais je crois que les Indiens qui me l'ont donné l'avaient reçu de ceux que j'emmenais avec moi pour mon service. Je ne pus trouver une autre origine."

the ruin at Armour's. On both sides of the Salt River the ruins stand on the first and second tiers, and not on the bottom close to the banks. The ruins are all small, and clusters of enclosures abound, but in estimating the ancient population they should always be excluded from computation.

It is not unlikely that the checker-board type of hamlets, and the same class with a central mound representing a larger building, were coeval, and the work of the same people. If not contemporaneous, the question arises whether the latter type was not perhaps the result of a change in conditions of security. Open settlements like the former imply peaceable intercourse between the inhabitants of the various villages, and the absence of danger from neighbors or nomads of a different stock; but we have not even traditional information about these people. Castañeda, as already stated, attributes the buildings of the "red house" near Fort Grant to "a people that had come from Cibola." Father Garcés was informed that the ruins on the Gila were those of pueblos built by some people that had come from Moqui. The reason which the Sobaypuris gave to the missionary for attributing those edifices to the Moquis was, that only the Moquis knew how to construct them, and to make pottery like that scattered about the ruins.<sup>1</sup> This shows that either they would not reveal to the priest any positive tradition in their possession, and consequently resorted to a myth of observation, or else that they knew of the northern origin of the settlements. If the latter should be true, then it is clear that the change in architecture south of the latitude of Fort Apache is due, not to some culture imported

<sup>1</sup> Garcés, *Diario y Derrotero*, p. 328: "Pregunté años pasados á unos viejos Sobaypuris de mi mision, que quien había hecho aquellas cabas que estaban caidas y la loza quebrada que hay en varios sitios del Rio Gila, pues los Pimas ni Apaches no saben hacerlo. Respondiéronme que los Moquis, pues solo ellos sabian hacer aquellas cosas."





PLATE V. — CAVE DWELLINGS ON THE UPPER RIO SALADO, ARIZONA.

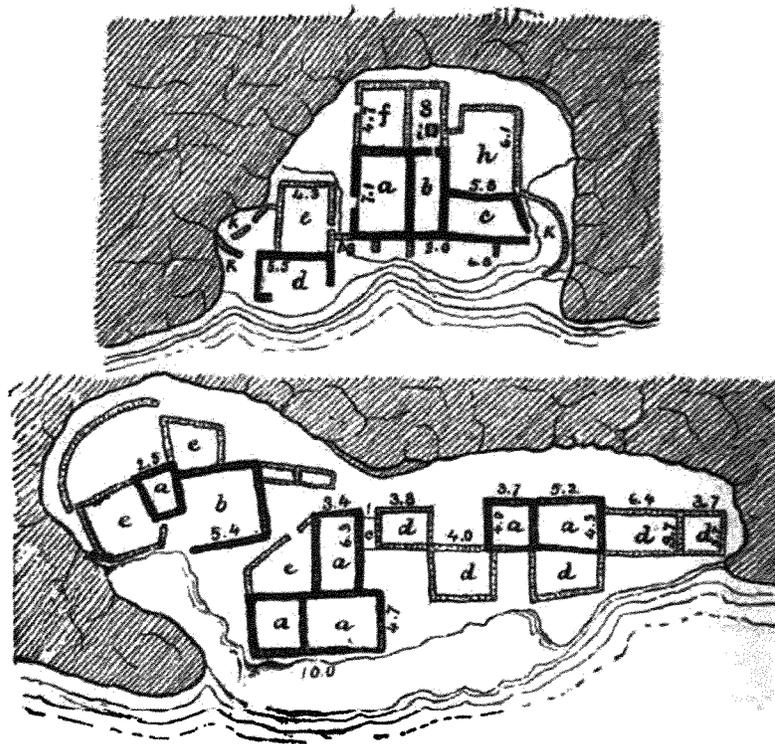
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by tribes coming from southern regions, but to an adaptation of house architecture and of house life to exigencies arising from changes in climate and environment.

This becomes the more probable, because about five miles south of the banks of the Upper Salado, and not far from the ranch of the well known scout, Archie McIntosh, there are two cave dwellings of moderate dimensions, the architecture of which is that of typical compact pueblos. Each cave is occupied by one house, and each of these houses is at least two stories high, the stories retreating from the bottom to the top, after the manner of New Mexican pueblo houses. (See Plate V.) Roofs, ceilings, doorways, hatchways, are still mostly intact, and although many of the beams have been burnt by the Apaches, enough are left to give an idea of that feature also. The rooms are somewhat larger than those in most one-house pueblo ruins farther north, as might be expected, since the caves are very warm in summer; but the walls are identical in composition and structure, and the floors also. Each cave dwelling would be just as much in place at the Chaca Cañon, or on the Rio de las Animas, as in the rocky recesses of the valley of Salt River. The terraced form was in this case imposed by the arched rear wall and roof of the caves, and was the result of accommodation to the shelter sought in the cavities. The presence of hatchways in the upper stories indicates that ladders, not stairways, were used for communicating between the upper and the lower floors.

The caves lie on a very steep slope, in some parts even perpendicular. Their elevation above the bottom of the narrow gulch from which the slope arises is about four hundred feet, and the acclivity, besides the number of boulders and rocky fragments with which it is covered, is rendered still more difficult of ascent by a profuse growth of *Cylindropuntia*

called Choyas, a dangerously thorny species of cactus. The bottom contains a spring, and is shaded by cottonwoods and dense thickets. The caves face to the east, and are visible at quite a distance from the river bottom. Approach to them



CAVE PUEBLOS ON THE UPPER SALT RIVER.

was quite difficult for an enemy, and the buildings so completely fill the cavities, that only narrow passages lead to the rear of the houses, where they could be entered. But here, as well as at the Upper Gila, it was easy to cut off the water supply, and thus to reduce the inhabitants. There are no

tillable spots nearer than the river, so that it may be that they had to go several miles in order to raise their crops. It is well known that such a distance is not an insurmountable obstacle for the sedentary native.

Owing to the sheltered situation of these cave dwellings many specimens of their industry, manufactured out of the most perishable material, have remained intact. Sandals like those from the Tzé-yi, yucca fibre and thread, and, above all, specimens of cotton cloth, were found here. Of the latter I have seen much, and some of it shows traces of "drawn work." The ancient inhabitants of Upper Salt River valley had cotton, but it does not follow with absolute certainty that they cultivated it themselves; still this is quite probable, for the climate is such as to permit the growth of the plant there much better than among the Moquis, and we know that the Moquis raised cotton in the sixteenth and seventeenth centuries. The pottery found in the caves is in no manner different from that accompanying other ruins on Salt River, and all the other artificial objects are also similar. The general culture was therefore the same, and nothing tends to show that the difference in architecture implied also a different people. This does not prove that the same tribe built the checker-board ruins near the river, and the cave dwellings on the mountain slopes. They may have been distinct tribes, or may have even belonged to distinct linguistic stocks. They may have lived contemporaneously, or the cave dwellers may have descended into the valley and reared their abodes there, or the valley people may have withdrawn to the caves as their last refuge. But both belonged to the same culture group, and the difference in mode of dwelling was not one imported, but one created locally by necessity, or by natural opportunities. The fact that certain very perishable articles were found in the caves, and not in

the partially ransacked ruin near Armour's, does not militate against this, for cloth and pottery of all sorts deteriorate much more rapidly in the ground or in rubbish than they do inside rock shelters; and this is especially the case where, as in this instance, the buildings under these shelters are still in an almost perfect state of preservation. The nutritive plants collected at both places were the same, corn and beans.

On the north side of Salt River graves have been found in connection with the enclosures of which I have spoken; but it seems probable, however, that they are those of Apaches. Near Armour's Ranch I saw the remains of an interment, from which loose bones and a few arrow-heads had been taken. The hollow left showed distinctly an oblong form, as if the body had lain extended, and been covered by stones, among which were several natural concretions of a singular shape. It is known that such mineral forms are used by the Southwestern Indians as fetiches. The mode of burial of the Apaches is said to be very simple; the body is interred and stones thrown over the place. In the present instance the corpse must have lain at only a slight depth, and I am therefore inclined to believe that it was an Apache burial; in this opinion I was confirmed by statements of the English-speaking settlers of Salt River valley.

From Armour's Ranch to the mouth of Tonto Creek the river continues to be lined with cottonwoods and groves of mezquite, no longer a shrub but a fair-sized tree. They have grown to quite a height on the mounds at Armour's; as the plant is said to be of slow growth, this would indicate considerable age. The shelves above the bottom land grow narrow as the mouth of the Tonto is approached, and the spaces for cultivation as well as the sites for habitation become smaller. Tonto Creek hugs the western slope of the

Sierra Masasar closely; the foot-hills are rugged and precipitous, and thorny plants cover their slopes. It is a wild spot, and wilder yet appear the mountains and the deep cañon in the west into which Salt River plunges.

The ruins in the immediate vicinity of the mouth of the Tonto hardly deserve any detailed mention, so much do they resemble those already described; but higher up, near Cline's Ranch, nine miles north of Salt River, I examined some interesting ruins. The bottom of the Tonto is sandy and overgrown with thorny shrubs, and cottonwoods line the rivulet. There are no ruins in this bottom, but on the bare shelves above it small ones are quite numerous. The checker-board village type is quite plain to be seen in places. One mile north of Cline's, however, I found a fine specimen of the kind already noticed at San Carlos, and more perfectly represented at Wheatfields and at Armour's. In this ruin the central mound is very plain, and the smaller houses have diminished in number and become reduced almost to out-houses. A quadrangular wall surrounds the mound, and the space thus enclosed is connected with the main edifice by walls of stone, thus dividing it into squares and rectangles. The wall has a thickness of 2.5 meters ( $8\frac{1}{2}$  feet); but I am in doubt whether it was solid, or whether there were two lines of stone with a narrow passage between. It is still the checker-board type, but the dwellings have been mostly consolidated in one central mass, from which enclosures diverge towards the circumvallation. The height of the large mound is 2.25 meters ( $7\frac{1}{2}$  feet), and from the débris I infer that it was either two stories in height, or was raised on an artificial platform. The pottery is absolutely the same as that of the plain checker-board ruins, which are quite abundant, but not distinctly connected with one another or with the ruins of the other class. The population of these mound ruins cannot

have been much larger than that of the others. In the one near Cline's, I do not think that more than a hundred, if so many, could have found accommodation. The cells which the mound reveals are not larger than those of the usual small house type, and there is but one, on the northeastern corner, which shows unusual dimensions. I am not sure whether this was not partitioned off originally.

The type of village which includes a larger and more substantial structure, indicated by a mound-like ruin, grows more conspicuous as we ascend the course of Tonto Creek. It may be said to prevail in Tonto Basin, which lies on the northern course of the stream, and extends along the northern base of the Sierra Ancha. On the west side of the stream, at Old Fort Reno, I measured two good specimens, the largest of which is given on Plate I. Figure 53. It is especially interesting on account of the manner in which the artificial platform is clearly shown. The platform supports two clusters of small houses very distinctly traceable. Tall mezquites have grown on the ruins, and the southeastern corner of the enclosure that surrounds the whole is formed by houses, two of which also stand on elevations, or at least form elevations rising above the surrounding level.

I will sum up the characteristics of aboriginal architecture of Upper Salt River with what I wrote to the Institute in 1883. After mentioning the checker-board villages, I said:—

“Besides small and low mounds, every village contained, if of any reasonable size, a larger and higher eminence, sometimes in the centre, sometimes towards one of the sides. This feature develops itself very prominently as soon as Upper Salt River is reached, and the lesser mounds decrease correspondingly.

“On Tonto Creek there is a very striking kind of ruin, consisting of a high mound in the centre, enclosed by a

broad quadrangular wall, while transverse walls connect this enclosure with the central hill. A few small buildings still cling to the inside of the circumvallations and of the inner courts, and the large enclosure seems to have absorbed all the others. From this point on, this is the typical ruin, isolated houses of course excepted, with only a difference in the number of small buildings and in the position of the mound, which sometimes stands on the side, or in a corner of the whole cluster. . . .

“But this central building, into which in some cases all the dwellings have merged, cannot compare in size with the communal house. The largest mounds which I have measured show, along the well defined lines of foundations, perimeters of 131.2 meters in an L-shaped polygon with re-entering angles, and 99.1 meters in a narrow horseshoe; the former is subdivided into twenty-nine, the latter into not more than twenty apartments. . . . There are indications that in some cases the house was erected on an artificial platform, as at Fort Reno; and the amount of rubbish indicates that in several instances the structures were two stories high. These facts have a double bearing. In the first place, they show that the population of one village sought to live together in one building with comparatively large rooms; and secondly, they prove beyond a doubt that even the largest village communities were small in population,—for the most extensive, counting one room to each family and adding a corresponding number for the few outlying structures, could not have sheltered three hundred people each. . . .

“From concurrent testimony, I conclude that this is the character of the ruins of the Tonto Basin and of the Upper Verde River. It certainly prevails south of the Lower Gila as far as the Southern Pacific Railroad, with some not unimportant modifications.”<sup>1</sup>

<sup>1</sup> *Fifth Annual Report*, p. 64.

The Masasar range is not very high; the highest of its four peaks only rises to 8,666 feet.<sup>1</sup> But as the distance from Tonto Creek bottom is only about ten miles, and the latter lies nearly six thousand feet lower, the ascent is quite steep. In the upper slopes of the chain there are sacrificial caves, and I have also heard of enclosures; but the first ruins which I saw, after crossing the crest from Old Fort Reno, were in the Sunflower Valley on a hill of lava and trap densely overgrown with thorny plants. They consist of a central mound with quadrangular circumvallation, the usual enclosures, and smaller mounds denoting outlying dwellings, with pottery, etc., of the general type. At Otero's, farther west, another ruin stands on a bald hill. It is much obliterated, still I noticed a mound measuring 36.5 meters (120 feet) by about 7 meters (23 feet). Very faint traces of stone enclosures appeared in various places. What I saw of potsherds belonged to the plainest and crudest kind, but even these were very few in number, and most of the lighter objects scattered over the surface had been washed away.

Beyond Otero's Ranch the descent to the banks of the Rio Verde begins. "Sugar-loaf," a towering rock, rises on the south side of the road, with its northern front almost vertical, and certainly inaccessible; the only ascent possible is from the south, where a steep acclivity, overgrown with dangerous "Choyas," affords means of reaching the top. There is permanent water at the foot of this cliff, and I was informed that ruins exist on its summit; but I failed to find them, unless they consist of rudely piled up circumvallations. It may be that Sugar-loaf was used as a temporary place of refuge.

Thence on to the banks of the Rio Verde sandy terraces extend, covered with every imaginable species of monstrous cactuses, tall mezquites, Mimosaceæ, and *Parkinsonia Tor-*

<sup>1</sup> According to the United States Geographical Survey.

*reyana* (the leafless *Palo verde*); the distinctive forms of the Southern Arizonian flora dot the white ground, and the temperature is frightfully hot even in May. The Rio Verde at Fort McDowell is a beautiful stream, emerald-green, enclosed by dense thickets and shaded by cottonwoods. The post stands west of the river on the first terrace above the bottom. The soil is sandy, and the vegetation bears the same character as on the east side. The temperature at the post in the afternoons from the 2d to the 13th of June varied between 102° and 108° in the shade. Low mountain ranges covered with scrubby vegetation skirt the western horizon.

The ruins around Fort McDowell lie on the terraces above the river, and those on the west bank are of the circumvallated mound type; but in some the walls of the central house are of a coarse adobe. In the ruin near the post, however, and in another one two miles south of it, the walls are of stone. (See Plate I. Figures 56 and 57.) There are also mounds of white marly rubbish, quite low and flat, but still showing that they once were houses. These mounds, from their material, belong to the class of ruins that prevail on the Lower Gila and Salado Rivers. I saw some lava implements, many broken metates, and a little pottery. The latter resembles the earthenware made by the Maricopa, Pima, and Pápago Indians of to-day, that is, it is coarse and poorly decorated with reddish lines. Still I also found some of the ancient kind, white and red, with black decorations of the Pueblo pattern. On the west sides of the Rio Verde, near its junction with the Salado, I measured two ruins of the plain checker-board pattern, without the central mound. The ground there is different from that higher up and on the opposite side; the mountains approach the river banks, and the surface is gravelly. Hence the material used in building was rubble instead of adobe.

Remains of ancient irrigating ditches are quite common

about Fort McDowell. I examined, among others, one of them north of the post, and found that, while it was quite long, its length was due in a great measure to the fact that its builders had simply followed the natural trend of the surface in order to avoid both cutting and filling. It makes great detours, clinging to the tortuous slopes as much as possible, so as to preserve the inclination without raising embankments. It is a piece of workmanship that, while certainly ingenious, places the skill of its makers on quite a modest level. I have heard of acequias as long as twenty miles, and have no reason to doubt the truth of the statement. In the manner indicated, it was easy to construct shallow ditches of great length. The width of the acequia is still 3.1 meters (10 feet) and the depth a little over two feet.

In addition to these canals, artificial tanks begin to appear in the neighborhood of Fort McDowell, differing from those on the Upper Gila; they are elliptical, and the rim is formed of stones, or by an embankment of earth of considerable thickness. But all these features are more nearly obliterated here than farther south, on the Salado and the Gila, near Tempe, and at Casa Grande. As the material is the same on the Rio Verde and on the Gila, greater age of the ruins on the former would seem to be the safest explanation.

I was informed by Mr. Walker, at Casa Grande, that the Pimas claim all the ruins north of the Gila to the Ka-got, or "Superstition range," as those of their own people. They say that a son of "Civ-an-o," the chief to whom they attribute the construction of the Casa Grande, settled on the banks of Salt River, but that on the Rio Verde there lived a different tribe, with whom their ancestors were at war. The Pimas also state that the ruins with walls of stone are not those of their ancient settlements, and they call them "O-ot-kom Vat-ki," gravelly ruins. As their own

pueblos formerly extended to the junction of the Rio Verde with the Salado, it would seem that the buildings near Fort McDowell stood near the limits of two tribal ranges, and were therefore more exposed to assault, when the two groups were at war with each other. There certainly is some historical truth in these fragments of folk-lore.

Higher up the Rio Verde, ruins of the mound type are said to occur in places, and it is known that near Fort Verde interesting aboriginal remains exist, but not having penetrated to that region, I cannot give any details about them. Cliff and cave dwellings have been discovered in the picturesque volcanic basin, with precipitous walls, called Montezuma's Well. West of the Rio Verde, I am informed, the ruins gradually grow fewer, and finally disappear near the 113th meridian. It may not be amiss, therefore, to designate that degree of longitude as the approximate western limit of aboriginal ruins in Arizona. More thorough investigations may subsequently modify this assumption.

I now come to the important region which is known as the delta between the Lower Salado and the Gila, often called the valley of Tempe, and one of the most remarkable sections of the Southwest. This delta lies twenty miles south of Fort McDowell, and is bounded by the Salado in the north, the Gila in the south, and in the east or northeast by the arid mountains called Superstition range. A level plain, about fifty miles from east to west and twenty-five from north to south, in the shape of a triangle, sandy and unprepossessing in appearance, forms the surface of this delta. In its virgin condition it was covered by the usual thorny vegetation, and colossal zahuaros dot it in every direction. Along the banks of the Salado barren ridges extend in places. Beyond Tempe these ridges close in upon the stream, leaving but a comparatively narrow strip, but after a few miles they recede again

on the north side, and the fertile valley of Phoenix appears like a western addition to the plain.

The altitude of Phoenix is 1,068 feet, that of Florence (or the southeastern corner of the delta) 1,553, so that the fall in a distance of fifty miles is nearly five hundred feet. The Salado flows at a higher level than the Gila, and it also carries a larger volume of water. The settlers of to-day have improved these conditions, not only by constructing canals parallel to the course of both streams, but across the delta from one river to the other, so as gradually to bring every foot of the surface under irrigation. The soil is extremely productive whenever moistened, and as the rainfall is uncertain, and on an average slight, artificial irrigation is indispensable. There are sections on the south bank of the Gila where two years may elapse without rain, except what falls on the mountain crests. There is no evidence that these conditions have changed within the period of sedentary habitation. Everything, on the contrary, points to the fact that the ancient dwellers in this country had recourse to the same methods as those of to-day, but on a scale and with mechanical means proportionate to a lower degree of civilization. Ancient irrigating ditches are frequent, and of considerable size. They run mostly parallel to the streams, but transverse acequias have also been discovered. I refer to the Preliminary Report of Mr. F. H. Cushing on the work done by him for the Hemenway Expedition for more complete details on the ancient irrigation system in the vicinity of Tempe.<sup>1</sup> I investigated one of the artificial channels a few miles west of Tempe. The width of the channel of this irri-

<sup>1</sup> *Preliminary Notes*, p. 168: "These canals in the Salado and Gila valleys were found to vary in length from ten to eighty miles, and in width from ten to eighty feet, with a depth from three to twelve feet. Each canal, whether large or small, was found on excavation to have been terraced, i. e. the banks of dirt thrown out in its excavation had formed, as it were, a greater canal containing a

gating ditch is 4.5 meters (15 feet); its length, as far as I could ascertain, about twenty miles. The borders where I saw it are slightly raised, and the whole shows nothing very marvellous. The soil is so movable that it was comparatively easy for a tribe that does such work by communal labor to open it with the aid of shovels of hard wood, such as the Pimas claim were used by their ancestors in tilling enclosed garden plots, to remove the soil with baskets, and afterwards keep the acequia in repair. Among the Pueblo Indians of to-day such works are communal enterprises, carried on by all the men, and sometimes also by the women, of the village, and performed at stated times. The same system was practised by them before the advent of Europeans, and before they had any knowledge of metal tools. In the region of Tempe and Phoenix the conditions were, to a certain extent, more favorable than on the Rio Grande, on account of the lightness of the soil. There is said to be a long and wide ditch near Tempe, part of which is reported to be cut through solid rock, but I have not seen it, and I have so often been told of similar marvels, which upon inspection dwindled down to quite modest proportions, that until it is proved by careful investigation that the cut is really artificial, and not merely a natural one artificially widened in places, I must take such statements with a great deal of reserve.

In addition to ditches, tanks, mostly elliptical and encompassed by solid embankments of earth, are of frequent occurrence. I always found them in the vicinity of ruins of settlements, and more or less distinctly connected with ancient canals.

What I am about to say may expose me to the criticism lesser, which in turn contained yet another. . . . I have said that these canals, reservoirs, and other ancient water-works, so levelled and filled had they become in the course of centuries, were scarcely traceable above the surface of the ground."

of attempting to depreciate the importance of aboriginal remains in the region under consideration. Whatever may have been stated as to the extent of the ancient settlements between the Salado and the Gila, and on both banks of these streams, I am satisfied that, while there are a great number of clusters of substantial buildings, there is nowhere any important aggregation representing a population locally large. Two classes of dwellings have been noticed, one of which is a many-storied or one-storied edifice, sometimes artificially raised, but nowhere equal in size to the communal pueblos of the north. The other is thus described in the words of Mr. Cushing: —

“The foundations of thin-walled, usually somewhat rounded huts, outside of the walls surrounding communal dwellings, scattered indefinitely and apparently without system, particularly around the outer borders of each city, and designed for occupancy by a distinctive ultra-mural — one might almost say ultra-urban — population; as shown by the fact that they were not, as are the scattered farm huts of Zuñi-land, occupied in summer merely, but in winter as well, as signified by the occurrence in each of a central hearth or fire-bowl, like those of the regular houses within the city.”<sup>1</sup>

These round structures, of which only the foundations were found, are those of more modern Pima huts. It is well known that the latter are round, and that their covering is semi-globular, like the well known roof of beams, poles, brush, and earth found in all the pueblos and ancient ruins, with the difference that, instead of being horizontal, the modern Pima hut is bent in the form of a cupola so as to be used as a wall as well as a roof. This cupola rests on a ring made of earth, and this ring remains like a foundation when the superstructure decays and gradually disappears. It is also known that

<sup>1</sup> *Preliminary Notes*, p. 175.

at the close of the seventeenth and in the beginning of the eighteenth century, when the country of which I speak was first visited by the Jesuits, quite a number of Pima settlements were found, which have since been abandoned, their inhabitants removing to other sites.<sup>1</sup> What may, therefore, be

<sup>1</sup> I refer to the report of Father Franciscus Eusebius Kuehne, appended to the *Luz de Tierra Incognita*, and entitled *Relacion Diaria de la Entrada al Noroeste que fué de hida y buelta de 309 leguas desde 22 de Setiembre hasta 18 de Octubre. Descubrimiento del Desemboque del Rio Grande á la Mar de la California y del Puerto de Sta Clara, 1698*. Previous to that date Captain Matéo Mange had already written a description of his trip with Father Kuehne to the Gila and Casa Grande in 1697. It is published in the third series of *Documentos para la Historia de Méjico*, under the somewhat misleading title of *Relacion del Estado de la Pimeria, que remite el Padre Visitador Horacio Polici, por el año de 1697*, vol. iv. p. 804. More definite are the reports of 1740 (*Noticias de la Pimeria del año de 1740*, *Ibid.*, p. 838): "En el Rio Gila hay tanta multitud de gente Pima, que hay quien asegure que en sus riberas seve tanta y mas que la que hay en el Rio Hiaqui, y esta gente está poblada Rio Abajo, sin duda hasta el mar, porque rio arriba á distancia no hay muy larga." The most explicit, however, of all the explorers is Father Jacob Sedelmair in 1745, in *Relacion que hizo el Padre Jacobo Sedelmair de la Compañia de Jesus, Misionero en Tubutama, con la Ocasion de haber venido á México por el mês de Febrevo del año de 1746, á solicitar operarios para fundar Misiones en los Rios Gila y Colorado, que habla Descubierto en síos entradas que hizo á la Gentilidad al norte de su Mision* (*Ibid.*, p. 849). It follows from all these authorities that in the past century the Pimas were scattered about the Gila on both banks in numerous small settlements, and also in all probability north of the Gila towards the Salado. In 1775, Father Garcés mentions at least four "rancherías" of Pimas near Casa Grande: "Salieron á recibirnos los Pimas Gileños de resulta del recado de ayer, esto es, su gobernador de las rancherías llamadas Aquituni y Cuitoa. El de Utilluc con su alcalde acompañados tambien del gobernador de Sutaquison y otros muchos Indios á caballo . . . En este pueblo de Sutaquison se acaba la nacion Pima del Rio Gila, la que en el distrito de cuatro leguas tiene cinco pueblos, es á saber: San Juan Capistrano de Utilluc, San Andrés de Tubuscabors Atison, San Serafino del Napcub y la Encarnacion de Sutaquison, compondrán como 2,500 almas. Todos estos pueblos hacen grandes siembras de trigo, algunas de maiz, algodón, calabazas y otras semillas, para cuyo riego tienen formadas buenas acequias, cercadas las milpas con cerco comun, y divididas las de distintos dueños con cercos particulares." *Diario*, pp. 232, 235. These statements of Father Garcés may even tend to explain the great number of irrigating ditches on the Delta and the Gila; many which now appear ancient may yet prove to be only two or three centuries old. At all events, it tends to show that the Pimas, even in the past century and before, had not abandoned certain ideas of culture which distinguished them from the

regarded as absolutely ancient are the groups of larger build- ings, and these groups are always at some distance apart, — enough to establish that each group formed a separate vil- lage. It follows, therefore, that the conception of extensive cities is not applicable here, and it is very doubtful whether the ruins were contemporaneously inhabited. Lastly, it is by no means certain that a common tribal bond united the groups that were contemporary and contiguous. We know, on the contrary, that most of the pueblos inhabited at the time of Columbus formed autonomous communities, and that a con- federacy for mutual assistance in peace and in war repre- sented the most advanced conceptions of the natives beyond the tribal cluster. This applies to villages situated on the same irrigating ditch; Tenochtitlan and Tlatelolco used the same acequia and were contiguous, yet they were indepen- dent of each other for a long time.<sup>1</sup> Where irrigation works of such great length as those on the Gila and Salado were possible, their opening may have been the work of two or more independent pueblos, just as to-day San Ildefonso and Santa Clara have one of their ditches in common. Such community of public works results from linguistic ties and from the nature of Indian social organization. It does not exclude autonomy, and it is and has always been a fruitful source of dissensions, even of warfare.

I repeat here that nowhere was I able to discover distinct

wilder tribes around them. Arricivita, *Crónica Seráfica y Apostólica*, lib. iv. cap. iii. p. 463. "Hay en solo este corto distrito cinco pueblos, que tienen como dos mil y quinientas almas: hacen grandes sementeras de trigo, maíz, algodón, calabazas y otras frutas, para cuyo cultivo tienen con buenas acequias, cercadas sus milpas; y andan vestidos con mantas que hacen ellos de algodón ó de la lana de sus ovejas"

<sup>1</sup> Tezozomoc, *Crónica Mexicana*, cap. xli.; Tobar, *Relacion del Origen de los Indios que habitan esta Nueva España segun sus Historias*, p. 69; Duran, *Historia de las Indias de Nueva España*, cap. xxxii. p. 257; and many other authorities.

traces of the estufa. Mr. Cushing declares that he found it.<sup>1</sup> We must therefore await the publication of his final report before asserting or denying anything on this point.

The artificial objects associated with the ruins agree with those of Pueblo culture in general, as is abundantly corroborated by the magnificent collections made by the Hemenway Expedition under Mr. Cushing's direction. The pottery is not at all different from that of the Salado, Upper Gila, and Fort Apache, local differences always excepted.

Part of Tempe stands on an ancient village, but the destruction is such as to render it difficult to trace the merest outlines. I saw some excellent stone axes which came from this site, of the type peculiar to the Southwest. On the plain southeast and south of Tempe stand several lofty mounds, but the ground is in private hands. These mounds showed houses several stories high, with thick walls. I transcribe here the description given by Mr. Cushing of the manner in which these walls were constructed:—

“The walls of all of these buildings were found to have been constructed after an ingenious and heretofore undescribed fashion. Besides stone and hand- as well as basket-made

<sup>1</sup> *Preliminary Notes*, p. 165: “Usually contiguous, or, if far removed, at least adjunctive to these great central temples, were what I found occasion to name the ‘sun temples’ of the ancient inhabitants, where, as evidenced by the central hearth, by the floors elevated at the edges for the accommodation of spectators, and by other signs, the mythic sun drama and other sacred ceremonials must have been performed during winter; as well as wherein the esoteric societies gave their rare public exhibitions of mysterious feats or occult medicine powers.

“The smallest of these which we measured was fifty feet in width by nearly a hundred in length, another was not less than one hundred feet in width by more than two hundred in length. All were elliptical in shape, the sole traces of which looked like gigantic oval mounds from which the centres had been dug out.

“In this appearance they were almost identical with enormous oval reservoirs which occurred throughout the district, with the difference, however, that while the latter were usually lower, and open at one or both ends, the sun temples were almost always unbroken.”

adobe work used in the making of them (especially of the communal dwellings to be mentioned later), careful examination revealed along the outer and inner edges of the main walls numerous holes, containing the dust of decayed wood. This gave evidence that corresponding to the thickness of a proposed wall rows of upright posts had been firmly planted, as further careful cutting into plastering on these walls determined these had been fastened together, both laterally and horizontally, and transversely by means of poles and sticks lashed to them. This wall-like form or framework had then been wattled on both the outer and inner sides with canes, adobe mud, or in some instances a kind of concrete, had then been impacted within these great wall-frames, and heavy coats of plastering added to their outer and inner surfaces. Thus, when dried, a structure almost unparalleled in adobe-work for solidity and enduring qualities was formed.

“The inner walls of these buildings differed from the outer only in being less massive, that is, in having the two rows of border posts nearer together. The lesser partitions had, on the other hand, still less thickness, having been built up along a ‘core,’ as it were, composed of a single row of posts.”<sup>1</sup>

The walls of the houses in this region represent, therefore, something akin to “gabion” work, with the difference that, while gabions are round, here they are square or rectangular, tied to one another, and a number of rows superposed to give to the walls the requisite height.

It is difficult to determine how many stories the loftier buildings originally had. As many as seven have been attributed to them, but I hold this to be an exaggeration. The greatest number attributed to the Casa Grande by its earliest explorers is four,<sup>2</sup> and at present there are only three

<sup>1</sup> *Preliminary Notes*, p. 164.

<sup>2</sup> Mange, in 1697, says (*Relacion del Estado de la Pimeria*, p. 804): “Y aunque

visible above the surface of the ground. Whether some of the stories were built so as to be retreating or not, I am unable to decide. From the appearance of the third story in the Casa Grande, we might be led to infer that, while the two lower stories have an unbroken wall on all sides, the uppermost tier may only have occupied the central part of the edifice, and not extended over the whole. The rooms are higher and much more spacious than in the northern ruins; the doorways are higher and wider, and the apertures for light and air, while not deserving the designation of windows, are larger than those in northern communal houses, although not much larger than in some of the well preserved cliff dwellings. But the largest buildings cannot, as will be seen further on, compare in extent with the typical pueblo house. On the whole, the architecture of the Tempe delta and Lower Gila is only a higher development of that noticed on the Upper Gila and Upper Salado, and the change appears to be the result of natural causes. The country is much more favorable for the subsistence of an agricultural population, and the inducements for permanent settlement were greater, so that greater solidity of construction was the natu-

estos jentiles lo han quemado distintas veces, se ven los cuatro altos con buenas salas, aposentos y ventanas curiosamente embarradas por dentro y fuera de manera que están las paredes encaladas y lisas con un barro algo colorado." Sedelmair, *Relacion*, p. 847: "La una de las Casas Grandes es un edificio grande, el principal cuarto del medio cuatro altos, y sus contornos de los cuatro lados de tres." *Description Geográfica natural y curiosa de la Provincia de Senora*, 1764, (the same as the "Rudo Ensayo," in third series, p. 503,) says: "Tiene dicha casa cuatro altos que están en pié aun." Father Pedro Font, who visited and measured the Casa Grande in 1775 in company with Father Garcés, says (*Notice de le Grande Maison dite de Moctecuzuma*, in *Cibola*, Appendix, p. 386): "Enfin on reconnoit que l'édifice avoit trois étages; si ce que disent les Indiens est vrai, et à en juger par des indices, il y en avoit quatre, en comptant un étage souterrain." Arricivita, *Crónica Seráfica*, p. 462: "Se conoce que la casa tenia tres altos, y acabo serían de madera. y se destruirían en la quemazon que de ella hizieron los Apaches." Mr. John Russell Bartlett (*Personal Narrative of Incidents*, vol. ii. p. 272, 1854) saw only three stories.

ral result. The material at hand most convenient and most practical was adobe, which does not admit of being raised with frail walls. The climate, moreover, is such as to render the assembling of a number of families in buildings with small cells uncomfortable and detrimental to health. Hence we have smaller edifices, but larger rooms and better ventilation.

In my letter to the Institute published in the Committee's Report of 1884, I referred to artificial mounds, resting on artificial terraces, which I found both at Tempe and at Casa Grande.<sup>1</sup> It has since been stated that these mounds were houses, and not solid masses of earth, as I supposed. With due respect to the source from which such statements have come, I would still adhere to my original opinion, until excavations made in the same localities of which I speak, and on the same ruins, reveal the existence of chambers. At the great mound, about three miles west of Tempe, clefts cut into the mass to a considerable depth, as they do into the so called Pyramid of Cholula, and I noticed that the mound was one solid mass, while the lines of foundations on the surface, and smaller mounds rising from them, indicated that the artificial eminence had originally supported buildings on its summit.

After these preliminary observations I turn to those ruins which I have personally investigated. My attention was first directed to the great mound situated a few miles west of Tempe, on the north side of Salt River.

That mound (see Plate I. Figure 58) forms the southwestern corner of a quite extensive group of ruins situated north of the road from Tempe to Phoenix. Clusters of the checker-board pattern, with foundations made of rocks, and little hillocks indicating houses, are scattered about it,

<sup>1</sup> *Fifth Annual Report*, p. 66.

chiefly to the east. I could not determine whether the large mound was directly connected with these clusters, or whether the latter formed one complex or not. Still they are in such close proximity that an original connection appears likely. The pottery is alike on the mound and on the smaller clusters. It is mostly coarse, with a sprinkling of painted fragments resembling the oldest types. About a hundred meters south of the mound are the vestiges of an ancient acequia, which is at present not over 4 meters wide and barely 0.75 m. (34 inches) deep. The mound presents a triple elevation. First there is a platform about 1.6 meters ( $5\frac{1}{4}$  feet) high, along the rim of which ran a wall with an edifice, now reduced to rubbish. In its northwestern corner, at distances varying from  $16\frac{1}{2}$  to 3 meters (55 to 10 feet) from the edge of the platform, rises the mound itself to a height of 3.2 meters ( $10\frac{1}{2}$  feet). Its sides are steep, and it is easy to see, where the interior is exposed, that it is a solid mass of earth, and not a building with rooms. Furthermore, the level on which the lower platform rests lies very little, if any, above that of the ancient irrigating ditch near by. I do not hesitate, therefore, to regard it as a solid mass raised on an artificial platform. The top of the mound bore a cluster of mounds and enclosures, a checker-board village on a small scale.

It will be remembered that the artificial platform already appears on Tonto Creek, and perhaps on the Upper Gila also; at Tempe it assumes a greater degree of perfection, as does the mound. The latter resembles the rectangular truncated pyramids of Mexico, with the difference that it is wholly of earth, and that its height is inconsiderable. Why the natives should have resorted to this kind of structure here and on the Upper Salado, and why only in certain cases, is a matter which I must leave for discussion to a later portion of this chapter.

There are ruins farther west, but I have not visited them. The plain between the Salado and Gila south of Tempe also contains numerous ruins. Here the Hemenway Expedition made its first researches, and the forthcoming report on its work relieves me from the need of detailed allusion to the remains disseminated over that section. I traversed it rapidly, catching a glimpse of the huge mounds at Mesa City, and crossed to the south side of the Gila at Agua Dulce.

Nature is the same there as on the north bank. As far as the eye reaches, it meets only whitish expanses dotted by a strange vegetation, except along the horizon, where rugged mountains obstruct the view. On the north side of the Gila rise the formidable cliffs of the Superstition range. Above it tower the four craggy peaks of the Masasar range. In the south, the mountains appear even more desolate; their profile is sharp, and they form well individualized clusters. It is frightfully hot on the banks of the river, but cottonwoods and other leafy plants shade its course. The volume of water is usually inferior to that of the Salado. In this section sometimes more than a year elapses before a shower reaches the bottom lands, but on the mountain crests and slopes thunder-storms occur daily during the rainy season. The gulches and rills descending from the heights forthwith carry the rain-water down to their foot, and sometimes as far as the first tier of terraces above the Gila. The Maricopa Indians take advantage of this to irrigate their fields by means of these mountain torrents, and, as already observed, the ancient inhabitants on the Upper Gila, and at other places, did the same. This accounts for the old irrigating ditches running at right angles to the course of the rivers.

Along the Lower Gila the ruins are easily noticed at a distance. They loom up as white mounds, which upon approach show traces of pottery, and sometimes protruding walls of

adobe. One of these mounds is situated about one mile west of Agua Dulce, with several smaller ones around it. Such clusters are numerous, and sometimes close together; still they were distinct settlements. They indicate a number of villages, most of which were of small size, stretched along the river and also scattered at greater intervals to the south of the Gila valley. Occasionally a ruin is met with of greater extent than the rest.\*

Six miles west of Agua Dulce stands the "Casa Blanca." What I surveyed of this prominent cluster is a mound, with surrounding wall. Upon examination I came to the conclusion that it was a ruined house several stories high, the walls of the upper story of which can be traced on the surface. Their thickness is 0.50 m. (20 inches) and they are of the usual white adobe. The circumvallation is of the same material. The building stood on an eminence, and a good view is enjoyed from it. A short distance below begins the Gila bottom, with its thickets and cottonwood groves. The Pima Indians have a village near by, so that I could not investigate further; but it appeared to me that the ruin was not the only one on this site, but that the ancient settlement had been composed of at least several buildings, of which the one measured was probably the most considerable.<sup>1</sup>

The circumvallations have as a rule one or more smaller structures along their inside, which peculiarity is also found on Tonto Creek and on the Rio Verde, and is most strongly

<sup>1</sup> The distance from Casa Blanca to Casa Grande is about thirty miles; it is not unlikely therefore that the two edifices which Father Sedelmair mentions as still in existence, twelve leagues west of Casa Grande, were those of Casa Blanca. He wrote in 1746, having visited the Lower Gila two years previously (*Relacion*, p. 847): "Como doce leguas mas abajo hay otros dos edificios con otros menores á su contorno y acequia." The statement that, in 1744, there were still two houses standing with several smaller ones around them, is significant of the rate of decay of these ruins built of friable adobe.

marked at Casa Grande. Casa Grande is, as I have elsewhere stated, an important monument. "Its situation has nothing to distinguish it from other ruins; but some of its buildings are intact, and others enable us in their ruined state to explain the present condition of other places. In short, the Casa Grande shows every degree of decay, every kind of structure, which the ancient villages of that region exhibit."<sup>1</sup>

The distance between Casa Grande and Casa Blanca is about thirty miles. Opposite Zacaton, where the Pima agency is located, there is a ruin on the north bank of the river, the foundations of which are of stone, and not of adobe, like those on the south bank. The reason for this becomes apparent when we consider the location. Steep and rugged heights approach the banks of the stream from the north, and the expanse between them and the Gila has only a thin crust of soil. Hence the material for making adobe walls was lacking, and stone was resorted to for construction. Eight miles northeast stands another ruin, but on a level of greater area, the soil of which is similar to that on the south bank. Accordingly this ruin is a shapeless mound, showing that the building was originally of adobe. Adobe walls, when they begin to crumble, turn almost to dust, and the ruin appears like a natural hill, in the interior of which partitions remain intact and are revealed by the most superficial excavations. The rubbish fills the rooms, so that in many cases artificial objects remain well preserved within. From the ruin last mentioned I saw a handsome clay urn painted yellow, with red decorative designs. Similar potsherds were scattered over the mounds at Casa Blanca. The jar was found to be sealed with a composition of mezquite gum and clay, and after this cover had been removed the interior was

<sup>1</sup> *Fifth Annual Report*, p. 67.

found to be filled with minutely broken human bones, every part of the skeleton being represented. Of the burials on the Tempe delta Mr. Cushing speaks as follows:—

“It was, as I have said, in the course of investigating one of these latter mounds, that I ascertained they were what I found it expedient to term ‘pyral mounds,’ since on their sites, for generations evidently, had been burned a certain class of the dead of these cities, together with their numerous funeral sacrifices. Usually at the southern and western bases of these mounds were found great cemeteries containing from twenty to two, three, and even four hundred incinerary urns.

“The same excavation which revealed these features of a pyral mound also revealed the contiguous enclosing wall of what proved to be a typical, very extensive, many-roomed dwelling. Not only from the discovery of totemic devices and forms of pottery, of which each one of these great blocks of dwellings contained always a distinguishing few, but also from the fact that each had outside of its enclosing wall its own pyral mound, its great underground communal oven, and its still greater reservoir fed by a special branch of the larger city viaducts or canals, it was inferable that each was the abiding place of a particular clan or gens.”<sup>1</sup>

Elsewhere he says:—

“First in the temples, in what remained of the second and third stories, afterwards in the enclosed communal buildings, we found sepulchres. Those in the temples were built of adobe, shaped like sarcophagi. These had in turn been carefully walled in and plastered over, in order that the living-rooms that contained them might still be occupied. Amongst other evidences of this were two instances in which these adobe burial cases or sarcophagi had been let into

<sup>1</sup> *Preliminary Notes*, p. 167.

the main central wall, by cutting nearly half-way through the latter, then plastering, in order that space in the living-room might be thereby economized; in yet another instance, the remains of a child were found wholly enclosed in a niche which had been excavated in the same central wall, near the floor.

“The interments in the surrounding walled communal dwellings differed from these latter only in that they were usually placed beneath the ground floors, sometimes in simple excavations sealed over with plaster, sometimes in carefully made rectangular cuttings, the bottoms and sides of which had been more or less thickly and carefully plastered and impacted. There were here also occasional instances of economizing in the space of the living-rooms, whenever in fact the dead had been buried above or on a level with the floors. In such cases cuttings large and high enough for the reception of the bended legs elevated at right angles to the reclining bodies had been made in the walls, and sarcophagi built out therefrom corresponding in length to the length of the body from the hips headward.

“In both the temples and the communal dwellings nearly all little children, the remains of whom were found, occurred in graves or sepulchres disposed about the hearths of the kitchen, or cooking-rooms.

“Frequently double, and in three instances treble, burials were encountered. The latter will help to explain the former. In one case, as admirably observed and reported by Dr. Wortman, the lowermost or first interment was that of a young woman; the next, superimposed, that of a youngish or middle-aged man; the last, and nearest the surface, that of an old woman. Both the young woman (first burial) and the old (last burial) had suffered from a peculiar disease which affected the bones; and which, as shown by my observations of certain families in Zuzi, was often transmis-

sible by heredity. Apparently then the two women were related, if not indeed sisters to each other. The skeleton of the man, however, showed no sign of disease; hence it was inferable that he was unrelated to the women buried with him by any other than marital ties. Judging of this case by Zufi marital institutions, the young woman was the first wife of the man. She dying, he married, according to well known primitive custom, her sister, who, surviving him by many years and remaining unmarried, had been buried with him, as he had been buried with his first wife. . . .

"All of the skeletons, especially of adults, were, as a rule with few exceptions, disposed with the heads to the east, and slightly elevated as though resting on pillows, so as to face the west; and the hands were usually placed at the sides, or crossed over the breast.

"With nearly all were paraphernalia, household utensils, articles of adornment, etc. . . .

"On the other hand, it was found that outside of the communal dwellings, usually at the western or southern bases of the pyral mounds, occurred extensive cemeteries. Each burial consisted of a vessel, (large or small, according to the age of the person whose thoroughly cremated remains it was destined to receive,) together, ordinarily, with traces of the more valued and sacred articles of personal property sacrificed at the time of cremation. Over each such vessel was placed either an inverted bowl or a cover, roughly rounded by chipping, of potsherds, which latter in most cases showed traces of having been firmly cemented by means of mud-plaster to the vessels they covered. Again, round each such burial were found always from two to three or ten or a dozen broken vessels, often indeed a complete set; namely, eating and drinking bowls, water jar and bottle, pitcher, spheroidal food receptacle, ladles large and small, and cooking pot.

Sometimes, however, one or another of these vessels, actually designed for sacrifice with the dead, was itself used as the receptacle of his or her remains. In every such case, however, the vessel had been either punctured at the bottom or on one side, or else violently cracked, in what I may call, from my knowledge of Zuñi customs, was the process of killing it. In and around all such vessels thus broken for sacrifice with the dead, were the remains of other articles, — the nature of which depended always upon whether the person interred was man or woman, girl or boy, — showing traces of having been burned in the same fires as that which burned these dead.

“As was the case in the temple and house burials, so here were occasionally, though much more rarely, encountered double burials, that is, the remains of two adults were found placed in a single incinerary urn, and likewise, so far as could be judged from their much calcined and broken remains, these double burials included the bones of both male and female persons.”<sup>1</sup>

Leaving aside the other details and explanations furnished by Mr. Cushing, however interesting and valuable, I shall only add that the urn found northeast of Zacaton may perhaps in this case indicate a third kind of burial. This isolated instance, however, proves nothing about the possible extent of such a custom. As far as the burial methods in houses, mentioned by Mr. Cushing, are concerned, it is well to note here that in the excavations which he afterwards made at the old pueblo of Halona near Zuñi, many skeletons were found buried in the rooms. The house burials at Tempe are therefore no exceptional feature.

I have copied thus extensively the remarks of Mr. Cushing for the reason that his explorations were conducted on a larger scale and with larger means than any other in the

<sup>1</sup> *Preliminary Notes*, p. 169.

Southwest, and that the volume from which I transcribe them has not been extensively circulated in this country. We must, however, wait for his final and detailed report, before we can judge of the decisive importance of the above statements. As he himself says, the paper in which the above extracts are embodied had to be prepared with great haste, to which I can bear testimony, as well as to the great difficulties resulting from ill health on his part.<sup>1</sup>

Between Zacaton and Casa Grande the signs of ancient habitations, I am told, are quite numerous. At Casa Grande I could proceed to some explorations, although excavations were of course impossible.

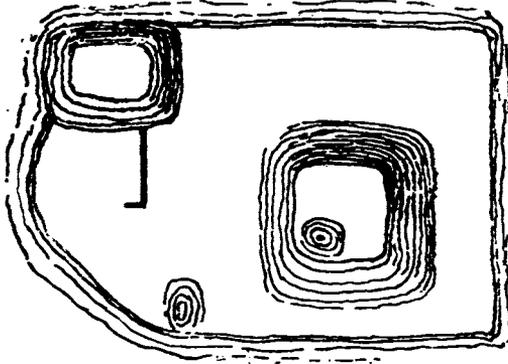
I refer to Plate I. Figure 59, for the general disposition and relative extent of the ruins. The whole area over which the ruins clustering around the "Great House" are disseminated is about nineteen acres; but they are divided, as will be seen, into two groups, separated by about one hundred meters, and the "Great House" stands near the southwestern corner of the southern group. As stated in my report of 1883, the northern group includes an artificial mound resting on an artificial platform, very similar to the mound at Tempe, and bearing on its summit the vestiges of buildings. As at Tempe, the platform has along its rim traces of a wall of circumvallation, and in its southwestern corner rise two lesser mounds, both of which were manifestly buildings.<sup>2</sup>

Of the Casa Grande, as well as of the mound in question, I subjoin ground plans on the same scale. My object is to show the similarity in disposition of both edifices. The Casa Grande itself does not rest on an artificially raised basis, but is built on a piece of ground naturally higher than the level

<sup>1</sup> *Ibid.*, p. 163. "By reason of the great haste with which this paper must be prepared, by reason also, alas, of the illness with which to the extreme of endurance I am oppressed while dictating it; brevity, system, logical sequence, and finish must be, to a large extent, sacrificed."

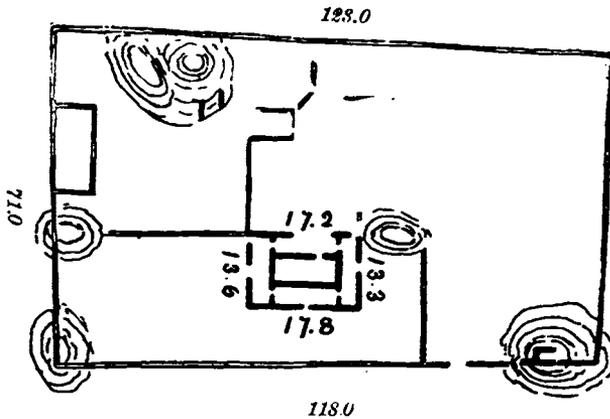
<sup>2</sup> *Fifth Annual Report*, p. 67.

of the northern group, and especially higher than the mound on the latter. But, allowing for these differences, the rescm-



MOUND AND PLATFORM. — Scale, 1 inch = 40 meters.

blance is otherwise striking, and we may well ask, Why in one case was the building placed on the surface of the



PLAN OF CASA GRANDE, AND ENCLOSURE. — Scale, 1 inch = 40 meters.

ground, and why in the other did it require a double sub-structure? I have attempted to suggest an explanation in my letter to the Institute.

“ Along the Lower Gila and Salado the copious showers which pour down on the higher mountains are conducted to the plain by ‘arroyos,’ which frequently flood the surrounding country for hours. The adobe of to-day suffers less from these sudden overflows ; but the so called concrete of the ancient buildings cannot stand the gnawing effects of water at their base. The Pimas surround their permanent winter houses by semicircular ditches for the purpose of deflecting the currents. I have noticed that artificial mounds occur almost exclusively on the lowest side of each settlement. Even at Old Fort Reno the drainage is such that a sudden cloud-burst might have endangered the houses unless they were placed on a level raised above the ground. The mounds, therefore, seem to have been the product of local causes, and not a distinctive feature applied to a certain class of buildings like the Teo-calli of Mexico. In one and the same region there are ruins like the Casa Grande and Tempe, containing buildings on mounds and others on the level ground ; other ruins where there are no mounds at all ; and still others where the settlement is confined to a mound.

“ I am therefore of the opinion that the mound building of this part of Arizona was a protective device, called forth by the peculiar conditions of drainage, which threatened structures resting on the natural level. I will add here that the artificial eminences are found at Pueblo Viejo, on the Upper Gila, along the whole route which I travelled ; but that out of forty-seven ruins or groups surveyed by me I have met with only five where the mounds were very distinct. Four of these are on the Lower Gila and Salado, and one in the Sierra Masāsar. But at Pueblo Viejo and at San Carlos there are indications that some of the buildings also rested on elevated platforms.”<sup>1</sup>

<sup>1</sup> *Fifth Annual Report*, p. 72.

From this opinion I have still no reason to dissent, although the existence of artificial mounds on the Lower Gila and Salado has been denied. While heartily glad to be corrected in my views in case they should prove incorrect and based upon incomplete observations, I repeat them here, hoping that they may conduce to future exhaustive investigation.

The walls of the Casa Grande are unusually thick, measuring 1.22 m. (4 feet), and even the partitions 0.92 m. (3 feet). At the Casa Blanca their thickness is only 0.50 m. (22 inches), as already said, and in other ruins between Casa Grande and Florence, 0.92 and 0.60 m. (3 and 2 feet) were measured by me. In the houses which Mr. Cushing examined about Tempe varying thickness of the walls was, as he told me, also observed, and some of them were as wide as at Casa Grande. The considerable width of the walls of Casa Grande is therefore not an unusual feature.

The doorways are higher and wider than in northern ruins, so are the light and air holes. The roof and ceilings, as far as traceable, belong to the usual pueblo pattern, that is, they consist of round beams supporting smaller poles, on which rested a layer of earth. All the woodwork is destroyed except the ends of the beams, but I was informed that a few posts of cedar wood were still visible some years ago. Cedar only grows at some distance from Casa Grande, but this was no obstacle to the patient and obstinate Indian. I could not find any trace of stairways or ladders. It was remarked in the last century, that the Apaches were the destroyers of the woodwork in the building,<sup>1</sup> and something similar was told me; but to what extent this is true, I am unable to determine.

<sup>1</sup> *Notice de la Grande Maison dite de Mootecusoma* (in *Cibola*, Appendix, p. 386): "Nous ne trouvâmes aucune trace d'escaliers; nous pensâmes qu'ils étaient de bois, et qu'ils furent brûlés lorsque les Apachés incendièrent l'édifice." This was written by Father Pedro Font, a Franciscan who accompanied Father Garcés in 1775.

Of the other shapeless mounds surrounding the Great House, or composing the northern cluster of the ruins, I am not in a position to say anything except that they indicate two-story edifices, long and comparatively narrow. Their size without exception falls short of the dimensions of northern communal pueblos, and, notwithstanding the extensive area occupied by the ruins, the population cannot have been large. I doubt whether it exceeded a thousand souls. Almost every inch of the ground is covered with bits of pottery, painted as well as plain, and I noticed some corrugated pieces. They all resemble the specimens excavated by Mr. Cushing from the vicinity of Tempe, and what I saw of those specimens convinces me that they belong to the class common to the ruins of Eastern and Central Arizona in general. There was among the potsherds which I picked up myself a sprinkling of pottery that closely resembled the modern ware of the Pimas and Pápagos; but as I had already noticed the same kind on the Rio Verde, and had been forced to the conclusion that they were ancient, I am loath to consider them as modern at Casa Grande. Of other artificial objects, I saw broken metates, and heard of the usual stone implements. The culture, as indicated by such remains, offers nothing at all particular.

The profusion of pottery scattered far beyond the area covered by the buildings has caused the impression that the settlement was much larger than I have represented it to be; I have, however, no reason to modify my opinion. I have already stated that clusters of ruins are numerous about the Gila, and at no great distance apart. Intercourse between these settlements, if they were contemporaneously inhabited — of which there is as yet no proof — must have been frequent, and the winds and other agencies have contributed towards scattering potsherds over much larger expanses than

those which they originally occupied. The acequias which run parallel to the Gila in this vicinity, and of which there are distinct traces, are usually lined with pieces of pottery which leads the untrained observer to draw erroneous impressions.

On the southwestern corner of the northern group of the Casa Grande cluster stands the elliptical tank which is indicated on Plate I. Figure 59. Its greatest depth is now  $2\frac{1}{2}$  meters ( $8\frac{1}{2}$  feet), and the width of the embankment surrounding it varies between eight and ten feet. A large mezquite tree has grown in the centre of this artificial depression. As the tank stands on the southwestern extremity of the northern, and not one hundred meters (three hundred feet) from the southern group, it was probably common to both.

Between Casa Grande and Florence the distance eastward is nine long miles, and the country shows no change. Several ancient irrigating ditches are seen on the road, some of which are quite deep. Nowhere did I notice any trace of a lining or casing, as at Tule; the raised banks or rims seemed to be only of the soil. Ruins in scattered clusters are numerous, all of the same character. In one place I found an elliptical tank almost as large as the one at Casa Grande, and presenting a similar appearance. Wherever walls protruded, the material was the same, only thinner. This may be due to the fact that they were merely partitions, and that I nowhere could measure the outer ones, which have crumbled. In short, from Casa Blanca in the west — and probably some distance beyond — a line of ruins extends to east of Florence, and probably as far as Riverside, or a stretch of more than sixty miles. These ruins, however, do not reach very far inland, although some are scattered throughout the Papaguera.

At this day Casa Grande shows two stories with vertical walls on all four sides, and from the centre rises a third story like a low tower. Whether the latter originally extended over

the whole building or not, I am unable to determine. As this question is related to the early historical notices concerning the edifice, I shall briefly refer to them here.

The discovery of Casa Grande seems to be due to the celebrated Jesuit, Eusebius Franciscus Kuehne (better known as Father Kino), who heard of the Casa Grande in 1694 and visited it in the same year.<sup>1</sup> But the earliest description is due to Father Kino's companion, Captain Matéo Mange, and dates from three years later, when the latter accompanied the missionary on his second visit. The building is described as being four stories high.<sup>2</sup> The Franciscan Father Font, who visited it in company with Father Garcés in 1775, declares that the Casa had three stories, but that, if what the Indians stated was true, there must have been four, one of which he judged may have been subterranean.<sup>3</sup> This agrees perfectly with the present condition of the Great House. Father Jacob Sedelmair, who saw the house in 1744, speaks of four stories, and also of twelve other structures around it still partly intact, but lower than the main one.<sup>4</sup> Thus it seems that

<sup>1</sup> Father Francisco Xavier Alegre, *Historia de la Compañía de Jesús en la Nueva España*, vol. iii. p. 83: "En este viaje tuvo noticia del Rio Gila, y de los grandes edificios que se ven en sus cercanias." *Apostólicos Asanes de la Compañía de Jesús*, p. 253. Sedelmair, *Relacion*, p. 845.

<sup>2</sup> *Relacion del Estado de la Pimeria*, p. 804: "Y vimos toda la vivienda del edificio que es muy grande de cuatro altos, quadradas las paredes y muy gruesas como de dos varas de ancho del dicho barro blanco. Y aunque estos Jentiles lo han quemado distintas veces, se ven los cuatro altos con buenas salas, aposentos y ventanas curiosamente embarradas por dentro y fuera de manera que estan las paredes encaladas y lisas con un barro algo colorado, las puertas muy parejas."

<sup>3</sup> *Notice de la Grande Maison*, p. 386: "Enfin, on reconnoit que l'édifice avoit trois étages: si ce que disent les Indiens est vrai, et á en juger de ce qui reste, il y en avoit quatre, en comptant un étage souterrain." Arricivita, *Crónica Seráfica*, p. 462: "Aunque se conoce que la casa tenia tres altos."

<sup>4</sup> *Relacion*, p. 847: "La una de las Casas Grandes es un edificio grande, el principal cuarto del medio de cuatro altos. . . . Á tiro de arcabuz se ven otras doce casas medio caidas de paredes gruesas tambien y todos los techos quemados, menos un cuarto bajo con unas vigas redondas lisas y no gruesas, que parecen de cedro ó sabino y sobre ellas otates muy parejas, y sobre estos una torta de

the greatest decay occurred between the years 1744 and 1775, and that it did not have originally more than four stories. This is corroborated by Mr. James Russell Bartlett in 1852.<sup>1</sup> Three of the four stories at least had vertical walls on all four sides, but the fourth had the shape of a central tower or lookout.

It remains now to glance at the purpose of these "great houses," which every cluster of ruins on the Gila and Salado includes, whenever it is of any importance or extent. Mr. Cushing, who also noticed this feature, calls the buildings temples. I have no doubt they may have been used incidentally for worship; still it was probably not their exclusive object. It should be remembered that we have in the first half of the seventeenth century descriptions of analogous buildings then actually used among some of the natives of Central Sonora. Those natives were the Southern Pimas, or "Nébomes," kindred to the Northern Pimas, who occupy the banks of the Gila near Casa Grande, Casa Blanca, and at intermediate points. Father Ribas, the historiographer of Sonora, says that the villages of the Nébomes consisted of solid houses made of large adobes, and that each village had besides a larger edifice, stronger, and provided with loopholes, which served, in case of attack, as a place of refuge or citadel.<sup>2</sup> The purpose of this building was not merely sur-

argamasa, y barro duro." This is a good description of a roof of the well known pueblo type.

<sup>1</sup> *Personal Narrative*, vol. ii. p. 272: "Three stories now stand and can plainly be made out by the ends of the beams remaining in the walls, or by the cavities which they occupied; but I think there must have been another story above, in order to account for the crumbling walls and rubbish within. The central portion or tower, rising from the foundation, is some eight or ten feet higher than the outer walls, and may have been several feet, probably one story, higher when the building was complete." Compare also, for other descriptions by modern writers, H. H. Bancroft, *Native Races of the Pacific States*, vol. iv. pp. 625 to 633.

<sup>2</sup> *Historia de los Triunfos de Nuestra Santa Fé*, p. 360: "Poblados estaban los Nebomes á orillas de arroyos de buenas aguas y corrientes: sus casas eran

mised by Father Ribas, who had means of acquiring personal knowledge, having been one of the early missionaries in Sonora.<sup>1</sup> The Spaniards had an opportunity of experiencing its use to their own detriment, and the edifice was so strong that its inmates had to be driven from it by fire.<sup>2</sup> Such a place of retreat, in case of attack, the Casa Grande and analogous constructions in Arizona seem to have been. The strength of the walls, the openings in them, their commanding position and height, favor the suggestion.<sup>3</sup> That they may also have been inhabited is not impossible; Mr. Cushing's investigations seem to prove it.

mejores y mas de asiento que las de otras naciones: porque eran de parades de grandes adobes, que hazian de barro, y cubiertas de açoteas, y terrados. Algunas dellas edificauã mucho mayores, y con troneras á modo de fuertes, y proposito para si acometiessen enemigos, recogerse á ellas la gente del pueblo y valerse de su flechería."

<sup>1</sup> Father Ribas was born at Cordova in Spain, and was in Sonora between 1604 and 1640. José Mariano Beristain de Souza, *Biblioteca Hispano-Americana Setentrional*, ed. 1883, vol. iii. p. 25.

<sup>2</sup> Ribas, *Historia de los Triumphos*, p. 372: "Pero nuestras espías dieron auiso, que el mayor numero de gente estaua fortificado en su pueblo y casas de paredes de adobes, y vna dellas grande, con sus troneras que les seruía de fortaleza. Dõde en tiempo de guerra se recogía la gente menuda, y por las troneras jugaban á su saluo de su flechería. Acometió el Capitã cõ sus soldados á esta casa fuerte. . . . Acometió á entrarla el Capitan con sus soldados, poniẽdo á las troneras las adargas pequeñas, como broqueles de q̄ usan. Defendianse valientemente los enemigos, y auían ya herido á dos soldados Españoles y otros Indios amigos. En esta ocasion mandó el Capitan, que se arrojasse fuego por las troneras dentro de la casa, donde no murieron no pocos de los enemigos, con el humo y fuego."

<sup>3</sup> To this should be added the wall of circumvallation, and possibly the buildings, some of which were more than one story high, attached to it inside of the enclosure. The thought that the latter might have also had a defensive object is expressed by Father Font (*Notice de la Grande Maison*, p. 385): "Tout autour sont des murs qui indiquent une enceinte ou muraille qui renfermait cette maison et d'autres édifices, surtout sur le derrière, où il parait qu'il y avait une construction comme un château intérieur ou réduit." Arricivita, who has only given another version of Font's description, is still clearer (*Crónica Seráfica*, p. 462): "Y á su rededor hay ruinas que parecen de muralla que cubría la casa y otros edificios, en cuyas esquinas parece había castillos ó atalayas; pues en una se conserva un pedazo con divisiones, y un alto."

In connection with all these questions it becomes interesting now to examine whether the Indians dwelling on the banks of the Gila at present, and who inhabited them when first visited by Europeans, have or had any traditions or folklore concerning the origin and fate of the ancient settlements there.

As early as 1697 Father Kino, when he visited the Casa Grande for the second time, interrogated the Pimas and gathered from their talks that the Great House had been built by a mighty chief called Siba, or Sibuni, who lived in it. He also inferred that the said chief had come thither from the north.<sup>1</sup> Father Sedelmair, in 1744, heard a similar tale.<sup>2</sup> Father Font, thirty-one years later was told: "The halls were lighted, from what remains to be seen, through the doorways only, and through round holes made in the walls looking to the rising and setting sun. The Indians told us that it was through these apertures, which are tolerably large, that the sovereign, whom they call the Unpleasant [literally "bitter"] Man, looked at the sun when it rose and set, in order to salute it."<sup>3</sup>

Mr. J. D. Walker, an old resident in the vicinity of Casa

<sup>1</sup> Matéo Mange, in *Documentos para la Historia de Méjico* (series iv. vol. i. p. 384) calls him Sibuni. On page 282 he writes: "Y que las fabricaron unas gentes que vinieron de la region del Norte, llamado el Siba que según su definicion en su idioma es el hombre amargo ó cruel y que por las sangrientas guerras que los daban á los Apaches y 20 naciones con ellos confederados, muriendo muchos de una y otra parte despoblaron y parte de ellos por disgusto se dividieron y volvieron para el Norte, de donde años antes habían salido, y lo mas hácia el Oriente y Sur."

<sup>2</sup> *Relacion*, p. 347: "Que dicen las fabricaron unas gentes que vinieron de la region del Norte, llamado el principal el Siba, que en el idioma de los Pimas es el hombre amargo y cruel, y que por las sangrientas guerras que les daban los Apaches y veinte naciones con ellos confederados, muriendo muchos de una y otra parte, se despoblaron y parte de ellos por disgustados se dividieron y volvieron para el Norte, de donde años antes habían salido, y los otros hácia el Oriente y Sur." This is manifestly copied from Mange.

<sup>3</sup> *Notice de la Grande Maison*, p. 386.

Grande, who has been to me personally an excellent friend and valuable informant, told me this tale.

The Gila Pimas claim to have been created on the banks of the river. After residing there for some time a great flood came that destroyed the tribe, with the exception of one man, called Ci-ho. He was of small stature, and became the ancestor of the present Pimas. The tribe, beginning to grow in numbers, built the villages now in ruins and also spread to the north bank of the river. But there appeared a monstrous eagle, which, occasionally assuming the shape of an old woman, visited the pueblos and stole women and children, carrying them to his abode in an inaccessible cliff. On one occasion the eagle seized a girl with the intention of making of her his wife. Ci-ho thereupon went to the cliff, but found it impossible to climb. The girl, who was still alive, shouted down to him the way of making the ascent. When the eagle came back, Ci-ho slew him with a sword, and thus liberated his people from the scourge.<sup>1</sup>

After this, quite a long period elapsed during which the Pimas remained in undisturbed possession of their adobe settlements. Whether Casa Grande was one of the oldest of them I did not ascertain, but it is stated that at one time a powerful chief called Ci-va-no lived there, after whom the Pimas call the place Ci-va-no Ki, or "House of Civano." He is said to have had twenty wives, each of whom wore on her head, like a head-dress, the peculiar half-hood, half-basket contrivance called Ki-jo. Civano's son is said to have settled on Lower Salt River, but the villages on the Rio Verde were, as already stated, inhabited by a tribe distinct from and hostile to these ancient Pimas. Casa Blanca and the ruins near Zacaton remained inhabited after Casa Grande had been abandoned. The latter is reported to have been destroyed

<sup>1</sup> For another version of this tale, see Bancroft, *Native Races*, vol. iii. p. 79.

by a foreign tribe that came from the east in three bands or hordes. The villages further west still held their own for some time, and it is even said that the people of Zacaton made war upon their kindred at Casa Blanca and blockaded that settlement by constructing a thorny hedge around it. Through the artifices of the medicine-men, the hedge turned into a circle of snakes.

It was while most of the Pima pueblos were still in existence that a part of the stock seceded and moved southward into Sonora, and became the Southern Pimas, or Nébomes. The Gila Pimas continued to live on their old range, but with the pressure from enemies, consequent famine, and epidemics, they grew weaker and weaker; one village after another was abandoned, and the remnants of the tribe, despondent of ever recovering their ascendancy, scattered, some over the Papaguera in Southwestern Arizona, while some remained huddled together in the frailer dwellings of easier construction in which they reside at this day.

The gist of these traditions is that the Pimas claim to be the lineal descendants of the Indians who built and inhabited the large houses and mounds on the Gila and Lower Salado Rivers, as well as on the delta between the two streams; that they recognize the Sonoran Pimas as their kindred, who separated from them many centuries ago; that they attribute the destruction and abandonment of the Casa Grande and other clusters now in ruins to various causes; and, lastly, that they claim that the villages were not all contemporaneously inhabited. Further than that, I do not at present venture to draw conclusions from the traditions above reported; but enough is contained in them to justify the wish that those traditions may be collected and recorded at the earliest possible day, and in the most complete manner, in order that they may be critically sifted and made useful.

The western limit of ancient architecture on the Gila seems to be about Gila Bend; at least I have been unable to learn of any ruins farther west. Along the Colorado River it is stated by Mr. H. H. Bancroft that no ruins exist.<sup>1</sup> Between that river and Gila Bend the country is flat and sandy, and what does not lie immediately on the stream is mostly destitute of water. It is therefore presumable that no ruins will be discovered there, except rock paintings and carvings, which, while they may in part be due to former sedentary tribes, are just as likely also to be the work of nomads. The extreme western limit of pueblo architecture, in the general sense of vestiges of houses built of more durable material than wood or reeds, appears therefore to be the 113th meridian in the latitude of 33°.

South of the Gila I have made no investigations of any consequence, but I have heard that throughout the so called "Papagueria," or that dismal stretch occupying the greatest portion of Southwestern Arizona, ruins similar to those on the Gila, of the same building material, and having a similar arrangement, are occasionally met with. I also heard of cliff-houses in the Sierra de los Ajos, near the frontier of Sonora. To what extent the information may be reliable, I cannot tell. Near the Picacho, an isolated rock with precipitous sides rising near the Southern Pacific Railroad line fifty miles west of Tucson, I saw low mounds and an elliptical tank. As the country is desolate and dry, it is not to be wondered at if vestiges of sedentary aborigines should prove gradually to grow less, and finally disappear in the direction of the south. Of the environs of Tucson and the country to the east of it, the valley of San Pedro, and the boundary lines of Sonora, as far as I was able to examine, I shall treat in the following chapter of this report.

<sup>1</sup> *Native Races*, vol. iv. p. 619.

If now we cast a retrospective glance at the fragmentary material above presented, it strikes us first that, as soon as we leave the colder pine regions of the Apache reservation, a new variety of Indian architecture appears. I purposely say a new variety, and not a new type; for the nucleus of it remains the small house already known to us in the northern Southwest. Just as, however, in the north, the small house has become, through aggregations brought about by force of circumstances, climate, and necessities of defence, the great communal structure called the "Pueblo," so in the south, where conditions of subsistence have been more favorable and there has been increase of population, it has reverted to larger clusters also, with the difference that the terraced plan was mostly abandoned, thicker walls were built, and the means of ventilation especially were suited to the exigencies of a hot climate. The artificial objects show a decided uniformity over the whole area, and the culture was fundamentally the same as farther north, where distinct varieties of buildings prevail. The change which that culture has undergone is one in degree only, and not one in kind, as Mr. Cushing's explorations at Tempe have amply proved.

But the archæological remains give us no clue to the people to whom they are due, except that they were sedentary Indians. Ethnological investigations alone can in time solve the riddle of the who and whence. The older Spanish authorities contain very slight information on these points. Castañeda says that the "Red House," which I believe to have been located near Fort Grant, was constructed by a tribe that came from Cibola, that is, from the north. The Sobaypuris informed Father Garcés that the ruins on the Gila were those of edifices constructed by people who had come from Moqui or from the north. A similar tale is connected with Casa Grande.

The Tontos, or Kohunes, a Yuma tribe, which inhabited the regions of Upper Salt River and the basin north of it, have disappeared as an independent cluster. There are some indications that these Indians were not formerly as wild as they appear to us now that they have become incorporated with the Apaches, and their folk-lore also should be studied. The Apaches appear as a later intrusive stock, yet they may have preserved important recollections of the time when they first drifted into Arizona, which was certainly earlier than the sixteenth century. The Navajos also may know something concerning movements of tribes from the northern sections of Arizona towards southern latitudes.

The only traditions so far studied, in a superficial manner, are those of the Pimas. I have stated that they claim to have originated on the Gila, or, so to speak, *in situ*; yet their language is a Shoshonee dialect. But they are also positive about their ancestors having been the builders and inhabitants of the most ancient important edifices of Arizona.

It need not surprise us to find associated with the principal ruins on the Gila the myth of their having been "stations" of Central Mexican tribes on their supposed wanderings from northern regions towards the tropics, which has been connected with them from the time they were first discovered by Europeans. Nor need it surprise us to find the Montezuma story attached to the past of Casa Grande. Neither of these tales possesses any safe historical basis. That northern tribes have drifted southward in the course of time seems very likely, but whether they preserved their original composition and their language to a degree sufficient to warrant the conclusion that they were still the same people in Central Mexico which they had been in more northern latitudes, is unknown. The Montezuma tale is certainly not a part of original Southwestern folk-lore. The Spaniards and their Indian followers from

the south brought it to the north, where it has hovered since around the principal ruins, like floating mist clinging to the slopes of higher mountains, easily dispelled by either the bright light and warmth of ethnological study, or the fresh breezes of historical criticism.

XI.

TUCSON, THE UPPER RIO SAN PEDRO, THE SIERRA HUACHUCA, AND THE SIERRA CANANÉA.

THE word "Tucson" is said to be derived from "Styucson," which signifies Black Creek in the Pima language according to the Hon. J. D. Walker. The same authority informed me that "Arizona" probably was a corruption of "Örli-son," or little creeks.<sup>1</sup>

The course of the Rio de Santa Cruz, near the banks of which Tucson is situated, terminates as a perennial stream only a short distance from the city. The Santa Cruz River rises in Northern Sonora and flows northward, and is therefore, nominally at least, a tributary of the Gila, but never do its waters directly reach it. While the San Pedro flows constantly as far as its mouth, the Santa Cruz sinks and disappears at a distance of at least fifty miles from the nearest point on the Gila. An almost completely waterless area divides that river from Tucson. We have in this another proof that it was not the Santa Cruz River which Fray Marcos of Nizza, and after him Coronado, followed on their journeys in quest of the pueblos of Cibola (Zufi), but the San Pedro, which gives an uninterrupted line of water supply from the head-waters of the Sonora River to the Gila.

<sup>1</sup> The name "Arizona" first appears about the middle of the last century; it was applied to the country south of Tucson, where there appears to have existed a mine of that name.

Although the level on which Tucson stands is fertile if irrigated, the mountains surrounding it in every direction appear mostly of frightful aridity. In the southwest they loom up in detached masses of inconsiderable altitude and insignificant profile, the peak of Babo-quivari excepted, which rises on the horizon, at a distance of sixty miles, in a bold and precipitous mass. In the northwest, towards Casa Grande, stretches a bleak plain dotted with monstrous cactuses and other singular forms peculiar to the flora of Arizona. The jagged outline of the Picacho appears like a blue phantom far away. The low ranges of the Tortilla skirt the north, connecting with a towering chain that overlooks Tucson by nearly seven thousand feet, although in a direct line its base is only fifteen miles distant. This chain is the Sierra Santa Catalina, a rugged mass, thinly overgrown with scrubby arboriferous plants. It skirts the San Pedro River on the east, thus separating it from Tucson. In the south looms up the Sierra de Santa Rita, the highest chain of Southern Arizona.<sup>1</sup> Its picturesque crests are covered with loftier trees.

The Papaguera contains, as I have already stated in the preceding chapter, vestiges of ruins similar to those on the Lower Gila and Salado Rivers; but they are not numerous. Around Tucson I have heard ruins spoken of, although I did not see any myself except at the Estanque Verde, sixteen miles east of the city, where, beneath dense and thorny thickets, I noticed the remains of a few scattered houses of the detached dwelling type. They were too much ruined to allow measurement, and I could not detect whether any enclosures had originally connected them or not. The few potsherds belonged to the general type of Southern Arizonian ruins, and my friend, Dr. J. B. Girard, U. S. A., possesses

<sup>1</sup> The elevation of the Santa Rita chain is supposed to be about 10,500 feet.

a handsome earthen canteen in the shape of a duck, corrugated and painted red, which was obtained at the Estanque Verde.

Along the course of the Santa Cruz stream, south of Tucson, ruins are said to exist, but no description of them could be obtained. The Sobaypuri branch of the Pima village Indians held that country in the seventeenth century, and for a long time previous. It is therefore advisable to bear in mind, that such vestiges of ancient habitations may be those of Sobaypuri settlements. When the latter were first met with, they were composed of frail structures; but still it is presumable that, as the villages were of a somewhat permanent character, the buildings had at least substantial foundations, which must have left traces similar to those still seen of older Pima settlements on the Gila. It is difficult to establish which places were inhabited in the seventeenth century and which not. The names are Pima, like Bac (Vatki), Tubac, and Tumacacori. At the place first named, where now stands the remarkable Jesuit church of San Javier del Bac, there was a considerable settlement of Pimas in 1697;<sup>1</sup> and it is likely that at the other two, or at least in their immediate vicinity, either Pimas or Sobaypuris were settled. The first attempt at building a church at San Javier appears to have been made in 1699;<sup>2</sup> but the present church dates properly from the middle of the past century.<sup>3</sup> At Tucson, the Sobaypuris established themselves about 1763, under the pressure of their hereditary foes, the Apaches.<sup>4</sup> In 1764, Tubac, Tu-

<sup>1</sup> *Relacion del Estado de la Pimeria*, p. 798.

<sup>2</sup> According to Alegre, *Historia de la Compañia de Jesús*, vol. iii.

<sup>3</sup> The oldest church books of the mission of San Javier in existence, when the present apostolic vicariate of Arizona was established, begin in 1720. *Libro de Partidas*, MS. Father Alexander Rapicani was the first priest who made entries. In 1751 the mission was abandoned owing to the uprising of the Pimas, and only reoccupied three years afterwards.

<sup>4</sup> *Descripcion Geográfica de Sonora*, cap. vi. P. Manuel de Aguirre, *Carta al*

macacori, Calabazas, and Bonostao were the principal Pima villages administered along the upper course of the Santa Cruz River.<sup>1</sup> Arivaca, which lies to the west, had been abandoned and destroyed by the Pimas themselves in 1751.<sup>2</sup>

Instead of penetrating to the west of Tucson into the desolate Papagueria, with small prospect of determining anything that had not been abundantly established, — namely, the gradual disappearance of aboriginal ruins in that direction, — I selected the upper course of the San Pedro River for a field of operations. I was prompted to this in part by my desire to follow, on my way to Sonora, the probable route of Fray Marcos of Nizza and of Coronado. I had noticed, while at Casa Grande and at Tucson, that the former could not have been the "Red House" spoken of by Castañeda, and that it was quite improbable that the Spaniards should have descended the Santa Cruz stream. The San Pedro remained the only likely route for them to have taken, and in investigating it I secured the advantage of combining antiquarian interest with historical. At the same time I should approach closer the eastern border of the territory of ruins in Arizona. I will quote here what I wrote to the Institute in the spring of 1884: —

"The dismal barrenness of the country west of the Rio Grande, as far as the Paso del Dragon in Arizona, on a line running due west of Fort Selden, and south to the Mexican boundary, precludes the possibility of important traces of aboriginal occupation being found there."<sup>3</sup>

Dragoon Pass lies due east of the San Pedro valley, and it

*Teniente Coronel D Juan de Pineda* (in "Doc. para la Historia de Mexico," 4th series, vol. i. p. 125).

<sup>1</sup> *Descripcion Geográfica*, p. 582.

<sup>2</sup> *Ibid.*

<sup>3</sup> *Fifth Annual Report*, p. 89.

is not superfluous on this occasion to cast a glance at the orography of Southeastern Arizona.

I have already spoken of the Santa Catalina chain as bordering the Rio San Pedro on the west. The southern termination of that chain is called Sierra del Rincon and its eastern slope descends into the San Pedro valley near Tres Alamos. South of that range lies a pass through which the Southern Pacific Railroad runs from Tucson to Benson, beyond which extends the Sierra Mestefia, also called Whetstone Mountain. This is followed by the Sierra Huachuca, which reaches the Mexican boundary line by its southern extension, the Mariquita. There is consequently, east of Tucson, a cordillera skirting the San Pedro valley on the west, and running approximately in the direction of north-northwest to south-southeast. The Santa Rita Mountain lies west of this cordillera and east of south of Tucson.

East of the San Pedro valley a parallel series of ranges arises. Beginning south of the Gila, with the isolated peak of Mount Turnbull and the transverse chain of the Santa Teresa Mountains, it takes a southeasterly direction with the Sierra Salitre, — a name recently corrupted into Galiuro.<sup>1</sup> This terminates north of Dragoon Pass, south of which the Dragoon Mountains begin along the eastern side of the San Pedro valley and merge into the Sierra Peñascosa, which abuts against the Sierra de la Mula, which extends as far as the Sonora frontier. A third cordillera looms up still farther east. It takes its origin south of the Gila, in Mount Graham and the Sierra Bonita, then follows the Pinaleno chain as far as the line of the Southern Pacific. South of the railroad rises the formidable Sierra Chiricahui (properly Chihui-cahui, or Turkey Mountains), which in turn is followed

<sup>1</sup> This is one of the most interesting changes of the kind; it can be traced on the maps, through Salitre, Calitre, Calitro, to Galiuro, as it appears to-day.

by the Sierra Guadalupe, part of the latter extending into Mexican territory. A fourth cordillera stretches from the Gila to the New Mexican frontier at Stein's Pass, and is constituted by the southern Gila range and by the Peloncillo.

Between these four cordilleras lie, counting from the boundary line of New Mexico towards Tucson, three longitudinal valleys, only one of which contains considerable vestiges of ancient dwellings, — the most western one, or that of San Pedro. It is also the only one having perennial water. The others are arid, and only scantily provided with springs. The mountains themselves present a forbidding appearance, which is deceptive, for the interior of the Chiricahui, for instance, has pleasant spots, good forests, and several permanent water sites and springs. I have heard of small ruins having been noticed in the interior of several of these chains, but cannot vouch for the correctness of this information. If there are any, they cannot be numerous. The course of the Rio San Pedro, however, shows abundant traces of former habitation.

I reached that stream at Tres Alamos, coming from Fort Lowell near Tucson by way of the Posta Quemada and the ranch of Miguel Torres. Near the Posta, where a beautiful spring issues on the property of Mr. Lick, there are traces of ancient foundations of stone; and Mr. Lick obtained, from a cave one mile higher up than his house, a great many deer-prongs, skinning-knives of wood, and broken pottery. South of the Posta, on the level extending along the base of the Sierra del Rincon, lies the hamlet of Pántanos, near the railroad, and there ruins exist, from which, among other objects, stone axes have been taken.

From the Posta Quemada the ground rises along the slope of the Rincon chain to the divide. It is arid, and the only vegetation is *Yucca*, *Dasylirium*, and the colossal *Zahuaros*,

with tall grass covering the ground. At the ranch of Torres, near the divide, I found ruins, nearly obliterated however, and covered by mezquite thickets. They form low mounds, measuring about 15 meters (48 feet) on each side, with hardly perceptible vestiges of stone or rubble on their surface, and covered with chips of flint and basalt. The pottery fragments were mostly plain black and red, brown, gray with indistinct reddish decorations, and yellow with traces of red lines. No corrugated or indented ware appeared, and the potsherds were, on the whole, much dilapidated and worn. Where the house of Torres stands, there had been a similar mound, from which was taken a metate, but no stone axes or other implements. The ruins have the appearance of either great age, or else much wearing away by summer rains, which are abundant enough to justify the selection of the site for the raising of primitive crops. But I was at a loss to discover whence the inhabitants had obtained their drinking water. If from some spring, it had not been discovered seven years ago, at the time of my visit; nor could I find any trace of a reservoir. At all events, the settlement was small, and seems to have been the only one in that vicinity. Beyond the divide begins a long descent towards the San Pedro River, over dreary slopes, bare and worn; after nine miles of a monotonous ride the valley is reached.

The river, now rendered muddy by the washings of the mines worked on its upper course near Contention and Charleston, runs in a cut which is from eight to twelve feet deep. On both sides of this cut, but sometimes, however, only on one, extends a bottom land which appears to be very fertile. Then comes a higher terrace, gravelly, and partially covered with low and thorny vegetation. The whole would present a desolate appearance were it not for occasional fields and cottonwood groves. At Tres Alamos there

are ruins, and thence on to the north they were said to be numerous, as far as the mouth of the San Pedro. Where it approaches the Gila, it is enclosed by rocky gorges, and it is not surprising to hear of caves in the walls of the cañon in which many "relics" are said to have been found, although I could ascertain nothing about their character. The climate at Tres Alamos is mild; snow seldom falling; and the summer heat, although the thermometer frequently rises to 100° in the shade, is said not to be oppressive.

The majority of ruins on the San Pedro seem to extend along its lower course, north of Tres Alamos. In a direct line the distance from the latter point to the junction of the stream with the Gila is about sixty miles, and it strikes me that this was the stretch on which Fray Marcos found the last villages of Indians before he entered the uninhabited region between the Gila and Zuñi.<sup>1</sup> Whether he, and Coronado afterwards, followed the San Pedro to its mouth, or whether he turned to the right so as to reach the Arivaypa and the site of Fort Grant, is not quite clear from the documents. I strongly incline to the latter conclusion, since the lower course of the San Pedro is almost impassable on account of the narrowness of the defile.

The Sobaypuris on the San Pedro were in commercial intercourse with some of the northern pueblos. Fray Marcos mentions among other objects which he saw in use turquoises brought from Zuñi. If the report concerning the existence of caves along the Lower San Pedro is true, as I believe, explorers should not be startled at finding in such places objects peculiar to the religious and house life of the natives of New Mexico and Northern Arizona. Such finds should not be taken as evidence of anything but aboriginal commerce in ancient times.

<sup>1</sup> *Relacion*, p. 339.

At Tres Alamos, about one mile north of the house of Mr. Thomas Dunbar, I examined quite a good-sized ruin, standing on the terrace above the river bottom, and partly overgrown by mezquite and other shrubs. A gulch divides the ruin into two groups. Besides low mounds and traces of rubble foundations there are polygonal enclosures, containing very little pottery, the purpose of which I am at a loss to divine. Some of the mounds show traces of partitions of rubble, indicating rooms of medium size. An abundance of flakes of flint, basalt, and trap are scattered over the mounds. Prismatic corn-crushers (*manos*) occur, and potsherds resembling in every way those noticed at the ranch of Miguel Torres. The ruins are considerably dilapidated, and, so far as I could learn, they were the only ones in that vicinity.

Nor could I ascertain anything about ruins between Tres Alamos and Benson, the northern terminus of the Sonora Railroad. It lies in the valley, which there presents a most unprepossessing appearance. South of it, and as far as the Mormon settlement of St. David, I noticed no trace of aboriginal remains. I copy from my Journal:—

“The valley presents throughout the same appearance as far as St. David, the Mormon settlement. The bottom is from  $1\frac{1}{2}$  to  $2\frac{1}{2}$  miles wide, and the gravelly bluffs encroach upon it from time to time, or here and there rises an isolated hill, or group of hills, or a little mesa. For six miles I followed the banks, and satisfied myself that there are no ruins, as the bluffs are too steep and too sharply crested. There may be some on the east side, where the flat appears to be wider; but the people all agree in asserting that there are none. There is much more mezquite growing here than farther south; and while it is scrubby, seldom over six feet high, the trunks are very stout at the surface of the ground, but divide into branches a few inches above it. . . . About

six miles from Benson the hills close in upon the river on the west side, and on the east lies a flat, bleak-looking, though in reality fertile expanse, forming a terrace. Below it the river runs in a cut with abrupt sides. This cut is 10 to 15 feet deep, and about 25 wide. This terrace is nearly three miles wide, and here stands the Mormon settlement before mentioned, distant from Benson by rail eight miles, and nine by the road which I travelled. North of St. David I saw ill-defined traces of ruins with potsherds like those on the divide and at Tres Alamos. On the west side there are a few semi-circular basins between the advancing gravel hills, and on the edge of some of these are springs, which suggest the possibility of the existence of ruins. On the east side springs are scarce. Five miles south of St. David the hills close in upon the river on both sides, leaving only a bottom scarcely a mile wide. Before reaching this point, I saw a group of ten low mounds of white adobe, resembling those on the Gila and Rio Verde, only smaller. Potsherds like those at Tres Alamos were strewn over their surface, and flakes of flint and trap, but no obsidian."

Contention lies seventeen miles south of Benson by the road. Bleak levels spread out west of it to the foot of the wooded Sierra Huachuca. The aspect of the landscape is monotonous, though the plain is grassy. Half a mile south of the place, on a steep bluff east of the river, I found a ruin which has been much disturbed, and what of it is still distinguishable indicates small houses with rubble foundations, and enclosures also of rubble. I found very little pottery on the site, and not a single piece that was not plain, — nothing corrugated or indented.

During my stay at Contention I saw persons who had dug in those ruins, as well as in others situated higher up the San Pedro, one of whom showed me drawings of objects

which the excavations had yielded. Among them was a frog carved out of some green stone called "jade" by the finder, a stone axe of the same material, and painted and corrugated potsherds. I have no reason to doubt the genuineness of these finds, although I did not see the originals. I was also informed that Charleston was in all likelihood the most southerly point to which ruins extended along the San Pedro in Arizona, and that there were traces of antiquities near Tombstone. My objective point being, however, the Huachuca mountain chain, I did not investigate personally the places indicated to me as bearing ancient remains.

From Contention to Fort Huachuca the ground slowly rises, and the Arroyo de Babocomari must be crossed about nine miles from the former place. Thence the direction is southwest to the foot of the chain, the upper slopes of which are pine-clad, while the cañones bear two varieties of oak. I could not find any trace of antiquities in the narrow gorges that cleave the sierra, but on its northern base, around Fort Wallen, and on the Babocomari, traces of ruins are visible. While mounds almost obliterated, foundations of small houses, and large enclosures formed by stones set on edge, may be distinguished, no clear conception can be obtained of the general plan and purpose of the structures. The artificial objects differ from those found along the San Pedro only in respect of the pottery, among which I found the ancient white and black, and red and black varieties, so abundant in more northern ruins. Since leaving Upper Salt River, I had not seen any specimens of these. The metates, instead of being made of lava, are of granite and quartzite, and the crushing pins are of greenstone. The metates show no particular skill in their manufacture, but are merely boulders worn out into a dish-like basin with a rim on three sides. Judging from the amount of pottery strewn about, one of the

ancient villages, at least, must have been quite extensive; still the houses were not more than one story high. I infer that the valley of the Babocomari Creek was inhabited in places by sedentary tribes about whom we have no documentary information. The interior of the Huachuca chain was uninhabited, and the same seems to have been the case with the Sierra Mariquita, if I am correctly informed.

Along the upper course of the San Pedro stream as far as the Mexican frontier, beyond Palominas, or Ochoaville, I heard only of a few inconsiderable ruins, provided the reports are reliable. Crossing into Mexico at the Custom-house Station, I found myself on the grassy plateau through which the branches of the San Pedro meander towards their junction near that group of buildings. One of these branches descends from between the Huachuca and Cananéa chains, and the other takes its rise in the Cananéa proper.

The plain along the foot of the Cananéa is regarded as the highest plateau of Sonora. Judging from the altitude of Fort Huachuca, I estimate its elevation above sea level at five thousand feet. The Cananéa Mountains bound it on the west, the Sierra de San José (an isolated pyramid of striking appearance) in the southwest, the Sierra de los Ajos in the east, and in the south rise the first spurs of the Manzanal, a range skirting the upper course of the Sonora River. Along the southern edge of the plateau I found faint traces of ruins on the brink of a dry arroyo, now reduced to low mounds; and in another place I noticed still fainter vestiges, but I looked in vain for potsherds. In the heart of the Cananéa I saw no traces, nor could I learn of any. That chain is pine-clad, and its gorges are extremely narrow. Beyond it lies Terrenate, where more important remains are said to exist. I was told that in that vicinity there were fortified hills (Cerros de Trincheras), those places of refuge peculiar

to Sonora and to the Sierra Madre of Chihuahua, of which I shall have occasion to speak hereafter. The pottery from that locality was described to me as being of the painted kind, but I saw none of it.

On the whole, the upper course of the San Pedro River and the region of its sources corresponds well to the "first desert," or uninhabited expanse, which, after leaving the Sonora River valley, Fray Marcos of Nizza had to traverse in order to reach the line of villages which the Sobaypuris occupied.<sup>1</sup> It is poorly adapted to the wants of land-tilling aborigines. The stream itself flows through a narrow channel, out of which it is difficult to draw its waters by means of acequias. Woods are distant, and the traces of occupation anterior to the sixteenth century are few and far between. They become more abundant farther south, along the course of the Rio Sonora. Rugged mountains enclose that river on both sides, west of which, in the direction of the arid and waterless coast, as well as in the east, about Fronteras, there are said to be remains.

I turned my steps to the south, in order to follow the spread of the Oyata tribe, which within historical times has been the most prominent stock in Northeastern and Central Sonora. In so doing, I felt sure of meeting with abundant remains, although I also felt that the separation of the historic from the prehistoric might present almost insuperable difficulties.

<sup>1</sup> *Relacion*, p. 338. Compare besides on these points my monograph on "Fray Marcos of Nizza," in *Contributions to the History of the Southwestern Portion of the United States*, 1890.

## XII.

THE VALLEY OF THE SONORA RIVER TO BABI-  
ÁCORA AND THE VALLEY OF OPOSURA.

THE Sonora River flows in the main from north to south, and divides the northern half of the State of the same name into two sections, nearly equal in size. Beyond the rugged mountain chains which line the river on both sides, other ranges, equally rugged and quite as arid, run parallel with them. The average direction of the chains east of the Rio Sonora is from north-northwest to south-southeast, and they appear to be but ramifications of the Sierra Madre, towards which they ultimately converge. The chains west of the Sonora valley are less elevated and more irregularly distributed. There is a gradual flattening of the country towards the coast of the Gulf of California. The coast is mostly a sandy stretch of varying width, poorly provided with water, and therefore scarcely inhabitable. Before the coming of the Spaniards, and up to the present time, only the nomadic Seris claimed the northern part of this coast as their range, not living upon it, but traversing it on their fishing, hunting, trading, and marauding expeditions. Between the "Playas," as the coast is usually called, and the valley of the Rio Sonora a single stream of any consequence, the Rio del Altar, reaches the waters of the gulf. There exist ruins between that river and the Sonora, but I could not visit them. I only mention here the fortified hill near Magdalena, con-

cerning which exaggerated reports have been circulated. It is one of the many "hills with bulwarks" (*cerros de trincheras*), two typical specimens of which I shall describe in this chapter.

East of the Sonora valley ruins are known to exist near Fronteras. The majority of the narrow defiles in North-eastern Sonora are destitute of perennial water as far as the vicinity of the Yaqui River. The Sonora valley, while by far the best portion of the northern half of the State, is by no means a continuously fertile region, as narrow gorges of considerable length separate the cultivable portions. Thus between Los Fresnos and Bacuachi nearly twenty miles of a rugged defile have to be traversed before the country opens out again at Mututicachi. There is also a very narrow gorge between Báuachi and Chinapa, and the road from the latter place to Arispe traverses more than one pass, where there is scarcely room for it by the side of the river. The long and picturesque cajon between Arispe and Sinoquipe is uninhabitable except in a few places. Thus the Sonora valley is a succession of smaller vales, separated by passes and cañons. To give an idea of the narrowness of the defiles it suffices to state that from the Ojo de Agua del Valle, where the Sonora rises, to Babiácora, in a distance of about one hundred and twenty miles,<sup>1</sup> the traveller has to cross and recross the stream more than a hundred times.

The Ojo de Agua del Valle lies in latitude 31° and Babiácora, where I left the valley of the Sonora to turn towards the east, in latitude 29°.40. Vegetation, therefore, is more vigorous than in Southern Arizona, and the more so since the altitude decreases to about two thousand feet. Nevertheless, the general aspect is similar, for the same leading forms predominate; only the thickets are denser, and the

<sup>1</sup> The distance in a straight line is only about eighty-five miles.

zahuaro is supplanted by the pitahaya. Beside the palo verde, the palo blanco grows on gravelly hills; wild fig trees appear occasionally, and at Arispe a solitary palm tree indicates the proximity of the tropics. On the level of Bácuachi, on the lonely and difficult trail from Babiácora to Oposura, fan palms rise beside knotty and stunted oaks. The orange is cultivated at Las Delicias, and cotton grows nearly everywhere. It seldom, if ever, snows in the Sonora valley, and several crops may be raised annually. The mountains, where not too rugged and steep, are overgrown on their upper slopes with oaks and pines. The following points may be considered characteristic of the type of landscape: the Ojo de Agua del Valle, the view of Bácuachi from the north, the gorges between Arispe and Sinoquipe, and the valley of Banamichi.

From the grassy level between the Cananéa chain and the head-waters of the Sonora, an abrupt descent into a bleak basin leads to the Ojo de Agua. Barren heights enclose the denuded spot, vegetation is scant, and even the cactuses are stunted. Thence the river enters a narrow valley with side branches. The latter are treeless, but the principal valley is overgrown with willows, cottonwoods, elders, and canebrakes. So dense are the thickets that they sometimes impede travel. This extends for several miles, then the valley becomes a cajon with few tillable spots, where tall cottonwoods rise along the banks of the stream.

The aspect of the village of Bácuachi is not striking. Standing on a high bluff, its adobe buildings offer nothing attractive. The terraces above the river are quite bleak, the soil is reddish, and jungles spread over it. But the eye is fascinated by the aspect of the Sierra de Bácuachi in the east; a profile with bold indentations, though not craggy, and pine-clad slopes, contrast singularly with the monotony of the val-

ley. Few mountain chains of moderate height dominate their surroundings in such an imposing manner.<sup>1</sup>

The basin of Arispe looks dreary, with the leaden hue and dismal ruggedness that often characterize mining localities. The town shows a dreary decay, due in part to the ravages of the Apaches, in part to the removal of the capital of Sonora from Arispe to Ures.<sup>2</sup> The Sierra de Arispe is well represented in Mr. Bartlett's excellent "Personal Narrative."<sup>3</sup> In the southern extremity of

<sup>1</sup> I have been unable to learn their height, but I think that the Sierra de Báu-achi rises to about eight or nine thousand feet.

<sup>2</sup> Charles P. Stone (*Notes on the State of Sonora*, 1861, p. 9) says that Ures became the capital in 1838. According to the same authority, Arispe in 1822 had 2,000 souls, in 1861 only 600. José Francisco Velasco (*Noticias estadísticas del Estado de Sonora*, p. 286) gives to Arispe 2,079 inhabitants in 1822, thirty-nine years later only a thousand. J. R. Bartlett (*Personal Narrative*, vol. i. p. 282) says that the removal of the capital from Arispe to Ures took place in 1832. When he visited Arispe in 1851, the town, although sadly dilapidated, still showed to greater advantage than in 1834. Of the church he says: "The only building of particular interest is the church, which was once a fine edifice, but is now fast falling to decay. Its interior is of unpleasing proportions, its length, as in most churches of the frontier where large timber cannot be procured, being too great for its breadth. It contains some fine pictures among the hundred or more that are suspended from its walls. They are all in beautifully carved frames, richly gilt, but both pictures and frames are suffering from neglect. The altar is covered with massive plates of embossed silver, and there is a profusion of this metal displayed in the shape of massive flower vases, chandeliers, censers, etc." Since that time the church has been completely rifled of its treasures, and it presents a desolate appearance, with its altars stripped of every ornament, and with its naked walls.

According to the *Catálogo de los Partidos contenidos en los Rectorados de las Misiones de Sonora por el año de 1658* [should be 1685], (in Documentos, 3d series, p. 793) the church books of Arispe began in 1648. In 1678, according to the *Relacion de las Misiones que la Compañía de Jesús tiene en el reino y provincia de la Nueva Vizcaya en la Nueva España*, by Father Juan Ortiz Zapata, S. J., (p. 379.) Arispe contained then 416 Indian inhabitants. It was an Opatá pueblo.

In the document entitled *Estado de la Provincia de Sonora*, 1730, (Documentos, 3d series, p. 617), we read: "Mision de Arispe se compone de tres pueblos: el principal y cabecera es Nuestra Señora de la Asuncion de Arispe. Tiene ciento ocho familias y mas de cien muchachos y muchachas de doctrina."

<sup>3</sup> Volume I. page 281.

the town stands the solitary palm tree before spoken of. Thence to the south the valley changes to a magnificent gorge; so narrow in many places that for several hundred yards it is necessary to travel in the river bed. Towering rocks, displaying strata of brilliant hues, rise on both sides. The crests assume strongly indented outlines. Along the perpendicular walls we notice with astonishment the columnar pitahaya, rooted in tiny crevices, with its stalks rising many feet. Alongside of them the wild fig tree expands its foliage like a trellis over the smoothest cliffs. A few recesses, enclosing arable ground, break the wildness of the scenery, of which Tetuachi is the most considerable. At Sinoquipe the country begins to open, and afterwards, though narrower in places, it presents a milder aspect.

The valley at Banamichi and south of it is made up of strange contrasts. On the east side of the river gravelly bluffs approach the banks covered with dense thickets of thorny plants. The dangerous choyas (*Cylindropuntia*) grow in profusion, and the palo blanco forms groves intermingled with mezquite, pitahaya, and palo verde. In front of the eastern chain of mountains the Cerro de Santa Elena rises boldly, together with other abrupt eminences, like outposts of a grander background. On the west side expands a lovely valley teeming with signs of cultivation, beyond which the Sierra de Opodepe terminates the view. In that valley fig and orange trees ripen their fruit; the winters are mild, snow falls only on the mountain tops, and rains are fairly abundant during the proper seasons. But while the Banamichi valley is the broadest and finest of all along the Sonora River, it is in reality of limited extent. Although there is abundant room for a number of small Indian villages, the tillable areas are not extensive. It need not surprise us, therefore, that, although aboriginal ruins are numerous along

the Sonora River, the settlements were of limited extent. The river bottom is not fit for permanent habitation, and even the present villages stand upon terraces so cut up by gulches that only room for small pueblos is found on their surface.

The character of the ruins along the Sonora River as far as Babiácora may be summed up in a general picture. From ten to fifty small houses, with a substructure of rubble, irregularly scattered, and enclosures, also of rubble but not connected together, formed a village. Of what material the superstructure, the walls, and the roof were made, can only be surmised. From descriptions I judge that the walls were usually made of poles and yucca leaves daubed over with mud, and the gable roofs of yucca or fan-palm leaves supported by rafters.

Another class of ruins shows low mounds. Such a cluster exists in the immediate vicinity of Banamichi, and is figured on Plate I. Figure 77. It is difficult to determine whether the mounds were houses or not. They are composed mostly of gravel, and seem unfit for walls of any height. Similar structures I met at Vaynorpa, on the east side of the Sonora River, below Las Delicias.

I refer to Plate I., Figures 70 to 77 inclusive, for sketches of ruins in the Sonora valley. The most characteristic of the eleven groups which I surveyed lies north of Banamichi, on a denuded plateau or terrace called Mesita de la Cruz, east of the river and above a declivity covered by dense vegetation. The buildings are distinguished from the enclosures by double foundation walls as well as by a slightly larger accumulation of rubbish.

Comparing ancient architecture in the Sonora valley with that of more northern ruins, it presents at first glance much more modest proportions, and much greater fragility. None

of the villages seen by me could have sheltered more than a few hundred people. I was at a loss to find traces of solid adobe buildings. Still the durable foundations indicate that the apparent insufficiency of the superstructure had nothing to do with permanence of abode. The soil offered little inducement for the manufacture of sun-dried brick, in comparison with the facility with which impermeable shelters could be constructed by means of vegetable substances. Palm leaves form an excellent roof, and ocotilla poles plastered with mud make a very solid wall. Owing to the heat of the climate, distribution of the respective households into separate dwellings was natural.

What appears striking is the lack of defensive structures around these hamlets, although their situation is generally such as to afford a free lookout, and is difficult of access in many instances. Moreover, we must remember that the nomadic Indians began their incursions into Sonora on a larger scale only at the close of the seventeenth century. The Seris, it is true, occasionally troubled the Opatas, but it is doubtful if they ever penetrated as far as the Rio Sonora. Only war between sedentary tribes could permanently disturb the peace of these settlements. Of such wars there are some evidences previous to the coming of the Spaniards.<sup>1</sup> But the Opatas provided against such a danger in another way, which I shall describe hereafter.

<sup>1</sup> Ribas, who calls the Seris "Heris," does not mention any incursions by the latter into the interior of Sonora. *Historia de los Triunfos*, p. 358: "Sustentanse de caça; aunque al tiempo de cosecha de maiz, con cueros de venados y sal que recogen de la mar van á rescatarlo á otras naciones. Los mas Cercanos destos á la mar tambien se sustentan de pescado." Fray Marcos de Nizza (*Descubrimiento de las Siete Ciudades*, p. 331) speaks of the Seris who came to visit him at Matape without any fear of the Eudeves who lived in that village. In the course of the past century the Seris became more dangerous. *Informe del Padre Lizasoïn, sobre las Provincias de Sonora y Nueva Vizcaya* (Documentos, 3d series, p. 693). In regard to wars between sedentary tribes, see Ribas, *Historia*.

The pottery found at the ruins consists mostly of a kind rather coarse and thick, yellowish or reddish. There are also gray potsherds and a few painted and indented ones; but the latter are scarce. In some localities I noticed none but the coarser varieties, which had the peculiarity of being striated by irregular incisions on the outer surface. These incisions are clearly artificial, and made without any pretence to symmetry, so that their object must have been practical, and not decorative. Inquiring of various Opatá Indians living in localities distant from one another, and between whom, therefore, collusion was hardly possible, I learned that the incisions were made for the purpose of facilitating evaporation, so that the fragments thus incised would be those of jars in which drinking water was not merely preserved, but also cooled, by making them artificially porous. I give this explanation with the usual reserve, although it strikes me as quite plausible.

The metates and stone axes exhibit no advance over those of Southern Arizona, and are of the same type. Flint arrowheads I nowhere found, and this is explained by the fact that the Opatá Indians used, instead of tips of stone or flint, wooden points hardened by fire. Of other implements, mortars excepted, I saw nothing.

I was everywhere emphatically assured that all the remains along the Sonora stream were those of Opatá villages. In regard to some of them, as, for instance, Mututicachi,<sup>1</sup> Jitisorichí,<sup>2</sup>

<sup>1</sup> *Descripcion Geografica de Sonora*, p. 588: "Otro pueblo desamparado está entre Bacoatzi y Terrenate, que se llama Mututicachi, que fué de pimas altos, y se despobló cuando se erigió la Mision de Santa Maria Soanca el año de 1730, adonde y Cocospera se agregaron dichos naturales por la mucha guerra que en dicho paraje les daban los Apaches."

<sup>2</sup> When Don Pedro de Rivera made his journey of inspection of the frontier garrisons of New Spain, he passed from Bácuachi to Arispe in October, 1726, and found no village between the two places, although he must certainly have passed at the foot of the Mesa of Jitisorichí. *Diario y Derrotero*, p. 37. This

Motepori,<sup>1</sup> and Huépaca,<sup>2</sup> there is not merely tradition connected, but also documentary information. Castañeda gives several names of pueblos met with on his passage with Coronado's troop in 1540 and 1542. He says: "Sonora is the name of a river and of a valley, of which the inhabitants are numerous and intelligent. The women wear under skirts of tanned deer-hide, and small 'san benitos' down to the waist. Every morning the caciques of the village go to the top of little eminences of earth built for the purpose, and for more than half an hour call out like public criers, notifying every one what he is to do. Their temples are little houses around which they plant a quantity of arrows when they look for war. Behind this province, towards the mountains, are built a large number of villages, comprising a number of tribes united in nations of seven or eight, ten or twelve villages. They are Upatrico, Mochila, Guagarispa, El Vallecillo, and others near the mountains which we have not seen."<sup>3</sup>

Previously he states that all the houses of the aborigines, from Sinaloa to the entrance of the "desert of Cibola," were built of mats of reeds.<sup>4</sup> From the highly valuable work of Ribas, published a century after Coronado's expedition, and written by one who had a good opportunity of seeing the Opatas in their primitive condition, we learn that their dwellings were "more durable and in better condition" than those of other Sonoran tribes.<sup>5</sup> It is possible that Father Ribas based his comparison upon the abodes of the Yaquis and Mayos, which were mere huts made of reeds and canes, and

confirms the local tradition that the site had been abandoned previous to the eighteenth, and even to the seventeenth century.

<sup>1</sup> Motepori was occupied in 1726. Rivera, *Diario*, p. 38. It was a mine, still worked in 1764. *Descripcion Geográfica*, p. 608.

<sup>2</sup> The information in regard to the old pueblo of Huépaca is only traditional.

<sup>3</sup> *Cibola*, p. 157.

<sup>4</sup> *Ibid.*, p. 156.

<sup>5</sup> *Historia de los Triunfos*, p. 392: "Sus casas mas durables y conpuestras."

without the foundations of stone peculiar to the houses of the Opata Indians.<sup>1</sup>

The indications concerning the mode of life and organization of the ancient inhabitants of the Sonora valley furnished by the ruins point to an agricultural stock, living in small communities. The ruins appear to be numerous, and are in clusters rather than in a line. This results from the broken character of the country, and it brought about the formation of local confederacies or leagues. It is not surprising, therefore, to learn that between cluster and cluster dissensions were wont to break out, which sometimes culminated in actual hostilities.

Thus I was informed that the Opatas of Sinoquipe and Banámichi had formerly confederated against their southern neighbors of Huépaca and Aconchi; that the Opatas of Oposura made war upon those of Banamichi and Huépaca; and that the people of Opodepe were hostile to those on the Sonora River, etc.<sup>2</sup> One of the consequences of these disturbances was the erection of defensive works, not around but outside of the villages, — places of refuge to which the whole population of several allied settlements could resort in case of danger. The existence of these places, which manifestly were fitted only for temporary occupation, seems to indicate that the warfare which the Indians of that part of Sonora carried on was not the persistent harassing peculiar to northern nomads, but attacks in larger bodies, of the approach of which those who were threatened could be forewarned.

The "cerro de trincheras," or fortified hill of Bato-na-pa, is situated a short distance south of the village of Banamichi.

<sup>1</sup> *Historia de los Triunfos*, pp. 5, 6.

<sup>2</sup> This information was obtained from Opata Indians of Banámichi, Sinoquipe, and Aconchi; how far it can be absolutely relied upon I do not know, yet I see no reason for doubting its truthfulness in the main.

The eminence forms a promontory of considerable extent, the western portion of which is rather densely overgrown with thorny shrubs. Towards the east, vegetation consists of trees, and the palo blanco predominates. The parapets mostly extend along the southern brink of the mesa, and they consist of low and rude walls of volcanic rocks piled up, and not of regular masonry. Their height varies, much of it having been destroyed. The highest point of the mesa is occupied by an enclosure in the shape of a lozenge, the walls of which are about one meter (3 feet) high, and as thick in places as 1.5 meters (5 feet). They are of dry work, consisting of boulders of the size of a man's head, and larger, piled up with considerable neatness, but without any mortar or mud. The enclosure measures about 25 by 21 meters (82 by 70 feet). The fortifications form something like a spiral, following the sinuosities of the ground. On the western slope there are no fortifications, which implies that danger had been expected only from the south and east. The parapets are so low at present that only by lying down behind them can any protection be secured. The whole is exceedingly primitive, and shows no skill beyond that of improving natural lines of defence.

I could not discover any traces of dwellings on the mesa of Batonapa; there is comparatively little pottery, and only a few crushers and an occasional fragment of a metate. All seems to indicate that the place was used only as a temporary retreat by the people of the neighboring villages, now in ruins.

Against an Indian foe the parapets would have been of good service, although their length required quite a number of men to occupy them successfully. The really important part of the stronghold is its highest point, where the rise and contours induced the builders to construct a double line of bulwarks, with angles and salients, so that the outer para-

pets could be commanded from the inner. On the whole, the Cerro de Batonapa resembles the fortified hill of Jio near Mitla, in Oaxaca; and even the Sacsahuaman above Cuzco, in Peru, though on a much smaller and more primitive scale.

The total height of the mesa of Batonapa above the valley is about 60 meters (185 feet), and the first or lowest parapets begin at an elevation of 50 meters (164 feet). To the north of the mesa are hot springs, from which the place has its name, signifying, in the Opatá language, "Where the water bubbles."

There is a similar fortified hill near Huépaca, which tradition says was used by the people of the village and of Aconchi against their northern neighbors.

East of Banamichi rises the steep Cerro de Santa Elena, the ascent to which is only possible from the north, east, and south; on the west the acclivity is vertical. Rude parapets similar to those of Batonapa defend the southern and eastern sides, in addition to the great steepness of the slope. They do not encircle the eminence, but run only a short distance, forming not less than six lines, one higher than another, at varying distances. Near the summit is a circular enclosure of stone about 16 meters (53 feet) in diameter and of inconsiderable height. The summit affords an extensive view.

I did not penetrate farther along the Sonora River than Babiácora, or a hundred and ten miles in a direct line south of the Arizona frontier. Beyond that point begins the long and wild Cajon of Ures. There must be ancient vestiges in the vicinity of Babiácora, since it was formerly inhabited by Pimas.<sup>1</sup> South of it begins the ancient range of the Eudeves, a branch of the Opatas.<sup>2</sup> Instead of going in that direction,

<sup>1</sup> Zapata, *Relacion de las Misiones*, p. 352: "La lengua de la gente es pima."

<sup>2</sup> *Ibid.*, p. 354: "La lengua en lo general es ova, la cual solo hablan ellos entre si, pero con los demas aun usan la lengua Egue." *Descripcion Geografica*,

I determined to follow the trails leading eastward in order to reach, if possible, the Sierra Madre, where I was told that numerous ruins of ancient settlements might be found. The popular impression was that the head-waters of the Yaqui, and especially those of the Rio de Aros, are rich in vestiges of antiquity; but I was also warned that it would be very difficult, if not impossible, to penetrate into the wilderness, owing to the prevailing state of insecurity. While it was believed that General Crook had been successful in removing the Chiricahuas from the central mountain chain, it was thought that straggling Apaches still infested the country; and there were traces of their occasional presence between Babiácora and Oposura, the nearest settlement in the east. Between these two points, at least thirty-five miles of uninhabited country intervene, so rugged and mountainous that the distance is considerably increased, and the scarcity of water and the steepness of the slopes render transit most tedious and difficult.

On this whole stretch I saw no remains of Indian buildings; a Spanish hacienda stands at Bácuachi, but it is in ruins at present, as the Apaches compelled its abandonment. It is along the Sonora valley and in the countries east of it that one learns what a terrible scourge the Apaches have been since the close of the seventeenth century. Only very few villages are not still half in ruins, and the trails are dotted with mementos of bloody tragedies. The inhabitants of Sonora were not as well armed as their savage invaders, and moreover constant revolutions engrossed the attention of the central and state governments to such a degree that very little military protection could be given to outlying districts. Thus abandoned to themselves, the sedentary Indians and

p. 569: "Los Indios de esta mision son Eudebes." Orozco y Berra, *Geografia de las Lenguas*, p. 344. According to the last author (p. 345), the "Ova" is the Jova, also a dialect of the Oyata; the "Egue" is the Eudebe.

Spanish settlers fell an easy prey to a wily and relentless foe.<sup>1</sup> I cannot repeat here the many harrowing tales told me by eyewitnesses of ravages committed, and of murders and massacres perpetrated.

From Babiácora the Sierra de la Palma must first be ascended, a nearly waterless and steep mountain chain of great ruggedness. The trail winds to the top of the crest, and then gradually descends along dizzy slopes, partially wooded. The Mesa de los Morenos, a wide and barren volcanic plateau, is next traversed, after which the Llano de Bácuachi is reached,—a grassy plain where fan palms grow to a considerable height, notwithstanding which the nights are quite chilly. Beyond the ruined hacienda, we crossed the bleak Sierra de Bácuachi unmolested. The descent into the Oposura valley is long and steep. Friable volcanic tufa forms the slopes, and on the picturesque perpendicular walls of chasms that open on every side wild fig trees, pitahayas, and other sub-tropical plants have sunk their roots, covering the cliffs with a network of green tapestry. The climate of the Oposura valley is warmer than that of the Sonora valley, but the vegetation is scrubby, and there is no beauty about the thorny jungles that skirt the river and obstruct travel. Beneath some of these thickets the remains of small villages can be traced. On Plate I. Figure 78, I have given the plan of the most considerable of these. The ruins are in all particulars like those of the Sonora valley, and I therefore refer to what I have said about the latter. The manufactured objects, in-

<sup>1</sup> I will only refer to the reply given in 1850, by the authorities of the village of Bácuachi, and incorporated in the *Noticias Históricas* of J. Lucas Biso (Boletín de la Sociedad Mexicana de Geografía y Estadística, vol. ii, n. 13, p. 71): "La decadencia comenzó desde la misma época de dicho alzamiento [1830], por lo insignificante que han estado las tropas presidiales hasta el día, así como la variación de la capital, como igualmente las revoluciones que ha habido en el estado." That the Apaches were better armed than the settlers was already a subject of complaint in the eighteenth century.

cluding pottery, are also similar. North of Oposura are the mining regions of Cumpas and Nacosari, occupied in the seventeenth century by tribes of the Oyata stock.<sup>1</sup> I did not visit them, but obtained from a resident of Oposura a description of a house of the Opatas in that vicinity, the roof of which was supported by wooden posts placed outside of the walls, which were of stone laid in adobe. With the exception of a building which I saw in one of the eastern ramifications of the Sierra Madre, of which I shall hereafter speak, this is the only specimen of Oyata architecture which I have heard of as being still somewhat intact. East of Oposura a series of ranges, running parallel with those which I have mentioned as skirting the Sonora River, extends from south of Fronteras towards the junction of the Oposura River with the Yaqui, at or near Tepachi. They are the Sierra Púrica, the Cerro de Nacosari, and the Sierra Grande de Oposura, all wild and rugged chains, with very little water. The western approaches to the Sierra Madre are, in these latitudes, of great ruggedness.

The town of Oposura, or, as it is now called, Moctezuma, has suffered much from the Apaches, as well as from the political disturbances which have afflicted Sonora since the days of Mexican independence. Its buildings are not in as dilapidated a condition as those of Arispe, still they show traces of neglect, characteristic of the disheartening influence which constant insecurity exercises upon the human mind. This was for more than one hundred and fifty years the condition of the population of the northern States of Mexico. In daily peril of their lives from hostile savages, and separated from the outer world by deserts, a cloud of hopelessness has finally settled upon the inhabitants which it will take generations to remove. So long as hostile Indians might at any

<sup>1</sup> Ribas, *Historia*, pp. 358, 359.

moment deprive them of life and property, or some Pronunciamento call them to arms for a cause of which they had not even a conception, there was slight incentive for them to display energy.

There is little to say in regard to the antiquities of this otherwise interesting region. The architecture of the natives who occupied these portions of Sonora bore such a modest character, and there is such uniformity among the ruins, that it becomes superfluous to refer to all of them in detail.

Crossing in succession the Sierra de Oposura and its eastern ramifications, the Sierra de las Bolas and the Cenizero, and finally the Sierra de Huassavas, to Granados, on the Yaqui River, I found myself surrounded by scenes of nature more rugged, but displaying greater exuberance in vegetation, than those sections of the Sonora valley which I have just described; but I also found there ancient vestiges of the same people.

In speaking of the ruin and decay which have befallen the settlements in Sonora, I have not mentioned another factor that has contributed towards it, the suppression of the order of the Jesuits. It cannot be denied that this order had, from the beginning of the seventeenth century until the second half of the eighteenth, performed great things in Sonora. They had raised the standard, both mental and moral, of the native inhabitants to a much higher level, and had correspondingly improved their material condition. The northern and central parts of Sonora had become dotted with Indian villages which possessed elements of a modest prosperity. With very limited means the Jesuits had resisted the terrible pressure which the Apaches brought to bear upon the natives. In some parts of the Sierra Madre they had been compelled to abandon, as I shall show further on, several of their missions. But in the main they held their own, and were a

mental as well as a material support to the sedentary Indians. The suppression of their order deprived the Christianized natives of this support, and utterly discouraged them. I do not pretend to judge the opportunity or justice of the measure that abolished the "Company of Jesus" for a time. But it is certain that it was a severe blow to Sonora and the northern regions of Mexico in general.

The number of Jesuit missions at one time in Sonora was considerable. Their ruins are not distinguishable from those of prehistoric settlements, except so far as tradition and documentary evidence apply to them. It is, therefore, as I have stated in the preceding chapter, not easy to separate the historic from the prehistoric. I was generally unsuccessful in doing it along the Sonora River, for traditionary information, as well as documentary evidence, is scant and confused. Along the Yaqui and in the Sierra Madre these impediments exist in a less degree, and the classification of the ruins into such as date from a time anterior to the Spanish occupation, and into villages still continuing to exist afterwards or founded since the sixteenth century, will therefore be a less difficult task.

### XIII.

#### THE UPPER YAQUI RIVER AND THE NORTHERN SIERRA MADRE OF SONORA.

THE village of Granados is of recent date, having been founded by two families, the Durazos and Arivsus, in 1826; it has now about four hundred souls, notwithstanding the great hindrance which the Apaches have been to the colonists. Hardly half a mile of a sandy and gravelly beach separates Granados from the Yaqui, which is here a beautiful, broad stream, easily forded in ordinary seasons. On the east bank begins the ascent of the Sierra de Bacadéhuachi.

That mountain chain presents an imposing aspect, rising so close to the river that some of its reddish brown crags seem to overhang it. It forms a mass of vertical cliffs, gigantic pillars, and narrow clefts, with hardly any vegetation, and its height above the stream and the green wheat-fields on the west is at least four thousand, possibly five thousand feet. The Bacadéhuachi chain is about twelve miles wide, separated by a narrow valley from the Nacori chain, beyond which the Sierra Madre looms up in solemn and rugged grandeur.

On the west side of the Yaqui the Sierra de Huassavas hugs the valley quite closely. Dry and rather broad beds of torrents descend from it and spread out towards the river bottom. The ridges between these arroyos are overgrown with the usual thorny jungles; and only the highest parts of

the sierra bear pine timber. In the Yaqui valley it is hot and humid; and at Huassavas, after so many months spent in arid regions, I was now in a country where the moisture of the atmosphere was perceptible even on a clear day. The feeling was by no means agreeable, yet to characterize the climate of Granados or Huassavas as "moist" would create an erroneous impression; it is only less arid than that of other parts of the Southwest.

The sources of the Yaqui are hardly known; from what I could ascertain, they lie nearly due east of the village of Nacori, beyond the bold Sierra de Que-va-uér-ichi, that rises abruptly above the Nacori valley. Chu-ui-chu-pa and Gavilan were indicated to me as the places where the largest river of the Mexican Pacific coast takes its rise. This would place it about in latitude  $29\frac{1}{2}^{\circ}$  and longitude  $108\frac{1}{2}^{\circ}$ , but subsequent investigations will, of course, modify these approximations. The Yaqui, under the name of Rio de Chuuichupa, flows first from south to north, and through extremely wild gorges, as far as the neighborhood of Huachinera, in latitude  $30\frac{1}{2}^{\circ}$ . There it makes a short curve to the west, and then again flows, under the title of Rio de Baserac, due north, to the village of Babispe, where it again changes both name and direction,—the former to Rio de Babispe, the latter to the west. Another turn of the river takes place a short distance west of Babispe, and thence on the Yaqui keeps a more or less southerly course, but changes its name frequently. North of Huassavas it is called Rio de Oposto, farther on Rio de Huassavas, still lower down Rio de Sahuaripa; its main confluent is the Rio de Aros. The name of Yaqui is applied to the great stream only below Sahuaripa. I am unacquainted with the country below Granados, as my investigations had to be confined to its upper course, and to such portions of the western Sierra Madre as were accessible at the time.

The region west of the principal chain of the Sierra Madre and east of the ranges of the Purica and Oposura is wild and rugged. The valleys are fewer in number than in an equal distance on the Sonora River, and the gorges through which the Yaqui flows are longer; but some of the valleys, like that in which stand the villages of Granados and Huassavas, and, farther north, the pueblos of Baserac and Babispe, are very fertile. In the seventeenth century the Jesuit missionaries found a fruitful field for their labors in this section of Sonora, for not only were there a number of small Opatas pueblos in proximity to the river, but the interior valleys also had their hamlets, and far into the Sierra Madre extended the settlements of Opatas, Jovas, and Eudeves. The greatest portion of these villages were much smaller than those of to-day. When we read in the catalogue of the Jesuit missions of 1678 that Nacori had 450 inhabitants, Huassavas 632, Bacadéhuachi 360, Baserac 399, Huachinera 538, and Babispe 402,<sup>1</sup>—and in 1730, that the same places had respectively 281 and 150 souls, 150 families, 272 souls, 274 families, 100 families, and 180 families,<sup>2</sup>—these figures indicate the changes which the Jesuits had brought about in the distribution of the population. The missions along the Upper Yaqui and farther east began in 1645.<sup>3</sup> With the subsequent inroads of the Indians from the eastern flanks of the Sierra Madre and afterwards of the Apaches, several settlements were abandoned. These districts suffered from such depredations at an earlier date than the western parts of Sonora. The Janos, Sumas, and Jocomes, tribes living in the vicinity of Casas Grandes, were enemies of the sedentary tribes of Eastern Sonora before the appearance of the Spaniards.<sup>4</sup> Yet their

<sup>1</sup> Ortiz Zapata, *Relacion de las Misiones*, pp. 364, 366, 367.

<sup>2</sup> *Estado de la Provincia de Sonora*, 1730, pp. 622, 623, 624.

<sup>3</sup> *Catálogo de los Partidos*, pp. 793, 794.

<sup>4</sup> This was repeatedly told me by Opatas themselves, as will appear further on.

inroads made no such lasting impression as those subsequently perpetrated by the Apaches. The villages in the Sierra Madre were, of course, most exposed to attack, and we need not be surprised therefore to see more and better provisions for defence in these mountains than along the Rio Sonora. A good specimen of a village protected by a wall of circumvallation is figured on Plate I. No. 79.

This village stands on the Mesa de San Antonio half a mile east of Granados. The eastern end of the mesa overlooks the valley, with sides steep and gravelly. The usual thorny shrubbery spreads over the surface of the mesa, and the rectangular buildings, of which only rubble foundations remain, are scattered at irregular intervals and at every possible angle in relation to one another. The buildings were quite large in comparison with those on the Sonora River, some of them measuring as much as 8 by 10 and 8 by 12 meters (26 by 32½ and 39½ feet). I could not discover any trace of partitions, for the whole is very ruinous, and even the foundations are quite indistinct. In one place I found traces of a small enclosure. Few artificial objects are scattered about the premises, and the pottery fragments are like those on the Sonora River and at Oposura, — plain, coarse, and incised. The metates are of granite, but I found no stone axes, nor was there any flint or obsidian. The surface of the mesa shows no signs of having been tilled; yet it is possible that the people of the little pueblo may have raised corn on it in proximity to their houses, as precipitation is abundant during the rainy season. At the foot of the mesa, in the bed of the Arroyo de la Culebra, are rows of boulders, such as could be picked up in the bed of the torrent at every step, laid on the ground, but not set in it, in parallel rows, intersected by transverse ones at irregular angles, thus forming a series of more or less rectangular

areas of varying widths and lengths. These groups of enclosed spaces are found on the lower end of the arroyo over a space of more than a mile. Higher up I noticed nothing, as the bed of the torrent is so completely covered with boulders as to be almost impassable except on the narrow trail.

These contrivances were new and strange to me. They were undoubtedly artificial, and it was plain that they could not have been foundations of houses or fortifications. They looked rather like rude dams, laid across the course of the arroyo. But for what purpose? The rocks lie loose on the ground, and might be carried away by torrents suddenly descending during a freshet or after a thunder-storm. Nevertheless, they could oppose considerable resistance, and prevent the spaces between them, to a certain extent, from being covered with drift. In fact, they were freer from boulders and gravel than the unenclosed expanses. I was told by Opatas that these lines of stones had been laid by their ancestors in order to keep a certain expanse of ground free from drift, and thus render it proper for cultivation. In other words, that the rows of boulders enclosed garden beds, protected in a measure from being covered with drift by the low dams. Although in appearance sandy, the soil becomes productive wherever irrigated, and the inhabitants of the Mesa de San Antonio had thus formed tillable patches within easy reach of their village.

The query arose, however, why this method had been adopted, which was much more laborious and uncertain in the end, instead of cultivating the fertile loam of the river bottom. Still, a portion of the fields may have been located in the bottom also, as the garden beds in the torrent are of only limited extent. But I was also informed that the bottom was covered with thickets and trees previous to its

settlement in 1826, and it is well known that the stone axe was not adapted to clearing land. I accordingly conclude that these contrivances belong to the kind of agricultural expedients of which I have spoken in connection with the Gila, by means of which the waters of mountain torrents were made to serve for the irrigation of crops planted in their paths. As will be seen further on, such contrivances are very numerous in the Sierra Madre districts.

East of the Mesa de San Antonio, on a high, steep rock, plainly visible from Granados, belonging to the chain of the Cenizero, I was informed, there is a fortified village, rather, as appeared from the description, a "cerro de trincheras," like the fortified hill at Batonapa, and at Santa Elena near Banamichi.

North of the Arroyo de la Culebra and east of the town of Huassavas, which lies on the Yaqui three miles north of Granados, there are dams similar to those just described in nearly every one of the numberless narrow gulches which descend from the sierra and cut up the foot-hills into little nooks. Sometimes the dikes run across the beds of the torrents, as at the Culebra, or are laid transversely across terraces between two gulches. There is a dam in the Cañada de las Tinajitas, and there was a house near the dikes, which, in this case, are laid across a triangular terrace above the junction of two arroyos. There are four dams in the broad and quite level Cañada de Mochu-ba-bi, about three miles west-northwest of Huassavas, and there the number and extent of the dikes is greater than at the Culebra, but I failed to notice traces of dwellings. Pottery also is quite scarce, and only of the red incised kind. Probably the vessels broken were water urns, and the earthenware used on such patches was only brought thither for drinking-water for those who tilled the little fields, and there were no permanent abodes con-

nected with them. I inquired diligently whether there are Indian villages of any description on the mesas about the Cañada of Mochubabi ; but those best informed denied it emphatically, assuring me that the garden plots had been cultivated by Indians who resided nearer to the river. Ribas mentions in 1645 a tribe of "Buasdabas,"<sup>1</sup> but whether the old pueblo stood on the site of the present one is not positively stated, although I believe this to have been the case.<sup>2</sup> It was manifestly smaller than to-day, as the policy of the Jesuits consisted in uniting the smaller pueblos to a larger one, and thus congregating them around the

<sup>1</sup> *Historia de los Triunfos*, p. 358.

<sup>2</sup> *Descripción Geográfica de Sonora*, p. 570. All I can gather from this work, which was probably written by Father John Nentwig, then missionary at Huassavas, is that the pueblo stood in 1764 on the same side of the river as to-day. The description of the trail from Oposura to Huassavas is very good, as well as that of the valley itself. Of the former he says: "Á Jonivavi, cinco leguas al Oriente, saldremos á dormir para destroncar (como dicen en Sonora) la jornada de diez y siete leguas, y las doce de bien mala tierra ; y pasar la del mayor riesgo de mañana antes que sea de día, y con esto lograremos escafarnos del sol que en todo tiempo es bien bravo en acercándose á medio día. Mayor mente en las quebradubas y cañadas por donde baja el camino á Guasavas." Of the situation and of the valley he remarks: "Y pasando la vista por todos los rumbos, dirá alguno de la comitiva, en que hoya nos hemos venido á meter, que apenas se ve una cuarta de cielo? — Y es así, que en Guasava no se vé la cuarta parte del cielo, á causa de su situacion en un valle que no tiene un cuarto de legua de ancho, á la orilla derecha del rio, que mas abajo se llama el Grande, entre dos sierras altas y asperas, que corren, como su valle y rio, Norte Sur." Already in 1678 the church of Huassavas is qualified by Ortiz Zapata (*Relacion de las Misiones*, p. 364) as "Una linda y muy capaz iglesia, con crucero muy bueno en madera ; ricos ornamentos de golpe de plata labrada para los altares ; una muy buena capilla de cantores con instrumentos ; la cantidad de muchachos de la doctrina en numero, y con puntualidad acuden á ella ; la casa de la vivienda del padre buena y cumplida, y los demas habitadores del pueblo la tienen de terrado." It seems that in 1764 a new church had been built, *Descripción (ut supra)*: "Despues de visitar la nueva iglesia, que se puede contar entre las mas decentes de Sonora, dedicada al Apóstol de las Indias San Francisco Javier." In 1730 the old church was still in use. *Estado de la Provincia de Sonora*, p. 622: "La iglesia de Guazaca es grande fábrica antigua y está bien alhajada como tambien la casa." At present the church is only an adobe pile of considerable extent, but it has been rifled.

church of a central mission as much as possible. The abandonment of the smaller villages is therefore not an evidence of depopulation in this instance, but rather of concentration for purposes of teaching and for greater security.

Southwest of Huassavas and nearly due west of Granados, above a narrow and rocky gulch, there are Indian carvings, executed on a smooth rock at the height of about twelve meters above the bottom of the arroyo. They are uncouth, incised figures, possibly intended for human forms, and enclosed by a rude trapezoidal frame cut in bas-relief. This sculpture is called *La Cara Pintada*, (literally, the Painted Face,<sup>1</sup>) and while it is undoubtedly Indian, it is not known whether the work was done by sedentary natives or by nomads, although the presumption is in favor of the former. Inside of the frame containing the human figure there is also the outline, very crudely executed, of a snake, resembling somewhat the symbol for lightning of the New Mexican Pueblo Indians. No remains of houses or dikes are in the immediate neighborhood of the *Cara Pintada*; the spot is wild and rugged, and appropriate for symbolic sculptures of Indian origin.

To the north of Huassavas, for a distance of nearly thirty-five miles, extends a desert, a broken and deserted mountain country. It is the stretch between the two portions of the Yaqui River, of which the eastern flows from south to north, and the western, below the bend at San Raphael, in the opposite direction, forming thus a peninsula of scarcely eighteen miles in width, in latitude  $30\frac{1}{2}^{\circ}$ . This tongue is occupied, in its northern half, by a wild and arid mountain chain, the *Sierra de Teras*, while the southern is covered

<sup>1</sup> The term "*Pintado*," in common parlance in the Southwest, signifies quite as often, when applied to pictographs, "carved" as "painted." "*Cara pintada*" may therefore be also translated "face carved out of the rock." I thought, however, I saw traces of red paint on the sculpture, but may have been mistaken.

by ramifications of the Sierra de Huépari. Fifteen miles north of Huassavas lies the village of Opotu, which is also an old settlement of Opatas and an ancient mission, the baptismal records of which begin in 1645.<sup>1</sup> I did not visit Opotu, but, after glancing at the valleys of Bacadéhuachi and Nacori, and the western flanks of the Queuavérichi Mountains, turned to the north-northeast in order to reach Huachinera, and finally to cross over into Chihuahua.

The Sierra de Bacadéhuachi, as previously stated, is a range of great steepness and ruggedness, especially on its western declivity towards the Yaqui River opposite Granados. From its volcanic slopes, after two or three hours of tedious ascent, the river and the green wheat-fields on its banks appear as if they lay at the bottom of a deep chasm. We look at them through a gap flanked by enormous rocks, and everywhere gigantic pillars and lofty pinnacles rise to the sky. There is no permanent water and no vegetation, — nothing but naked walls and crags, steep inclines, and chasms.<sup>2</sup> From the crest the eye plunges eastward into the valley of Bacadéhuachi and over slopes less inclined, and therefore decked with the usual scrubby vegetation. Beyond that valley rises the Sierra de Nacori, and still beyond the pine-clad Sierra de los Parapetos, and a blue silhouette in the far east indicates the Sierra Madre. No ruins can be expected in the clefts and precipices by which the Bacadéhuachi Mountains are rent, rather than traversed.

<sup>1</sup> *Catálogo de los Partidos*, p. 793: "Segundo nuestro Padre San Ignacio de Opotu; sus bautismos comenzaron año de 1645." In 1678 the pueblo had 424 inhabitants. Ortiz Zapata, *Relacion de las Misiones*, p. 365. The church was not as large as that of Huassavas. In 1730 Opotu had 448 inhabitants. *Estado de la Provincia de Sonora*, p. 622. In 1764, the *Descripcion* (p. 572) places Opotu at "diez leguas al norte sobre la orilla derecha del mismo rio."

<sup>2</sup> This ascent to the Bacadéhuachi Mountains is called in *Descripcion* (p. 576). "La famosa cuesta de Bacatehac, donde cerca de una docena de cruces nos piden sufragios, por otros tantos muertos por los Apaches."

The valley of Bacadéhuachi is quite narrow, with a streamlet running through it. The climate is warm, there is some fertile soil, and there are small clusters of ruins scattered over the jungle-covered hills. The pottery, etc., is of the usual kind. Plans of the remains which I measured on the Mesita Montosa and the Mesita de San Marcos are given in Plate I., Figures 81 and 82, near the dilapidated and sad-looking present village.<sup>1</sup> The ruins on the Mesita Montosa present enclosures, plainly marked, and a mound indicating a small building. I was told that there were other ruins of like aspect and size scattered along the valley, but no vestiges of ancient settlements of considerable extent. None of the dike-like contrivances already described were found in the Bacadéhuachi valley.

The Sierrita de Nacori is a low range, on the crest and slopes of which I did not notice or hear of any ruins, but the valley of Nacori is rich in remains. They are, as far as I could see, small clusters, or frequently only isolated houses, nearly always connected with artificial dams. I have given a plain of the ruins on the "Divisadero," east of Nacori, where the indistinct remains of a few small buildings stand on the top of the hill (Plate I. Figure 80). A system of dikes and a few houses is found at Vay-ua-va-vi in the same vicinity. These ruins lie in the foot-hills of the Queuavérichi chain, a mountain range which rises majestically over the Nacori val-

<sup>1</sup> In 1884, Bacadéhuachi contained five hundred inhabitants. The place presented a sad appearance, being much dilapidated and neglected. The Apaches have committed fearful ravages during the past and present centuries. In some years the number of people killed in the parishes which now form the parish of Huassavas, and included Huassavas, Nacori, Opoto, Bacadéhuachi, Huachinera, Baserao, Babispe, and San Miguelito, an aggregate of 5,500 souls, reached as high as eighty to one hundred a year. The present church of Bacadéhuachi is a remarkable structure, but it dates from the closing years of the past century, when the Franciscans had charge of the former Jesuit missions. Remains of the old Jesuit church still exist, and I was informed (after it was too late) that it contained two stone idols of ancient make.

ley and terminates in a high peak which descends abruptly to the south. To cross this chain from either side is said to be attended with great difficulties, which has proved an element of comparative security for the inhabitants of Nacori during their long troubles with the Apaches. In later years the people of the Yaqui River were in the habit of sending their live stock to the Nacori valley for safety.<sup>1</sup> The valley opens to the south; in the north also there is a gap, but it is of difficult passage on account of the broken nature of its volcanic rocks. North of Queuavérichi rises the Sierra de los Parapetos, on whose western declivity ruins are found, at a place about twenty-five miles northeast of Nacori. Several of the steep heights that rise in front of the mountains, like videttes, were said to be fortified, one of which I examined, the lofty Cerro de Tonibabi, south of east of Nacori. I found it a typical "cerro de trincheras," very similar to the one near Santa Elena near the Sonora River. The parapets, however, were higher, and composed of larger blocks of stone. Little pottery accompanied the lines of fortification. I saw no houses, but a number of circular places which might have served as lookouts. The view from the height is very extensive to the west, north, and south. In the east the high sierra completely obstructs it. At the foot

<sup>1</sup> I was told that the ranges east of Nacori were impassable to cattle, and the only way by which the Apaches could drive them out was past one of the settlements lying east, south, or north of Nacori. The inhabitants of Oposura even sent their cattle to that valley, where they were safer than at a greater distance from the Sierra Madre. Nevertheless Nacori was hard pressed by the Apaches, and several times in imminent danger of being destroyed. The last attack was made on the 17th of July, 1883, and it came very near being successful. Nacori contains at present three hundred inhabitants. It is built in the form of a hollow square, and the houses are connected by a wall, so that it is in fact a fort, the entrance to which is by two heavy wooden gates. The church is a plain adobe structure. The houses of the hamlet are also of adobe, and not large. The fields are scattered along the arroyo, which is not always flowing. In fact, drought is a drawback to the otherwise fertile valley.

are hot springs, from which the place derives its Oyata name.

The view which one enjoys from the hills northeast of Nacori is historically interesting. But, while extensive, it is by no means beautiful. Hills and vales covered with a dusty vegetation stretch toward the south and southeast, and along the horizon rise hazy isolated mountains, with a shaggy profile. At one time the Jesuits had several missions in that now utterly deserted region. Within a radius of thirty miles southeast of Nacori lay the Indian villages of Tyopari, Servas, and Mochopa. The mission at Tyopari was founded in 1676,<sup>1</sup> while Servas became christianized about 1645.<sup>2</sup> North-

<sup>1</sup> It is also written "Teopari," according to the *Catálogo*, p. 791. The baptismal records of the mission begin in 1676. "Sus bautismos comenzaron año de 1676." In the previous year it was visited, from the Chihuahua side, by Father Tomar de Guadalajara, S. J. Father Ortiz Zapata says, in the *Relacion de las Misiones*, p. 342: "Salió dicho padre al pueblo de San José de Teopari de Ovas cristianos pertenecientes al pueblo de Saguaripa que está quince leguas distante hácia el Oriente de la cabecera dentro de la sierra y habiéndole visitado dice en su carta de Teopari á tres leguas está el rio que es el de Papigochic y ya cerca de Saguaripa coje el nombre de Iaquí y otras tres leguas ó cuatro rio arriba está una hacienda llamada Oparrapa; . . . de Oparrapa á dos leguas está la ranchería de Natora que es de mucha gente." He mentions other villages and rancherías, thus showing that some portions of the interior of the Sierra Madre were still fairly settled in the seventeenth century. In addition to those villages, it is stated, in 1764, that many Jovas lived in scattered houses, or possibly even in caves. I suspect that the following passage in the *Descripcion Geográfica* (p. 552) may apply to the latter sort of abodes: "Mas zapios y agrestes son los Jovas especialmente casi la mayor porcion de su casta que no quiere reducirse á vivir en pueblos, fuera de los que están en Ponida, Teopari y Mochopa; sino tiran a vivir en las barrancas de la sierra donde nacieron; . . . los de la ranchería de Satechl y los de las márgenes del rio de los Mulatos y del de Aros, que moran entre breñas y malezas, manteniendose con raíces, yerbas y frutas silvestres, consistiendo sus siembras solo en tal cual mata de maiz y algunas calabazas y sandias donde los consienten las angosturas, en que dichos rios rompen por aquella sierra." In 1730, Tyopari contained seventy-eight families, and had a church, and in its neighborhood was the mission annex of Santa Maria de los Dolores, with forty-five families.

<sup>2</sup> *Catálogo*, p. 794, calls it "Sereva"; the *Relacion de las Misiones*, p. 366, "Sereba." That report gives the distance from Bacadéhuachi at "siete leguas

east of the latter place lie the abandoned silver mines of Huaynopa, about which weird tales are circulated in Sonora as well as in Chihuahua, and the search for which has cost so many lives.<sup>1</sup> Satechi is another abandoned village in that vicinity.<sup>2</sup> The Indians who inhabited these villages were, at Tyopari and Satechi, Jovas; at Mochopa and probably at Servas, Opatas.<sup>3</sup> Their abandonment was brought about by the incursions of the Apaches, except in the case of Servas, which the Sumas and Jocomes destroyed in 1690.<sup>4</sup> The other three were still occupied in 1764, and given up between that year and the end of the past century.<sup>5</sup> In examining the

de distancia al sur tiene el pueblo llamado Santo Tomas de Sereba, adonde se redujó un pueblo antiguo llamado Setasura." Population in 1678, 272 souls. Servas and Setasura are thus proved to have been not contemporaneously inhabited, but successive settlements of the same tribe.

<sup>1</sup> The mines of Huaynopa have been so frequently sought for that it may not be amiss to give here the location according to *Descripcion*, p. 577. Speaking of Satechi it says: "No confina esta mision con poblacion de Españoles, sino la despoblada de Guainofa, como doce leguas adelante de Satechi al nordeste en la sierra, la que tenía muy ricas minas de plata." The mines of Huaynopa must therefore have been abandoned before 1764.

<sup>2</sup> Satechi appears to have been a mere hamlet. *Descripcion Geográfica*, p. 576: "Y doce leguas al oeste sudoeste [from Nacori], hay una ranchería de Jovas que pertenecen á esta administracion llamada Satechi, de cuya nacion andan muchos por la serrania, sin reconocer pueblo ni padre misionero por suyo."

<sup>3</sup> Ortiz Zapata, *Relacion*, p. 348. *Descripcion*, pp. 568, 576. *Estado de la Provincia de Sonora*, p. 621.

<sup>4</sup> *Descripcion*, p. 585: "El pueblo de Santo Tomás de Servas de nacion opata está despoblado desde 1690 por haberlo asolado y destruido enemigos, que es creible serian Jocomis y Sumas." Of the others it is stated in the same place: "El pueblo de Natorase despobló el año de 1748, por órden del Exmo Sr. Virey conde de Revilla Gigedo, á causa de ser inadministrable desde Teopari su cabecera, por las muchas cuestras, malos pasos, larga distancia de leguas, cuyos naturales, de nacion Jovas se poblaron á media legua de Arivechi, constituyen hoy el pueblo de Ponida, en donde son administrados y el pueblo de Teopari y la ranchería de Chamada (esta ranchería ya se mudó al pueblo llamado Santo Tomás) quedaron desde entonces agregados á la mision de Sagaripa, habiendose despoblado el propio año San Matéo por invasion del enemigo Apache."

<sup>5</sup> *Descripcion*, p. 567: "Está á diez y seis leguas al Oriente" of Sahuaripa and an annex to the mission at the latter place. On page 576, it mentions Mochopa and Satechi as still occupied.

antiquities of this region, the fact of the comparatively recent abandonment of these villages should not be overlooked, nor should it be forgotten that several attempts at mining were made during the early part of the eighteenth century, in the interior of the Sierra Madre.<sup>1</sup>

If from the Cerro de Tonivavi we look to the north and the northeast, the bold and pine-clad mountains rising in that direction recall a recent event which has been of great importance to the Southwest in general. It was at Los Metates, northeast of Nacori, in what is called the Sierra de los Parapetos, that the late Major General Crook made the treaty with the Chiricahui Apaches which led to the pacification of that unruly tribe and its return to Arizona. Aside from the political and military importance of General Crook's achievement, and not speaking of the tact and daring displayed by him on this "armed peace mission," as I have elsewhere ventured to designate his campaign, we owe to it the first intimation of the existence of ruins in the interior of the Sierra Madre.<sup>2</sup> The officers of his expeditionary corps, notably Captain J. G. Bourke, have reported that cave dwellings and other ruined abodes, also dikes built for the purpose of forming arable plots on slopes and in the beds of torrents,<sup>3</sup> are met with in what now is a forest wilderness, shunned by civilized man for more than a century, and barely accessible at the present day. With the very limited

<sup>1</sup> *Descripcion*, p. 600: "Y mas á este rumbo hay muchas minas despobladas en las cercanías de la ranchería de Satechi y hasta bien ádentro de la sierra, como las que éran del real de Guainopa." It seems therefore that the mines in the interior of the Sierra Madre were abandoned previous to 1764.

<sup>2</sup> This was reported at the close of the campaign, but I have not at my disposal the publications in which the notices appeared. Whether or not Spanish authorities of older date have referred to those ruins, I am unable to say.

<sup>3</sup> *An Apache Campaign*, p. 60: "In every sheltered spot could be discerned the ruins, — buildings, walls, and dams erected by an extinct race once possessing this region." This was in the upper parts of the Cajon de Bamochi, east of the Sierra de Huachinera.

means placed at my disposal, one year after General Crook's memorable campaign, I intersected his route through the Sierra Madre in several places, and thus became able to testify to the truthfulness of the statements made concerning the antiquities in the interior of the great chain.

Turning to the regions that bound upon the Yaqui in the direction north of Huassavas, I have already stated that expanses devoid of ancient remains intervene between those in which are scattered traces of settlements. This leads to the inference that the groups geographically separated may have been also politically distinct. I recall in this connection the passage of Castañeda quoted in the preceding chapter.<sup>1</sup> Ribas, a hundred years later, speaks of the Buasdabas (Huassavas) and the Bapispes (Babispes) as distinct tribes,<sup>2</sup> and in the valuable description of Sonora of the year 1764 is the following explicit statement: —

“In the past an office has been created among the Indians, I do not know for what reason, which anciently was unknown to them. It is neither a religious office, nor for the royal service; neither for the public or private good has it any utility. This is the office of Captain General. It is clear that in ancient times it did not exist, either under that name or any other; for those of each cluster or settlement obeyed only the most valiant man who distinguished himself in his community, and they recognized no one as superior to him. Those clusters, although belonging to the same nation, had their dissensions and wars among themselves, as for instance those of Bacadeguatzí with the Baseracas, because the latter were in the habit of coming at night and making their provision of salt in the saline belonging to Bacadeguatzí; and if the former noticed their presence, they went out to

<sup>1</sup> *Cibola*, p. 157. See *ante*, p. 490.

<sup>2</sup> *Historia de los Triunfos*, p. 359.

defend their rights, as they claimed that the salt, which they used in their dishes, belonged to them exclusively, and that they were the sole owners of it, since they owned no other."<sup>1</sup>

This passage is quite instructive. In the first place, we are informed of the Salines in the vicinity of Bacadéhuachi, which are still known to exist, although they are of limited extent, and of the fact that in times anterior to Spanish colonization the natives used salt for household purposes. More important yet is the confirmation of the picture of the social organization of the Opatas, as I presented, though with less positive data, that of the inhabitants in the Sonora valley in times anterior to Columbus.

The distance between Huassavas and the village of Huachinera is fifty miles counting by the winding trail, which after thrice crossing and recrossing the Yaqui, meanders through rugged cañones and over steep and rocky ridges. The yucca plant grows quite tall in this wilderness, and as we rise towards the plateau (Llano) of Huépari oaks begin to appear. Not far from Huassavas, in a recess of the Bacadéhuachi Mountains, there is a cave called Vay-mó-dachi, where the Opatas used to hold secret meetings for magic purposes. Such conclaves were even said to have been held until lately, and they are an indication of some ethnological value. At present the cave is regarded as a resort of witches. To the secret organizations among primitive peoples, and to nightly gatherings of their members in secluded spots, the origin of many popular legends and weird folk-lore tales may safely be attributed.

I did not notice any ruins until I came to the basin called "La Tinaja," at the foot of the steep Cuesta del Jarato. There is permanent water in natural tanks, and I saw the

<sup>1</sup> *Descripcion Geográfica*, p. 595.

remains of small isolated buildings measuring about  $3\frac{1}{2}$  by 5 meters. Rubble foundations and rubbish are all that remain, except some traces of artificial dikes. Pottery, plain, red, and incised, was scattered over the scarcely distinguishable remains, and I noticed here for the first time the foot of a stone metate. This was new to me, and I am in doubt whether possibly the implement may not have been a modern corn-mill, accidentally broken on the spot and left by the owners.

The change in climate which one witnesses after ascending by the Jarato to the plateau of Huépari, is striking. A sloping plain covered with high grass and dotted with oaks stretches to the northeast. The wind blows cool and strong over it, and we breathe easily after the days spent in the narrow clefts along the Yaqui. The mountain panorama is extensive; the Cerro of Nacosari looms up in the west, and, in closer proximity, the forbidding Sierra de Teras. In the east rises the wooded Sierra de Huachinera, behind which, in a narrow and wild gorge called Cajon de Bamochi, General Crook and his little force toiled into the Sierra Madre the previous year. In the south, a broad gap divides the Bacadéhuachi range from that of Nacori; but the appearance is deceptive, for the Tahuaro, as this gap is called, is partly a lava-flow almost impassable on account of the rents and gashes in its surface. South of the Huachinera Mountains and east of the Nacori chain rise the crests of the Eastern Sierra Madre. The Tahuaro is remarkable for the profusion of nodules of obsidian contained in its lava, which appear also on the surface of the Huépari mesa, and, with the boulders of hard lava with which the ground is covered beneath the tall grass, render travel rather uncomfortable for the horses. Near the brink of the arroyo or valley of Tesorobabi, the rock becomes more friable, and the obsidian nodules

extend only over a part of the declivity. Vegetation crowds into the bottom of the upper part of the valley. Cottonwoods rise in tall specimens and cluster in groves, and wild flowers, such as the Tivin-a-ui, or Yerba de San Pedro, and others, adorn the spot, and poisonous ivy grows in abundance. The bottom, though not extensive, is fertile, and there is an abandoned hacienda at Tesorobabi; there are also said to be ruins in its neighborhood,<sup>1</sup> but I had not time to make any investigations. Thence the trail follows the downward course of the arroyo, and, while the trees diminish in size, there is no decrease in the quantity of wild flowers. Towards the lower end of the valley ruins again appear, which I was unable to investigate, but was assured that they were in all respects similar to those around Huachinera.

This former Jesuit mission, founded about 1645, is now a village of four hundred inhabitants, situated on the banks of the Tesorobabi Creek.<sup>2</sup> Bleak hills, with numerous ruins, surround the fields of the pueblo on all sides. On Plate I. Figure 83, will be found the plat of the ruins on the Mesa Juriban, opposite Huachinera. There is nothing in the appearance of the foundations to which the former houses are reduced to distinguish them from other similar places in Sonora. The same may be said of the remains at the Horconcitos, or Hueri-huachi, Plate I. Figure 84, three miles north of Huachinera, and of those at Terapia, a mile and a half north of the town. Besides the little mounds indicating houses, there are enclosures, without any traces, however, of the checker-board arrangement peculiar to ruins in Southern and Eastern Ari-

<sup>1</sup> Bourke, *Apache Campaign*, p. 57: "Alongside of this ranch are the ruins of an ancient pueblo, with quantities of broken pottery, stone mortars, obsidian flakes, and kindred reliquia."

<sup>2</sup> In 1884 the population of Huachinera was 290 souls; there was not a house in the whole town valued at more than one hundred dollars.

zona. I saw no dikes at either of these three localities. What, however, struck me at once, was the character of the pottery. Instead of the coarse and plain ware noticed elsewhere in Sonora, the potsherds showed a degree of perfection which I had not seen farther north, except perhaps at the ruin near San Matéo, in Western New Mexico. Its quality was superior, comparatively thin, and well glazed. The shapes of the vessels were of the usual forms of pueblo pottery, but there were also a few with concave bottoms. All the designs were clearly evolutions from the well known symbols of the Pueblos. I noticed among them the clouds, the whirlwind, the earth, the double "line of life," and the lightning. The colors were of various and even of quite unusual hues, and the lines drawn with care. I was also struck by seeing for the first time a figure in the shape of a large heart. From the vicinity of Huachinera on, this excellent pottery was associated with all the ruins, irrespective of variations in architectural type.

West of Huachinera a long and sandy wooded valley leads almost due east towards the place where the Yaqui River issues from the sombre gorges of the Huachinera Mountains. This is traversed by the Arroyo de la Calera; afterwards comes a region quite broken, and thickly overgrown with mezquites and cottonwoods; and finally bare hills rise in the northwest, merging into the Sierra de Baserac. Descending these hills, the valley of Cobora is reached and the banks of the Yaqui River, which we had left to the west of us after crossing it the last time on the journey from Huassavas to Huachinera. This is here a roaring torrent, bordered by narrow tillable expanses in spots on the first or lowest tier of terraces above the gravelly bottom. Tall mezquites grow on these terraces in isolated specimens, and here I found a number of ruins of small villages, Cobora, Qui-ta-mac, and Los Otates,

all once Opata settlements. For the plan of the first one, see Plate I. Figure 85. It will be noticed that the houses are more regularly disposed than elsewhere in Sonora, forming a hollow square. But none of the buildings exceed in size the average dimensions of those on the Sonora River. A system of dikes has been established near Quitamac, across the course of a gulch that descends a steep incline. Beyond each dike a little platform has been formed, the surface of which contained an accumulation of quite fertile soil. On the highest point of the dike there stood what appeared to be the remains of a small dwelling. It seemed as if the gravelly nature of the river bottom and the impossibility of irrigating the first terrace and of cultivating the steep slopes had compelled the creating of tillable patches in the course of the torrents in the artificial manner suggested. Such dams were quite numerous in this vicinity.

Ascending the banks of the Yaqui for a few miles in an easterly direction, and thus approaching the mouth of the gorge, I visited the ruins of Baquigopa on the north side of the river (see Plate I. Figure 86). Although the buildings are not much larger, they seem from the amount of rubbish accumulated and the height of the mounds to have consisted of adobe with rubble foundations, and possibly to have rested on low artificial platforms. In addition to houses, I found at Baquigopa the traces of a defensive wall of stone reared along the edge of the terrace on which the pueblo is built; and below this terrace extended an area covered with good soil, on which the foundations of small buildings appeared, together with traces of former cultivation. It would have been possible to irrigate this area from the river; but if there were ever any acequias, I was unable to discover them. Crossing the Yaqui again to the south, and traversing the dizzy and dangerous path that winds around the cliff of Civo-

na-ro-co above the raging stream, I visited the ruins of Batesopa. These consist of at least seventy or eighty houses in a badly ruined state, stretched out at irregular intervals on a narrow tongue above the river. There are many dikes built across the gulches, which terminate on this tongue.

At Batesopa I was shown a circular depression measuring about ten meters (33 feet) across, surrounded by a low rim three meters (10 feet) in width, looking very much like the threshing floors in use among the Pueblo Indians of New Mexico, except for the slight depression. I was told by an Opata from Huachinera, one of the few who still have a practical knowledge of the Opata language, that the sun and moon had been created here by his ancestors. I copy the story as told me from my Journal of the 18th of April, 1884:—

“The people built two fires, and then began to tickle each other. A man and a woman were found who were not ticklish. They threw the man into one of the fires, and he was changed into the sun, and the woman into the other, and she became the moon. The sun appeared first in the heavens, in the west; whence he proceeded east, there to begin his diurnal course, and the moon followed in like manner.”

Afterwards the same Indian told me: “The old people sat together all night in order to invent a name for the sun, and at sunrise they had not yet found one, when a cricket, sitting under a metate near which an old woman was crouching, began to chirp, ‘Ta-senide, Ta-senide.’ Thenceforward they called the sun ‘Ta.’ They took the cricket, put it in a safe place, and cared for it until it died of old age.”

I give this bit of folk-lore especially on account of its analogy with the Nahuatl legend of the creation of the sun and moon.<sup>1</sup> It is noteworthy that the Opata language has lately

<sup>1</sup> *Historia de los Mexicanos por sus Pinturas* (Anales del Museo Nacional de México, vol. ii. p. 90): “Visto que estaba acordado por los dioses de hazer sol,

been declared to belong to the same stock as the Nahuatl;<sup>1</sup> and while it may be that the tradition is originally Opatá, there is a possibility that it was imported by Central Mexican Indians who came to Sonora with the Spaniards.

In connection with these myths I was informed of some historical traditions concerning the ruined pueblos in this remote corner of the upper Yaqui region. They point to the fact that the Opatas of Batesopa and Baquigopa, and perhaps those of Cobora, were frequently disturbed by the inhabitants of Casas Grandes, on the other side of the Sierra Madre. From Batesopa, Casas Grandes may be reached in less than five days of wearisome foot-travel, across a very rough mountain wilderness.<sup>2</sup> It was also asserted that the Opatas of Batesopa in revenge made incursions upon Casas Grandes. At last the aggressions of the Indians from Western Chihuahua became so troublesome, that Batesopa and Baquigopa had to be abandoned, their inhabitants retiring to Terapa in the immediate vicinity of Huachinera. When the hostilities on the part of the Casas Grandes Indians ceased, Bate-

y aúa fecho la guerra para dalle de comer, quizo quiçalcoatl que su hijo fuese sol, el qual tenia á el por padre y no tenia madre, y tambien quizo que tlalocatecli, dios del agua, heziese á su hijo del y de chalchuitli, que es su muger, luna, y para lo hazer ayunaron no comiendo fasta . . . y sacaronsse sangre de las orejas, y por esto ayunauan, y se sacavan sangre de las orejas y del cuerpo en sus oraciones y sacrificios; y esto fecho, el quiçalcoatl tomó a buhijo y lo arrojó en vna grande lumbré, y de allí salió fecho el sol para alumbrar la tierra. Y despues de muerta la lumbré, vino tlalocatecli y echó á su hijo en la ceniza, y salió pecho luna, y por esto parese senizienta y escura; y en este postrero año deste treze comenzó alumbrar el sol, porque fasta entonces aúa sido noche, y la luna comenzó á andar tras el y nunca le alcança, y andan por el aire sin que lleguen á los cielos." More explicit yet is Sahagun, *Historia General de las Cosas de Nueva España* (ed. of 1829, vol. ii. pp. 245-250); but the quotation is too long to be given here.

<sup>1</sup> Gatschet, *Classification into Seven Linguistic Stocks* (Wheeler's Survey, vol. vii. p. 403).

<sup>2</sup> The wild gorge from which the Yaqui emerges into the low grounds of Batesopa is said to lead, in the first place, to a spot called "Los Taraycitos," where well preserved ruins are reported as existing.

sopa and Baquigopa were again occupied, until finally the Jesuits prevailed upon the people to abandon them permanently, and to settle at Huachinera. These tales therefore apply partly to a period anterior to the seventeenth century, and, if reliable, they cast some light upon prehistoric occurrences. At all events, they tend to show that villages of sedentary Indians formerly existed much farther in the interior of the Sierra Madre than now, and that many of these villages were not the abodes of a "lost race," but simply the results of a former expansion of a stock still existing.

I have already mentioned that the Sierra Madre contains vestiges of cave dwellings, and it is not certain that all of these were prehistoric. Besides the well known fact that a part of the Tarahumares in Southwestern Chihuahua dwell, and dwell to-day, in caves, many of which are artificially partitioned, I have been able to find a few leaves of the oldest church books of the parish of Bacadéhuachi, on which were recorded several notices of deaths of Indians whom the "enemy" had wounded, and to whom the missionaries went to administer the sacraments in the caves in which they lived.<sup>1</sup> It seems, therefore, that even during the historic period there were Opata (or Jova) Indians who resided in such natural shelters; and also, that, as I have repeatedly remarked, cave dwelling is not peculiar to a distinct stock or tribe, but a result of natural causes, or of circumstances affecting the security of living.

The artificial objects which I noticed in connection with the ruins described are like those around Huachinera, and the potsherds exhibit the same superiority in design and

<sup>1</sup> *Libro de Difuntos de Bacadéhuachi*, 1655, MS.: "Matauan los Opauas adentro de las cuevas, endonde biuan antes de cristianizarse, y les daban sagrado, porque estauan catequizandoles."

make. The pieces are mostly thin, but very hard. I was informed while at Huachinera that layers of excellent mineral paint, of various hues, crop out in the neighborhood of Nacori. These mineral deposits may have exercised some influence upon the quality of the pottery; but it is surprising that at Nacori itself the ancient pottery should belong to the crude and almost undecorated variety peculiar to the Sonora valley, and that the finer kinds should be found about forty miles farther north. Painted specimens are found occasionally in localities where the common kinds prevail, but they are extremely rare. East of Nacori, in the main sierra, the potsherds are said to belong to the handsomely decorated class. The places where they were noticed cannot be very far, in a straight line, from the Nacori valley.

From Huachinera to Baserac, the distance is about twelve miles. At first, the trail follows the Tesorobabi torrent, which below Huachinera is not perennial; then it enters a broad and open valley, "rather bleak. The heights on both sides are low and somewhat rocky, but not so rocky as farther south. There is hardly any vegetation but low cedars, mezquites, and arboriferous *Opuntia*. Everything looks 'New Mexican.' At the Estancia, a large hacienda, the Yaqui is crossed again; it is a broad, swift, and limpid river, which here has emerged from the cañones of the Sierra de Baserac, and soon after turns to the north. Remaining on the east side of the river, we crossed bare hills and dry gulches, until we emerged again into the valley, which there has assumed an almost semicircular form. The village of Baserac lies directly above the river on a steep bluff, not so high as the one on which Huachinera is built."<sup>1</sup>

A little east of this trail, and a few miles only to the south of Baserac, an arroyo winding through a series of basins is

<sup>1</sup> *Journal*, April 21, 1884.

traversed by a number of artificial dikes. The arroyo is enclosed by bleak hills not over fifteen meters (49 feet) high, from which the rock projects in ledges and benches; occasional cedars or junipers, and a few mezquites, grow on them, and the tops are covered with grass. The bottom of the gulch is the usual sand and gravel, except behind each of the traversing dikes, where triangular or quadrangular patches of soil have formed as high as the original height of the dikes. That height nowhere exceeds 1.5 m., or 4 feet 10 inches, and their thickness is not over 0.5 m., or 22 inches; they are regular walls of broken stones laid in adobe mud, and the grade on an extent of 120 meters is not quite 12 meters. I noticed no traces of buildings in connection with these dams, but there are ruins within a compass of a few miles, among which is the ancient pueblo of Ta-mi-cho-pa, of which only faint traces remain, — so faint, indeed, that it was impossible to secure a ground plan. It lies on the north side of the Yaqui, on a plateau showing signs of former cultivation. Tamichopa is a historic pueblo. It was inhabited until 1758, and there was also a Spanish rancho near it. On Saturday before Palm Sunday, while the inhabitants were all away from their homes, the Apaches set fire to the houses, and everything was consumed except the chapel, and the place remained deserted thereafter.<sup>1</sup> Opposite Tamichopa, on the terraces above the river, on what is called the Mesa de la Prensa, are ruins of enclosures, and also of a few houses. I have given a plan of the former on Plate I. Figure 87.

The old pueblo of Baserac stood, as I was informed by an

<sup>1</sup> *Descripcion*, pp. 577, 585: "El por los Apaches abrasado pueblo y estancia Tamichopa, que así lo llaman por el mucho chamizo que aquí se da en las vegas del río. . . . Tamichopa, pueblito y estancia de la misión de Baseraca, fué destruido y quemado (dejando intacta la capilla) por los Apaches el año de 1758 vispera de Ramos. Fué la dicha de sus pocos naturales Opatas hallarse en la ocasión todos fuera de él para quedar con sus vidas."

aged Opata living in the village, on the east bank of the Yaqui, although to-day it stands on the western. The present church is a clumsy adobe building, but there are still remains of an older edifice, built by the Jesuits. A few arches of stone resemble the style of the seventeenth century, and the beams in the present temple may also be ancient. There are many descendants of Opatas in the place, but I found only a few who could speak the language. Even among these there was much difference of opinion concerning the derivation of the most current local names, and while my informants unanimously confirmed the traditions related above, as to hostilities between the people of Casas Grandes and the Opatas of Batesopa and Baquigopa in early days, and the consequent abandonment of these villages, their statements concerning other subjects were conflicting and contradictory.

West of Baserac the Sierra de Teras rises in frowning crags, over which there are only one or two passes, and it is moreover poorly supplied with water. On its eastern base lie ruins, at a distance of about twelve miles from Baserac. The place is called Los Metates, and forms a basin surrounded by steep heights at the foot of the mountains. Oaks grow in clusters, and tall grass covers the bottom, in which there is permanent water. The site is in appearance completely shut out from the outside, looking like a hidden corner, a secluded retreat. From the base of the lofty cliffs narrow tongues of rock descend and traverse the bottom, forming mesas of inconsiderable height with steep sides and partially bare tops. On the upper ends of these mesas stand some oaks, and grass in bunches and tufts grows wherever possible. One of these mesas is about 146 feet high, and on its western side ascent is apparently impossible, while it is also very difficult from the east. Upon it are ruins, mostly made up of lines of parapets, the lower

ones of which consist only of rocks laid on the surface. On the top of the mesa are dry walls; elsewhere rocks, two to five times the size of a man's head, form the parapets, all of which have been artificially broken. One structure is evidently an enclosure, and there is in fact only one ruin that appears to have been a building. Nevertheless, there are a number of large metates, some of them very well preserved and apparently little used, and also considerable of the handsomely painted ancient pottery. It looks as if the height had been occupied only a short time, and the dwellings had been constructed only of the frailest material; and as if it had been hastily abandoned. (See Plate I. Figure 88.) There is an upright post of wood, which has been hewn and squared with implements of iron. The walls at that place are 0.90 m. (35 inches) high, 0.60 m. (2 feet) thick, and although of dry work are built with considerable accuracy and neatness. The wooden post is called a whipping-post (*picote*) by the natives, but I was unable to obtain any information from them in regard to the history of the ruin. It was manifestly a fortified hill, or "cerro de trincheras," like Batonapa, Tonibabi near Nacori, and others. If the hewn post is of the same date as the ruins, it would indicate that the latter belong to the historical period. Several settlements of Opatas, such as Teras, Guepacomatzi, and Toapara, are mentioned in the past century as lying north of Opoto, and as having been abandoned on account of the persistent hostilities of the Apaches, Sumas, and Jocomes.<sup>1</sup> I am unable to

<sup>1</sup> *Descripcion*, p. 585. "San Juan del Rio, los Opatas llaman al paraje Toapara. Era antiguamente poblacion de Opatas, visita del de Tera á doces leguas arriba de Opoto: se ven todavia las ruinas de una pequena iglesia que hubo; despues fué real de minas muy ricas por la continua batería que daban los Apaches. Guepa Comatzi, cueva grande, fué una ranchería de Opatas á tres leguas rio arriba con buenas tierras. . . . Tieras, pueblo y mision de Opatas, cuatro leguas de Guepa Comatzi, el cual se habian agregado muchos Bumaz y

decide whether Los Metates was one of them. From the statement that both the first and the last mentioned had a small church, I infer that neither of them can have been the place which I speak of. There is a bare possibility, however, that the Opatas driven from one or the other of those pueblos might have found a temporary refuge in this hidden recess of the Teras range; in which case the traces of work done with iron tools might easily be reconciled with the other more primitive features of the ruins.

Before reaching Los Metates, the valley of Las Escobas has to be traversed. It is more grassy, but the grass conceals large boulders which render walking very disagreeable. Oaks are scattered over the bottom, and a rivulet of limpid water trickles through it. In places this has been dammed up by dry walls constructed with boulders neatly piled. The main one of these is 1.3 meters (4 feet 3 inches) high, and behind it extends for five meters (16 feet) a space of rich arable soil. The garden plots thus formed are very small; but here, as well as at Los Metates, the large boulders strewn everywhere were an almost insuperable obstacle to cultivation. As at Los Metates, the works at Las Escobas appeared in a good state of preservation.

Taking a different route from the one by which I had reached Los Metates, I satisfied myself that most of the country west of Baserac, as far as the Teras range, is devoid of ruins. On a rock above the broad Arroyo de las Flechas, which terminates at Baserac, there were formerly

Jocomis, administrada de frailes Franciscanos: Hasta que por un mulato mayor-domo disgustado, se alzaron dichos Sumas y Jocomis, y tripulados entre Apaches empezó dicha nacion á guerrear y hostilizar á estos pueblos, y los Opatas de dichos puestos se agregaron parte á Opotu, parte á Teurizatzi, etc. El padre misionero tuvo á tiempo aviso de la sublevacion y se retiró á Babispe, por lo cual habiendole buscado los alzados para matarlo á la mañana, como no lo hallaron, quemaron iglesia y casas, cuyas ruinas aun subsisten."

some rock carvings representing arrows;<sup>1</sup> now they are almost obliterated.

East of Baserac rises the low and barren mountain chain which bears the name of the village.<sup>2</sup> I heard of caves that had once been inhabited, one of which turned out to have been used as a distillery of mezcal; the others I could not visit, but I penetrated as far as Joi-tu-da-chi, in the sierra, entering it by a picturesque cajon, through the bottom of which a lively brook is running. Joitudachi is a dismal spot, a bald ridge with very steep slopes. Below it is a dry arroyo traversed by artificial dikes, and on the brink above stands a ruin (Plate I. Fig. 89), containing the only specimen of Opata house architecture in which the walls are in part intact. They are from 0.30 to 0.35 m. thick, and built of thin plates of sandstone imbedded in adobe mud. Their height on the north side (on the south they are destroyed) is not over four feet. Every trace of the roof has disappeared, and the pottery, etc. is as usual. On both sides of the Cajon of Mechapa ruins are said to exist, and to be of the usual description. I also heard of caves in which witches were wont to gather, and of nightly processions from one of these caves to the other. An Opata of Baserac assured me that in a cave in the sierra sandals of yucca had been found, and that his ancestors used to wear them until after the coming of the Jesuits; at the present day moccasins are generally almost exclusively worn.

The most northerly point along the Yaqui is Babispe. That unfortunate village has been completely destroyed since my visit, by the earthquake of May, 1887. It had a large and massive church, built towards the end of the last century, after the Franciscan order had taken charge of the missions

<sup>1</sup> So I was informed; I did not examine the place myself.

<sup>2</sup> Sierrita de Baserac.

which the Jesuits were forced to abandon. Of the old temple no trace remains. Fertile lands extend in the bottom below the pueblo, but east of the river the mountains rise in steep slopes. I found painted pottery and traces of ruins adjacent to the pueblo, and at La Galerita, midway nearly between Barberac and Babispe, a small cluster of houses and enclosures of the usual type stand near the dwelling of Jesus Escalante.

Such small hamlets may be found at various places along the Yaqui River. At San Miguel, as already stated, rock carvings are known to exist, but I could not proceed in that direction, as my plan was to cross into Chihuahua in order to visit the ruins of Casas Grandes. I therefore took leave of Sonora at Babispe, which is the last settlement towards the northeast. The country north of it has been traversed and examined by the officers of General Crook's expedition on their march towards the Sierra Madre in 1883. I copy from the work of Captain Bourke the description which he has given of the scenery between San Bernardino, on the United States boundary line, and the Babispe valley:—

“The whole country was a desert. On each hand were the ruins of depopulated and abandoned hamlets, destroyed by the Apaches. The bottom lands of the San Bernardino, once smiling with crops of wheat and barley, were now covered with a thickly matted jungle of semi-tropical vegetation. The river banks were choked by dense brakes of cane, of great size and thickness. The narrow valleys were hemmed in by rugged and forbidding mountains, gashed and slashed with a thousand ravines, to cross which exhausted both strength and patience. The foot-hills were covered with *chevaux-de-frise* of Spanish bayonet, mezcal, and cactus. The *lignum-vitæ* flaunted its plumage of crimson flowers, much like the Fuchsia, but growing in clusters. The greasewood, ordinarily so homely, here assumed a garniture of

creamy blossoms, rivalling the gaudy dahlia-like cups upon the nopal, and putting to shame the modest tendrils pendent from the branches of the mezquite.

"The sun glared pitilessly, wearing out the poor mules, which had as much as they could do to scramble over the steep hills, composed of a nondescript accumulation of lava, sandstone, porphyry, and limestone, half rounded by the action of water, and so loosely held together as to slip apart and roll away the instant the feet of animals or men touched them."<sup>1</sup>

There are said to be ruins near San Bernardino, which was deserted previous to 1852, on account of the Apaches.<sup>2</sup> Between it and Bábispe there was only one considerable hacienda, at Batepito,<sup>3</sup> where I have heard there are ruins. Of settlements of Indians within historic times I know of none nearer than about Fronteras, where a mission and frontier garrison existed; its Opata name is Cu-quia-ra-chi. North of Fronteras lay Santa Rosa, and in the vicinity Turica-chi and Cu-chu-ta, — all Opata villages which the incursions of the Janos and Sumas obliged their inhabitants to abandon.<sup>4</sup> The description of Sonora, of the year 1764, mentions ruins near San Bernardino, in the valleys of Cu-chu-ve-ra-chi and Batepito, but adds: "There is no recollection of the people who lived in the said localities. From what I

<sup>1</sup> *An Apache Campaign*, p. 44.

<sup>2</sup> Bartlett, *Personal Narrative*, vol. i. p. 255.

<sup>3</sup> *Descripcion Geográfica*, p. 606.

<sup>4</sup> *Descripcion*, p. 605: "En primer lugar nos encontramos con él de Fronteras ó Santa Rosa Corodeguatzi. . . . Este fué el primero y único presidio de Sonora desde 1690 hasta 740; porque como por los años de 686 se alzaron los Jacomis, sumas y Janos y se unieron con los Apaches, empezando á hacer guerra á los Opatas, asaltaron el día 10 de Mayo de 1688 el pueblo de Santa Rosa, á cosa de ocho leguas al Norte de Cuquiaratzi, y á este dicho 11 de Junio de 89, por lo cual los Opatas de Santa Rosa se retiraron al paraje en que ahora está dicho pueblo." The three missions named were founded in 1653. *Catálogo de los Partidos*, p. 794.

learn, I have no doubt that the Opatas nation extended over these countries, and what causes me to believe it is, that many of these places have names in that idiom, like Batepito, or turn of the waters, Cuchuveratzi, or valley or torrent of the fish called matalote, Naideni, Bacatzi, etc."<sup>1</sup> While the evidence presented by the author of the "Geographical Description" is not absolutely convincing, yet, in presence of the emphatic statements of the Opatas that their stock originally came from the north,<sup>2</sup> the conjecture is legitimate that the ruins north of Babispe are those of Opatas settlements, as well as those farther south.

The orography of the region north of Babispe deserves a brief notice. The ranges or clusters of mountains are in fact continuations of the cordillera, which, in Arizona, terminates on the Mexican frontier with the southern ends of the Chiricahuis. South of it rise in succession the Pitaycachi, Sarampion, and finally Oche-ta-hué-ca, which is also called Sierra de Babispe. All these mountains are comparatively arid, and their profiles are as sharp and rugged as those of any of the Sierra Madre or more western chains. A little to the east of them rises the Cabellera as a transverse range, while the others run in a southeasterly or southerly direction.

The pass over which the trail to Chihuahua crosses is usually called the Pass of Carretas; between it and Babispe I noticed no ruins. It is a wild and mountainous country with narrow valleys, partly covered with thickets and groves, partly bald and bare. From the height of the Cuesta Grande, where the last ascent is made, we gaze as it were upon another world.

<sup>1</sup> *Description*, p. 605.

<sup>2</sup> The same is stated of all the natives of Sonora by Ribas, *Historia de los Triunfos*, p. 20: "Y finalmente en los informes que sobre esta materia hize, siempre halle rastros de que todas estas naciones, que se van asentando de paz en nuevas reducciones, salieron de la parte del norte."

## .XIV.

## NORTHWESTERN CHIHUAHUA.

THE Cuesta Grande is noted in the history of the past century for the innumerable murders perpetrated there by the Apaches and their allies, the Janos, Sumas, and Jocomes.<sup>1</sup> The ascent to the crest is steep, and the trail narrow and leading in places by the side of precipices. It is interesting to watch a train of a hundred or more pack animals and saddle horses creeping up the dizzy slopes. On the crest the view changes, and in place of deep mountain gorges, a broad level stretches to the east, bleak, bare, and solemn. Dark hills of lava scattered over the foreground alone interrupt the monotony of this elevated plain.<sup>2</sup> In the north towers Ochetahueca, clad in dark pines; farther on along the horizon distant ranges rise of the Sierra de las Espuelas, near the boundary line of the United States, looking pale in the morning light. No trees appear to cover their slopes, but in strong contrast with these bleak mountains stand the northern branches of the Sierra Madre south of us. The Sierra Tesahui-nori, which is the most western of the three branches composing the great chain at this end, is covered

<sup>1</sup> *Descripcion Geográfica de Sonora*, p. 578: "Á tres leguas de Babispe al Nornordiste empieza la famosa cuesta de Carretas, por los muchos estragos que en ella han hecho los Apaches en las vidas y haciendas de los pasajeros y traficantes."

<sup>2</sup> I have no means at command for ascertaining the elevation of Carretas or of the plateau on which it stands, but estimate it at about five thousand feet.

with forests of pine. Watercourses trickle through its gorges into the level plateau, there to sink and disappear. The first of these brooks which the trail intersects is crossed at the hacienda of Carretas.

Carretas was formerly inhabited by tribes which to-day are extinct; there was a settlement of Sumas and Janos, which had been gathered around a chapel forming a mission. This mission was administered by the Franciscans of the province of Zacatecas,<sup>1</sup> and was abandoned in consequence of the outbreaks which began after the rebellion of the Pueblos of New Mexico, in 1660.<sup>2</sup> It appears that in

<sup>1</sup> Fray Francisco de Arlegui (*Crónica de Zacatecas*, p. 105) places the foundation of the mission of Carretas about 1660, but erroneously. Francisco de Gorraez Beaumont, *Informe al Virey Marqués de Mancera*, p. 233: "Al segundo año de mi gobierno en aquellas provincias, haciendome capáz de ellas, tuve noticia como en este paraje citado de las Casas Grandes y otro llamado del Torreon y las Carretas y su circunferencia había muchos Indios llamados Yumas y otras naciones que pedían ministro de doctrina que mediante el se bautizarían y recibirían el Santo Evangelio; y aunque á los principios por cosa no usada ni vista, no di crédito á ello, se fué corroborando esta voz á los pasajeros que iban y venían desde el Parral al Reale de Sonora." Further on he says: "Soy de opinion que será muy del servicio de su Majestad el que se pongan las tres doctrinas en el paraje de las Casas Grandes, Carretas y Torreon." Therefore in 1667 the mission of Carretas had not yet been established, and it did not even exist in 1669. *Informe de Oficiales Reales*, August 17, 1669, p. 256. It was established between that year and 1680. *Descripcion Geográfica de Sonora*, p. 586: "Á estos no ayudaria foco para fortalecer esta frontera, ejecutar lo mismo en los pueblos desiertos, el uno de Carretas que fué tambien de la administracion de los Frailes Franciscanos, de nacion Suma, que se alzó." Rivera, *Diario y Derrotero*, p. 45: "Y encontrando con las ruynas de vn pueblo y mission de Yndios Sumas q̄ Huvo en el paraje que se nombra Carretas."

<sup>2</sup> I am unable to fix the date positively, but the general uprising of the tribes took place in 1684. The *Descripcion Geográfica* (cap. ix. art. ii.) places it in 1686, and Arlegui (*Crónica de Zacatecas*, p. 104) between the years 1686 and 1690, stating that between these two years the missions of Carretas and Torreon were destroyed by the Apaches. Still, it is certain that the Janos had already risen in 1684. *Testimonio sacado á la letra de los autos de pedimento del Cabildo, Justicia y Reximiento en que piden licencia para salirse de este puesto*, MS., fol. 1:

1834 there was again a hacienda at Carretas, which was afterwards destroyed by the Apaches. It was subsequently re-occupied, then abandoned again, and in 1884 was still in ruins. Since that time it has been purchased by Americans, and is said to be now in a flourishing condition.

Carretas is a beautiful spot, but for agricultural purposes its resources are slight, as the arroyo, though perennial, carries but little water. But for a cattle ranch it has few superiors, if any; the wooded foot-hills of the Sierra Tesahuinori come down to within a short distance of the dwellings, and the soil is light and productive. Tall grass spreads out everywhere except on the ridges and masses of dark lava scattered through the extensive plain. Between the Cuesta and Carretas I noticed no signs of ancient ruins; and this is easily explained, since not only is the intervening country destitute of water, but volcanic and other rocks frequently crop out unfit for tillage. When we reach the light and white soil, resembling that on the Lower Gila and on the Tempe delta, ruins of ancient habitations reappear along the course of the stream, on the border of the plain, near what is called El Vado.

The appearance which these ruins present is strikingly different from that of any of those investigated by me in Sonora. They resemble the ruins on the Gila and Lower Salado, inasmuch as they consist of low mounds of white earth, indicating buildings larger and more substantial than those of Sonora, and connected with them were enclosures. The walls surrounding the latter were embankments of the same material as the mounds with some traces of stone-work.

"Y despues que V. M. tomó posesion havido sublivacion general de todas las naciones comarcanas fués an llegado á profanar los vasos sagrados en la mision de N. Sa. de la Soledad de los Xanos." If Janos was attacked in 1684, it is presumable that the more exposed mission of Carretas suffered about the same time.

The mounds are about  $1\frac{1}{2}$  meters (5 feet) high, and covered with all kinds of well painted potsherds like those found in the ruins of Northeastern Sonora. Metates and crushing-pins, besides pottery, were the only manufactured objects noticed by me on the spot. On Plate I. Figure 91, I have given a reduced plat of this ruin. There are faint traces of stone or rubble foundations on one of the mounds composing this cluster; otherwise it is clear that buildings and enclosures were of the same kind of white adobe as the walls at Casa Grande and other ruins on the Gila. Whether or not the enclosures protected cultivated patches I could not determine; it seems unlikely to me, however, that they could have been reared for defensive purposes. They are different from the enclosures of Arizona, since the latter surround the central edifices and have buildings attached to their inside.

This ruin is not the only one in the vicinity of Carretas. There are others, I was informed, farther down the arroyo, where it is still perennial.

After crossing from Sonora into Chihuahua by way of the Cuesta Grande and reaching Carretas, one finds the landscape so different from what it was on the western flanks of the Sierra Madre that he is scarcely surprised at meeting also a different variety of ancient aboriginal architecture. The climate of the plateau is cooler than in the valleys of the Yaqui; there are no trees, only grass and cactuses covering the dreary plain. Strong cool winds blow over it, and there is no shade nearer than the mountains; frail houses, even if resting on rubble foundations, would not have sufficed for permanent abodes, and thick walls were therefore a necessity. That they should be of the same kind of adobe as on the Gila resulted from the similarity of the soil, and, besides, it was easier to manufacture adobes than to break

and pile the hard lava rock that crops out here and there on the surface.<sup>1</sup>

The well established fact, that the Sumas and Janos dwelt in the vicinity of Carretas in the seventeenth century, and probably at an earlier date, raises the question whether the ruins there may not be perhaps those of their settlements. This, however, would attribute to the tribes named a higher degree of **culture** than we are authorized to allow them according to Spanish **authorities**.<sup>2</sup> We have no evidence that either of these tribes lived in **houses** built of solid material, like those at Carretas or Casas Grandes. Although it is not impossible that they may at some remote period have undergone a change in culture that brought about a decline in architectural and other arts, there is no proof of it to my knowledge.

From Carretas on, the landscape becomes, if possible, more monotonous; the plain stretches to the east and north, and the Sierra de en el Medio looms up in front of the Espuelas, and of the chains along the boundary line of New Mexico. In the south, another northern branch of the Sierra Madre, the Sierra de San Pedro, succeeds the Tesahuinori chain, and we already catch a glimpse of the third and most easterly ramification, the Sierra del Carcay. At "Lagartos,"<sup>3</sup> the return trail of General Crook's corps is intersected by the road from Babispe to Janos. In the east low and bald ranges

<sup>1</sup> I allude here to the resemblance between the Gila ruins and those of Northwestern Chihuahua without in the least intending to imply that they are those of the same people. This may be possible, but similarity in architecture is by no means sufficient to prove it.

<sup>2</sup> See Part I. of this Report, pp. 87-93.

<sup>3</sup> This name was given to the place on account of the large sized-lizards said to live in a rocky eminence rising by the side of the road. The day was cold, and they did not show themselves out of their hiding places. In this century "Lagartos" was the scene of a massacre perpetrated by the Apaches upon a convoy.

loom up, the Sierra de Janos, the Escondida, and the Palotada, while in the west the mountains of Sonora sink below the horizon. The plain gradually dips towards the east, and not a drop of permanent water is found between Carretas and Los Alisos.<sup>1</sup> The latter is a dry arroyo, but at the so called Ojitos there are springs, and also ruins (Plate I. Fig. 91) similar to those at Carretas. The mounds are smaller, and the enclosures larger, and it can be distinctly seen that they were cultivated areas. These remains are, so far as I know, the only ones between Carretas and the course of the Casas Grandes River near Janos. At the latter place, seventy miles east of Babispe, we strike the main line of ruins, which extends from Ascension in the north to the interior of the Sierra Madre.

I have already stated that the Sierra Madre begins south of the trail from Babispe to Janos, or about in latitude  $30\frac{3}{4}^{\circ}$ , and it is composed of three parallel ranges, the Tesahuinori in the west, the San Pedro in the middle, and the Carcay in the east. The first two are pine-clad and with more gentle declivities, although the gorges are narrow and rugged; the Carcay is a mass of frowning walls, crowned by tower-like cliffs and battlements. I heard of ruins in the valleys that separate these chains, and was also told of ruins in the first two. There are certainly remains at the Casa de Janos.

In the vicinity of Janos I investigated two ruins, represented on Plate I. Figures 92 and 93. Their appearance resembles that of the mounds near Agua Dulce, and between Casa Grande and Florence, on the Gila. They form whitish hillocks covered with bits of well painted pottery; and in one place a wall has been excavated, which is seen to have been 1.1 meters (3 feet 7 inches) thick, and of identical make

<sup>1</sup> This was the scene of the engagement between Colonel Garcia of the Mexican troops and the Apaches under Gerónimo, in 1882.

with the ancient adobe walls in Southern Arizona. Two rooms as far as exposed measure respectively 3.0 and 2.4 by 2.5 meters (10 and 8 by 8 feet), but I am inclined to believe that they were larger. The size of the largest mound is about 20 by 15 meters, or 65 by 49 feet.

Janos is a comparatively ancient settlement. Its vicinity was held by a tribe of that name, or one which the Spaniards called by that name. This tribe, as stated in the first part of this report, has completely disappeared, having been absorbed by the Apaches in the beginning of the past century.<sup>1</sup> About 1727, seventy families of Sumas were added to the few Janos still living near the place, but this colony of Sumas also gradually disappeared.<sup>2</sup> Janos became a frontier garrison (Presidio) at an early date.<sup>3</sup> In 1684, its native inhabitants killed their priest, Fray Manuel Beltran, and sacked the buildings of the church, as well as those of the Spanish colonists.<sup>4</sup> It was reoccupied some time afterwards, and the

<sup>1</sup> See Part I. page 91.

<sup>2</sup> In 1726 Don Pedro de Rivera found a small settlement of Sumas at Janos. *Diario y Derrotero*, p. 45: "Quando arrivé segunda vez al Presidio de Janos encôtré en él las setenta familias de los Yndios de la nacion Sumas que queda preuenido, no quisieron poblarse en el presidio de el Pasco: y haviendome aplicado con la mayor atencion á fin de que dichos Yndios se redujesen á vida política, y se retirasen de la infeliz en que andaban. Se consiguió el fin que se pretendía; facilitandoles su quietud cō agregarla al pueblo inmediato de los Yndios Janos: por cuyo medio se libertó la tierra de los enemigos de aquella nacion que la hostilizaban."

<sup>3</sup> Its name was Santiago y San Felipe de Janos. Rivera, *Diario*, p. 29. The Presidio must have been founded after 1686. Escalante, *Carta al Padre Morfi*, par. 7.

<sup>4</sup> Escalante, *Carta*, par. 7: "Subleváronse los Zumas y los Janos, y estos por medio de los Mansos infieles quitaron la vida á su ministro el Padre Fray Manuel Beltran, destruyéron el templo y profanaron los ornamentos sagrados. Llamábase esta mision Nuestra Señora de la Soledad de los Janos." *Causa Criminal q̄ se a seguido contra los Yndios Xptianos Manssos por Denunsiasion, etc.*, 1684, MS. fol. 28. A Manso Indian testified in regard to this massacre: "Que es berdad que para matar al Pe Beltran y á los otros Españoles fueron nuebe ynfieles ayudandoles á los Janos y Sumas." *Testimonio sacado á la letra de los autos del Pedimento del Cabildo, Justissia y Reximienio*, 1634, MS., fol. 1:

Janos were subdued by Don Domingo Gironza Petriz de Cruzate, Governor of New Mexico, but residing at El Paso del Norte.<sup>1</sup> According to Villasenor y Sanchez, the Presidio in 1748 was garrisoned only by forty-seven soldiers and four officers.<sup>2</sup> In 1857 the garrison was removed from Janos to Casas Grandes, where it remains to-day.

South of Janos the Casas Grandes River, there running about from south to north, passes through wild and bleak gorges, in which no vestiges of antiquities exist to my knowledge.

I have stated in one of the previous chapters that the Casas Grandes River empties into an inland basin, the centre of which is occupied by several shallow lagunes, thus forming a separate drainage system between the Rio Grande in the east and the Yaqui in the west. These lagunes lie on Mexican territory between the parallels of 31° and 32°, and the meridians of 107° and 108° west. The three principal ones are the Laguna de Guzman, the Laguna de Patos, and the Laguna de Santa Maria. The first, which is also the largest, receives the waters of the Casas Grandes River; the second, those of a small stream, called Rio del Carmen; and the third, the Rio de Galeana, or Santa Maria.<sup>3</sup> Owing to the flatness of this lake country and the nature of its soil, and also to lack of precipitation during the greatest number of months in the year, the extent of these shallow lakes is quite variable.<sup>4</sup> I have heard of ruins situated not far

“Pues an llegado á profanar los vassos sagrados en la mission de Nra Sra de la Soledad de los Xanos, matando á vn relixioso y vna familia de Españoles.”

<sup>1</sup> Escalante, *Carta*, par. 7: “Perseveraron todos estos en su rebeldia dos años, hasta que no pudiendo mantener la incesante guerra que D. Domingo Gironza hacía matando y apresando á muchos de ellos, se rindiéron y pidieron paces el año de 1686.”

<sup>2</sup> *Teatro Americano*, vol. ii. p. 365.

<sup>3</sup> Pedro García-Conde, *Ensayo estadístico sobre el Estado de Chihuahua*, 1836, p. 12.

<sup>4</sup> *Ibid.*, p. 13, speaking of the Laguna de Guzman: “Su tamaño es muy varia

from their shores, but could not verify the truth of the statement. Along the Casas Grandes River ruins are found as far north as the vicinity of Ascension, but I had not time, on my journey from Casas Grandes to Deming, to examine them closely. They loom up like whitish mounds, and some of them appear to be of considerable size. I saw potsherds that had been picked up on their surface, which looked like the ancient pottery of Janos and Northeastern Sonora. North of Ascension, although the river runs through a grassy plain, it is in a channel of from ten to twelve feet in depth, and with vertical sides, so that access to its waters is difficult.<sup>1</sup> Trees and shrubs grow along the banks in the channel, but the plain is destitute of all vegetation except low and scrubby mezquite. Under these conditions the construction of irrigating ditches became quite a severe task, and this may have been at least one of the reasons why I failed to find any traces of antiquities between the Espia, an isolated conical hill some distance north of Ascension, and Deming in New Mexico. The plain south of Deming to the Mexican frontier, a distance of at least forty-five miles, has no other perennial water than occasional springs, and the Boca Grande is an arid and rocky mountain cluster, and so is the Sierra de la Hacha farther west. There may be a few small ruins on the upper slopes of the latter mountain, but I am not sure of it.

The inland basin of which I have here spoken, therefore, if not completely devoid of ruins, seems to be without any considerable number of them. Between the Casas Grandes

ble, pués en el tiempo de las aguas sobresale de sus regulares bordes y en el rigor de la seca es muy reducido."

<sup>1</sup> This channel is narrow, but descent to the river on horseback is impossible sometimes for a distance of ten miles. It is quite a trying situation to ride for hours within sight of the water without being able to get the thirsty animal to it. The only spring of any consequence on the plain is the Ojo de la Mosca, not far from the boundary line of the United States.

River and the lagunes rises the Corral de Piedras, an arid chain in which I have been told no ruins exist except those of Apache huts, and of large, rudely made enclosures, said to be of modern origin. Ancient remains, therefore, are limited to the upper courses of the streams that empty into the lagunes from the south and some of the valleys descending into them, and to the Upper Rio Mimbres in New Mexico. Of the last I have spoken in Chapter VII. The difference in architecture between the northern and the southern ruins is considerable. The former are all small buildings of stone with stone enclosures; the latter, in the lower regions at the foot of the Sierra Madre, are large buildings of adobe, often many-storied, similar to those on the Lower Gila of Arizona, and indicating more extensive settlements and a larger population.

Between Janos and Ascension there is a mountain pass through which the river has cut its way, in which I noticed no ruins. Neither did I see any south of Janos for twenty-five miles, or as far as the plain of Corralitos. This hacienda, with mining works, dates from this century, and lies in a broad valley, which extends, with various narrowings, as far as Casas Grandes. Everywhere in the valley the soil is easily cultivated and fertile when irrigated. Groves of cottonwood line the banks of the river at intervals. It is a beautiful valley, not so extensive as that along the Gila and the Tempe delta, but quite as favorable for agriculture; but it is colder, since its altitude is about four thousand feet, and snow falls nearly every winter, remaining on the ground sometimes for several days. While therefore the Casas Grandes valley was, on a smaller scale, also a "centre of subsistence" for land-tilling aborigines, it is still neither in extent nor in general resources so well suited for the increase and establishment of a considerable Indian population as are those portions of Ari-

zona. Nevertheless, it is a very interesting region, and one in which native culture in the Southwest probably attained its highest development. It is also happily conditioned in the sense that, while its natural resources are considerable, the climate is sufficiently temperate to inspire man to activity, and not to depress his moral and physical powers in the same degree as in warmer countries where the contrast between the seasons is less marked.

The mountains bordering the valley on both sides seem to be devoid of ruins. From Corralitos the rugged Carcay is plainly seen, and between it and the valley rises the Pajarito, a naked volcanic chain of lesser elevation. South of it, due west of Casas Grandes, the Cerro de Montezuma dominates the valley. In the east also there are barren chains like the Cerro Colorado and the Escondida, so that the valley lies between two cordilleras which gradually converge. Fifteen miles south of Casas Grandes the space separating them narrows to a gap between volcanic heights, called the Boquilla. Farther on lies San Diego, where the Casas Grandes River is formed by the junction of the Rio de Palanganas with the Rio de Piedras Verdes. The Palanganas rises due south, and is flanked on the east by the Sierra de Ancon; the Piedras Verdes descends from the northwest, and has its source between the Sierra de San Pedro and a more southerly ramification of the Sierra Madre. This chain, which looms up ten or fifteen miles west of San Diego, beyond an arid plain, is the Sierra de la Madera de Casas Grandes, at least twenty-five miles distant, and to it the inhabitants of the valley have to resort for their wood. The profile of the chains is not strongly marked, and its slopes are densely wooded. The eastern ramifications of the Sierra Madre, except the Carcay, have less rugged profiles and bear more vegetation than the western branches of the great central chains.

Along the rivers Casas Grandes, Palanganas, and Piedras Verdes the ruins are disposed in groups as well as in isolated mounds; they are therefore far from constituting a continuous line. Near Corralitos I saw but a few inconsiderable remains, but after leaving the abandoned hacienda of Barranco Colorado white eminences loom up conspicuously here and there. It may be seen at a glance that the houses which crumbled into these hillocks of white sandy clay were in many cases two or more stories high. I counted at least fourteen groups of mounds, and isolated ones, some of which were not higher than 0.50 or 1.5 m., and one group is shown on Plate I. Figure 92a. The highest of the three mounds composing the cluster appears to be three meters, but it is impossible to determine its elevation without excavating to the ground floor. Mounds of a similar character are visible also on the east side of the Casas Grandes River, but they are not as numerous, since the valley there is narrower than on the western side. The river runs in a shallow groove, and the ruins are always at a distance of from one half to one and two miles from it. The intervals between the groups vary greatly; sometimes they stand near together, again a mile or more separates two groups. Nowhere did I see a cluster indicating a considerable pueblo; nevertheless, owing to the size of the houses, it is possible that the largest group may have contained several hundred inhabitants. Potsherds are strewn over and about the mounds, striking on account of the brightness of their colors and the regularity of their designs, as well as for the thinness and hardness of the clay and their fine glaze.

About four miles north of Casas Grandes, the valley narrows, and, after turning an angle, the village of Casas Grandes appears. It is a town of dilapidated adobe buildings, with a population of one thousand souls, and with barracks

occupied by about four hundred soldiers. The church is the usual adobe pile, and poorly equipped with ornaments and decorations. Before reaching the village, the ruined church of San Antonio de Padua de Casas Grandes is passed, standing on the second tier of terraces above the river, with its walls still of their full height. Around it the soil is covered with fragments of the same pottery as that on the ruined mounds. I am unable to state precisely when this church was built, but it must have been after 1667, and some years previous to 1680.<sup>1</sup> In 1726 it was still in use, the Franciscan order from Zacatecas administering to the spiritual wants of the unimportant settlement of Spanish colonists and Sumas and Conchos Indians.<sup>2</sup> In 1748 the church was already abandoned, and a single dilapidated hacienda, called Santa Ana Bienes, contained the remnants of the once prosperous population.<sup>3</sup> The uprisings of the Sumas in 1684,

<sup>1</sup> It is certain that in 1667 there was no church at Casas Grandes, although Arlegui intimates that the mission had been founded before that date; his statements are positive. The date of 1680 I infer from the importance which the settlement at Casas Grandes had then acquired through its production of wheat and the number of cattle raised there. Compare, in regard to the last two points, Fray Francisco de Ayeta, *Carta al Virrey*, 1680, MS.

<sup>2</sup> Rivera, *Diario y Derrotero*, pp. 35, 47: "Y habiendo pasado el pequeño río de Casas Grandes hize noche á la vanda de el Veste de él, en vna Estancia de Ganado, que llaman S. Antonio. . . Y encontrando con el pequeño pueblo y mission de S. Antonio de Casas Grandes, habitado de cinco ó seis familias de Yndios Conchos y Sumas, y administrado por religiosos de S. Francisco, hize noche cerca de él, en vna hazienda de labor, situada á la vanda de ueste de el río, como lo está dicho pueblo."

<sup>3</sup> Villaseñor y Sanchez, *Teatro Americano*, vol. ii. p. 363: "El Valle que llaman Casas Grandes, tambien muy ameno, aunque de poco pueblo, por lo inhabitando y peligroso, por cuya causa no se pueden cultivar sus tierras por falta de gente. Manteniendose algunos vecinos con sus huertas en gran miseria, sin poder adelantarlos. En dicho tránsito está otro puesto con el mismo peligro, que el antecedente, endonde se halla extinguida aquella doctrina, que aúa de religiosos del Seráfico Orden, por auer desolado el pueblo, ó pueblos, que en dicho valle aúa, sin auer quedado en él más, que un Indio. Inmediatamente a dicho pueblo, oy demolido de Casas Grandes, está la hacienda, nombrada Santa Ana Bienes, cuyas tierras son abundantes de frutas de Castilla."

their subsequent alliance with the Apaches, and the depredations of the latter, had accomplished its destruction. In the present century, after Casas Grandes had been repeopled, the sufferings of its inhabitants from the savages, principally since the outbreak in Sonora of 1831 or 1832, were sometimes fearful; neither life nor property was safe until 1884. The Apaches, Janeros as well as Chiricahuis, had their strongholds in the Sierra Madre, whence they could descend with impunity upon the settlements.

Half a mile south of the present village are the famous ruins from which the name Casas Grandes, or Great Houses, derives its origin. They lie on the southern extremity of a terrace which rises above the river bottom, and is traversed by several small gulches running in the main from northwest to southeast. A considerable portion of the ruins lying nearer to the river has been partially built over with modern houses, so that their full extent can hardly be ascertained; but I believe the plan on Plate I., Figure 93*a*, will give a fair idea of them. Besides being quite extensive for Southwestern ruins, they are also compact, so that the population, if we take into consideration the fact that the houses were several stories high, may have amounted to three or four thousand souls. In that case it would have been by far the largest Indian pueblo in the Southwest, and twice as large as the most populous village known to have existed farther north.

I refer to the ground plan of the edifices which I could survey and measure (Plate VI.), where it will be seen that the buildings which are partly intact stand on the southern limit of the whole cluster. The site is well selected, commanding an extensive view. The ground is gravelly, as the terraces generally are, and ledges of rocks protrude here and there. The cultivable bottom land commences at the foot of



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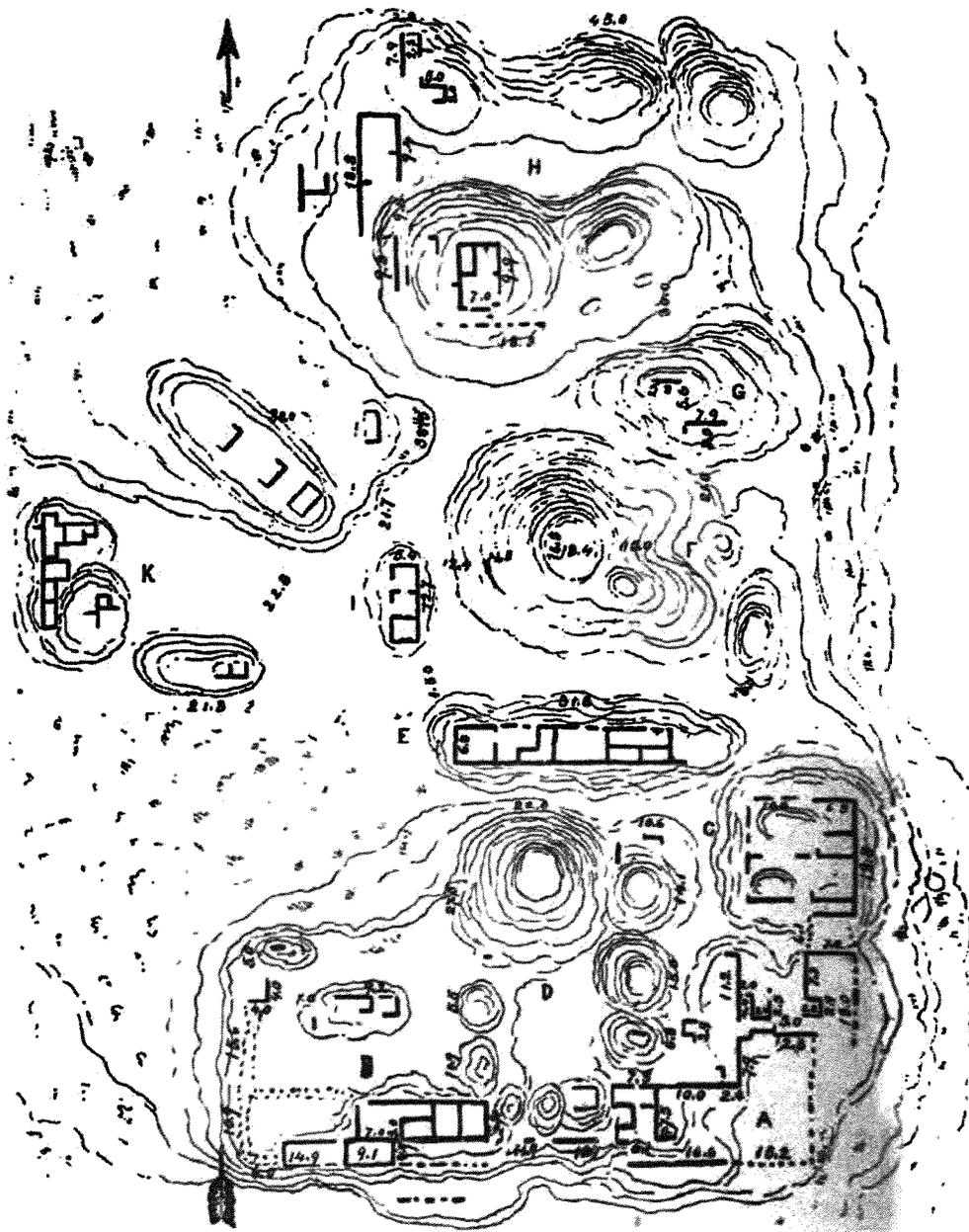


PLATE VII. — MAIN PORTION OF RUINS OF CASAS GRANDES.

the terrace, which is only a few feet above it. A part at least of the pueblo, therefore, was built on ground unfit for cultivation, but adjacent to such as was tillable, and not farther from the river than a quarter of a mile. No enemy could approach Casas Grandes in the daytime without being discovered. In the west a bleak terrace stretches as far as the foot of the Cerro de Montezuma, at least three miles distant. In the east the whole bottom, and the terraces and hills beyond, together with the farthest mountain slopes, lie open to the view; to the south every crag and cleft in the Sierra del Cristo may be scanned; and in the southeast, between bare heights, the Pass of Chocolate opens naked and bleak, leading into the fine valley of Galeana. Except the cottonwoods and the fields along the river, only a scrubby and dusty vegetation covers the ground. The light of the sun is reflected from the white slopes with a dazzling glare.

The walls exposed in the ruins are in places two or sometimes three stories high, and their thickness varies between 0.40 m. (16 inches) and 1.2 m. (4 feet). They are of the same make and pattern as those of the ruins in the Tempe valley, so amply described by Mr. Cushing. (See Plate VII.) Most of the rooms are large, with some exceptions, and the doorways are of quite a good size. The air-holes and apertures for light deserve the name of windows; they are round, rectangular, and elliptical or oval. One round window measured 0.38 m. (15 inches) across; an elliptical one opened in a corner was 0.85 m. (2 feet 10 inches) by 0.40 m. (16 inches); and a rectangular one measured 0.50 m. (20 inches) in width. The lintels of the doors as well as of the windows were of wood, and mostly 0.15 m. (6 inches) thick. They seemed, from the impressions which were left, to have consisted of flat or half-round pieces, but I could not determine the kind of timber used. Of the roofing or ceiling I saw but one

specimen. Round beams from 0.13 to 0.17 m. in diameter (5 to 7 inches), supported a superstructure of ocotilla poles and earth. The floors were of earth, and the walls were covered in places with a thin coating of whitewash, and I noticed traces of fire on them.

A wall with two superposed grooves, the upper clearly the groove of the ceiling, but the lower oblique and ascending almost to that ceiling, seems to indicate a flight of steps; but I could not determine positively whether it was a staircase or not. If it was, the inhabitants of Casas Grandes had made quite an important stride in architectural progress. Of ladders I saw no trace.

The question of the form of these edifices, whether they were like the pueblos of the north, with retreating terraces, or with a central tower, as Casa Grande, or massive blocks with straight walls to the top, is a difficult one to determine. The conical shape of the mounds would lead to the inference that the central parts were higher than the outer ones; on the other hand, there are outer walls still standing which are three stories in height. From the older descriptions of Casas Grandes in my possession, I cannot gather any light on this subject. Mr. Bartlett, who has furnished a careful description of the ruins, says: —

“From a close examination of what remains of the building or buildings, I came to the conclusion that the outer portions were the lowest, and not above one story in height, while the central ones were from three to six stories. Hence the large heaps of ruined walls and rubbish in the centre, and in consequence the better preservation and support of that portion of the edifice. By far the larger portions which have fallen are the exterior walls. This arises from the moisture of the earth and the greater exposure to rains. The central parts are in a measure protected by the accu-

mulation of rubbish, and by the greater thickness of their walls." <sup>1</sup>

Mr. Bartlett saw Casas Grandes fully thirty-eight years ago, or more than thirty years previous to my visit to the place; and was therefore able to notice a great many features which have since disappeared; nevertheless, I do not believe that the houses had as many stories as he attributes to them. Four, or in some edifices five, is the most I could allow.

The ruins of Casas Grandes stand close together, even appearing to be crowded in a small compass. Alleys, rather than streets, separate the various mounds; and although the width of these passages must have been greater when the edifices were intact, there is nowhere, so far as I was able to detect, any square or public yard of considerable extent. There is less distance in this great pueblo from one mound to another than in the ruins between Casas Grandes and Corralitos, and much less than at Casa Grande in Arizona. This is a singular feature. The houses at Casas Grandes are also those best preserved in the whole region.

That the object of these great houses was, first of all, the abode of the people, can scarcely be doubted. The objects scattered about the ruins almost everywhere are mostly

<sup>1</sup> *Personal Narrative*, vol. ii. p. 350. García-Conde (*Ensayo Estadístico*, p. 74) is more positive: "Entre estas ruinas se encuentran dos especies de habitaciones muy distintas: la primera consiste en un grupo de piezas construidas de tapia y exactamente orientadas según los cuatro puntos cardinales: Las masas de tierra son de un tamaño desigual, pero colocadas con simetría y descubre mucha habilidad en el arte de construirlos por haber durando un tiempo que excede de trescientos años. Se reconoce que este edificio ha tenido tres altos y una azotea con escaleras exteriores y probablemente de madera. Este mismo género de construcciones se encuentra todavía en todos los pueblos de los Indios independientes del Moqui al N. W. del Estado. Las mas de las piezas son muy estrechas, con las puertas tan pequeñas y angostas que parecen calabozos. Todavía existe en muchas partes el enjarre de las paredes cuya finura é igualdad demuestra la inteligencia de los arquitectos." Escudero (*Noticias Estadísticas del Estado de Chihuahua*, 1834, p. 234) copies the above textually.

household articles and utensils. No place has been dug into without metates, pottery, and other articles of daily use coming to light. Still it is not improbable that places of worship were also included from the descriptions given. I was not able to make any excavations, and do not venture any opinion. Fetiches have been found at the ruins, but where and under what conditions I could not ascertain. One quite remarkable find is of considerable importance in an ethnological sense.

In one of the large mounds which are now partly built over, and in which only excavations of small depth can be made, a little room was opened in which, I was told, a large meteorite was found. It was noticed that the block, which was of unusual size and of a silvery hue, had been originally wrapped up in some kind of matting, which crumbled as soon as air was admitted into the chamber. The meteorite was afterwards removed to the city of Chihuahua, where it fell into the possession of Don Enrico Miller, or Müller, an old and prominent resident, but where it is now I could not ascertain.

Upon the supposition that the above statements are correct, the finding of this meteorite in one of the buildings of the ancient pueblo becomes a very interesting feature. It is not to be presumed that the aerolite fell into the building, but it is much more likely that it was found elsewhere and carried to the place where it was subsequently discovered. That it was enveloped in matting shows that superstitious care was bestowed upon it, that it was considered as a fetich, and therefore that the small room in which it was discovered had some religious purpose.

It is well known that the States of Chihuahua, Durango, Coahuila, Zacatecas, and even Jalisco, have been frequently the site of falls of large meteorites. The number of such

blocks of huge size found in those States is remarkable. In the State of Chihuahua alone, at least three, and probably more, enormous aerolites have been discovered. These blocks fell, as far as known, during times anterior to the Spanish period. There existed among the Indians of Western and Central Chihuahua a tradition to the effect that the fall of at least one of these masses had some connection with the movements of some of the tribes. The tradition is confused, for the reason that the Spanish authorities relating it bring it into relation with the supposed migrations of Central Mexican tribes from the north to more southerly regions.<sup>1</sup> While it would be wrong absolutely to discard such an interpretation, since we have no means of testing it, it is well to recall here the fact of the discovery of the Casas Grandes meteorite. The folk-lore alluded to by the Spaniards in the sixteenth century, however, was not applied to that meteorite, since Casas Grandes was then unknown to them, but to one of the large meteorites in Southern Chihuahua.<sup>2</sup> From all appearances the tradition was peculiar to the Tarahumares and the Tepehuanes, tribes which, according to the latest linguistic investigations, belong to the same stock as the Opatas, Pimas, Yaquis, and also the Nahuatl of Central Mexico.

My inability to excavate the ruins has rendered it impossible for me to ascertain anything concerning ancient burials. I have not heard of skeletons having been discovered inside the great houses; but there are structures which remain enigmatical to me. These structures lie west and northwest of

<sup>1</sup> Villagran (*Historia de la Nueva México*, cantos i. and ii.) is, so far as I know, the earliest printed authority in which this tradition is mentioned. A condensed version of it is found in Zárate-Salmeron, *Relaciones de todas las Casas, etc.*, 1626, par. 105 to 108.

<sup>2</sup> The locality is identified by Zárate-Salmeron (*Relaciones*, par. 105) as "tres leguas de Santa Bárbara, media legua abartado del Camioi por donde pasan los carros que van al Nuevo México."

the measurable portions of the ruins, and appear on the plan under the numerals I. to V. and VII. to XII. (Plate VI.) With the exception of I. and IV., they are solid elliptical or circular mounds, of various heights, composed mainly of gravel. They suggest the idea of artificial platforms upon which buildings were to be erected; but I saw no traces of foundations, and the level on which they are situated is already higher than that of the great houses themselves. Nos. I. and IV. are still more peculiar; while the others are low, hardly over one or two feet high, I. rises to an elevation of 3.5 m. (11½ feet). It has been excavated in the centre, and the section shows nothing else but a solid mass of gravel. It is a mass of gravel, with a rim of stones extending around its upper slopes at a few inches below the top, which is flat, and thickly strewn with fragments of pottery. This artificial elevation is connected with a partly ruined enclosure, the interior of which is free from gravel, and was slightly moist. The enclosure consists of an embankment supported by a stone wall, similar to the dikes near Baserac in Sonora. The stone wall was built on the inner side, and the surface of the area thus enclosed is thirteen hundred square meters, or a little more than one fourth of an acre. The star-formed structure IV. is a low heap of gravel with a slight depression in the centre.

The little artificial eminences, numbered IV., VII., VIII., and IX. are scattered in a line along the brink of a dry gulch which bounds the southern complex of the ruins on the north, northeast, and east, merging into the bottom proper. What their object may have been, I cannot surmise, neither can I imagine the purpose of the other mounds.

In regard to I., it is well to note that it lies on the line of an old acequia, so that it seems as if the enclosed area with

which it is connected stood in some relation to the irrigating ditch, although I do not venture to suggest that it was originally a garden plot.

I could not find any signs that the low mounds mentioned were pyral mounds, and nowhere did I see any trace of combustion. Still I was afterwards informed that a layer of charcoal and ashes, containing charred bones, had been noticed near the top of mound II. The excavation in the latter mound was made for the purpose of treasure-seeking. As in many other places in the Southwest, Casas Grandes is credited with fabulous ancient wealth. Before referring to the irrigating ditches, traces of which exist at and near Casas Grandes, I will mention the building N. Mr. J. R. Bartlett has also spoken of it in his valuable work.<sup>1</sup> The plan of this building is so different from that of the other houses that the thought arises whether it may have been of modern origin. Still the potsherds are ancient, although less numerous. The ground plan of this ruin recalls that of a house of a Spanish Mexican hacienda, and the building was only one story in height.

It will be noticed that one-story edifices are not uncommon at Casas Grandes, and that they stand mostly on the outside of the large clusters, rather than between the many-storied buildings. The rooms are on the whole considerably larger than in northern ruins, those on the Gila and Salado excepted.

I am in doubt as to whether some of the buildings stood on platforms or not. The open space forming the southeast corner of the group A appears as if raised a foot or two above the rest. Still, the amount of rubbish is so considerable that it is impossible, without excavations, to determine whether the substructure is artificial or not. On the south-

<sup>1</sup> *Personal Narrative*, vol. ii. pp. 360-362.

western corner of the same group are traces of an enclosure of adobe, similar to the one around the Casa Grande, and to the walls surrounding the mounds at Tempe and the Casa Blanca.

Comparing the architecture of Casas Grandes with that of the Gila, it strikes me that the settlement was more compactly built, and that the edifices present a higher degree of skill, if not in the manner in which they are constructed, at least in that in which they are arranged. They were manifestly not for habitation alone, but also with the view of defence. There are, as far as I could see, no fortifications proper, but the size and situation of the buildings, their number, and the strength of the walls, were a means of protection against an Indian foe. The buildings were really fortresses, as well as houses. Where a cluster is as large as Casas Grandes it is probable that the downfall was gradual, and probably brought about by various causes.

Of all the objects found at the ruins of Casas Grandes the pottery attracts the principal attention. Not that it is any better than that found in the ruins of that section in general, for it is of the same make and type; but the number of specimens found in a good state of preservation is striking. The decoration on these vessels — I have seen but very few plain ones — derives its patterns from symbolic figures which are like those of the pueblos of New Mexico. In addition to the painted pottery, there is also plastically decorated ware, but all of this that I have seen is also painted. One jar showed very crude corrugations, but still was painted reddish brown; another kind of pottery had regular indentations carefully painted in various colors. It may be remembered that, in speaking of the corrugated pottery found at Fort Apache, I said that it was painted, but without regard to harmony with plastic designs. Lastly, I have heard of pottery with human figures, colored in alto-

rilievo, but was unable to procure any specimen. I was assured that the figures are grossly obscene. Mr. Bartlett has given fair representations of the Casas Grandes pottery.<sup>1</sup> The shapes are like those of New Mexican pueblo pottery, with the difference that the bottoms are convex.

The metates of Casas Grandes differ from others seen by me in the Southwest in being much better fabricated, and even sometimes elaborately carved. They are generally square, and nicely finished, but I saw one of crude make. A double metate of lava was shown to me, and Mr. Bartlett has figured one with legs.<sup>1</sup> Whatever crushing-pins I saw were prismatic, and not cylindrical as they are farther south. I noticed mortars of lava, fairly made, and one pestle, with the head of a mountain sheep rather well sculptured. The last implement was of syenite. Stone axes are like the well known instruments of the kind from Arizona. I heard of cotton cloth found in the ruins, and of threads of yucca fibre. I have seen many turquoise beads and ear pendants of turquoise precisely like those worn to-day by the Pueblo Indians or found in the ruins; also shell beads and many shells, entire as well as broken and perforated. The following species have been identified from the copies made by me in colors: *Turritella Broderipiana*, a species from the Pacific Coast; *Conus Proteus*, probably from the West Indies; *Conus regularis*, from the West Indies; and a *Columbella*, locality not given. All the univalves found at Casas Grandes, as far as I know, are marine shells. The finding of such shells at a point so far away from the sea-coast and nearly equidistant from the Gulfs of Mexico and of California, is a remarkable feature, implying a primitive commerce or inter-tribal warfare which carried the objects to the inland pueblo at Casas Grandes.

<sup>1</sup> *Personal Narrative*, plate to page 362.

Two interesting finds I have still to report. One is a fetich of the puma (*Felis concolor*), "mountain lion," or cougar. The specimen was of small size, apparently made of some kind of actinolite, and the figure was exactly like the fetiches of the mountain lion, called at Zuñi "long tail." It might have been manufactured in New Mexico, so great is the resemblance. Another piece was only the head of the same animal, of larger size and of the same kind of stone. If the body was in proportion to the size of the head, the whole figure would have been as large as a small domestic cat.

It is quite likely that the main portion of the fields lay in the bottom near the river, where the land is very fertile and can easily be irrigated. South of Casas Grandes and at a distance of about two or three miles, an ancient acequia may be followed for a distance of about half a mile. It is nearly  $5\frac{1}{2}$  meters (18 feet) wide, and, although it has no artificial lining, the sides are raised, one meter on the west, and  $1\frac{3}{4}$  meters on the east (3 and  $5\frac{7}{8}$  feet), so that it is a mere shallow trough. This acequia stretches across from one side of a bend of the river to the other, but I was unable to find whether it merely connected the sides or extended farther. There are some ruins on the dunes west of it, as well as on the eastern bank.

The main irrigating ditch, however, which is traceable at Casas Grandes, enters the ancient village from the northwest (see Plate VI.), and can be traced for a distance of two or three miles. It runs almost straight from northwest to southeast, and I have been told that it takes its origin about three miles from the ruins, at the foot of higher slopes, and near a copious spring. It looks therefore as if it had conducted the waters of the spring to the settlement for household purposes only. Indeed, after passing the enig-

matical structure marked I., it empties into the circular tank V., the diameter of which is 15 meters (49 feet). The depth of this tank is still 1.6 meters (5 feet). South of it I was unable to trace the ditch any farther; but there is, near the house N, and thirty meters west of the building B, another tank, VI., 22 meters (72 feet) in diameter, with a rim one meter high and 12 meters wide (3 and 39 feet). This tank is two meters deep in the centre. It is not impossible, therefore, that the acequia, after passing through or by the tank V., continued its course in order to supply the larger basin VI. also.

The acequia is best preserved on the terrace in the northwest of the ruins. There its course is intercepted by gulches, and the section is therefore very plain. It seems that, at a depth of about four feet below the present surface, a layer of calcareous concrete formed the bottom of the shallow trough through which the water was conducted. This channel is about ten feet wide, and, what I had never seen before in the Southwest, was carried on a steady and very gradual incline by means of artificial filling, and probably by wooden channels crossing intervening gulches. The calcareous concrete forming the bed of the acequia may be artificial, in which case the channel at Casas Grandes would be similar to the lined water-conduits at Tule in Eastern Arizona. This is interesting, since it shows that tribes living under natural conditions so different as to develop distinct varieties of architecture have resorted to the same contrivances for purposes of irrigation.

Another acequia, 4.3 meters (14 feet) wide and also slightly raised above the ground, showing four longitudinal rows of stones laid at intervals of from four to six feet, may be traced in the bottom. It looks more like a road-bed than like a ditch, still I cannot conceive it to have been anything else.

It seemed to me as if both these channels had been connected, and as if they were but branches of the main line running across the terrace, one deflecting to the west of the ruins to fill the two artificial basins (V. and VI.), the other entering the bottom between the western part of the ruins and that portion of them lying in the bottom. But it may be that the lower acequia derived its waters from the river. At all events, it seems clear that the inhabitants of Casas Grandes had made considerable progress in irrigation.

Ruins are said to exist on the east side of the river also, and opposite the main cluster; but I was not able to visit them. Having heard many reports concerning relics of antiquity both south and west of Casas Grandes, and at the same time having satisfied myself that the ruins did not extend to the east any farther than the first or second terrace above the river, and that they were of the same description as those already investigated by me, I determined to penetrate as far as San Diego, where the Casas Grandes River is formed by the junction of the Palanganas and Piedras Verdes, in order to examine the ruins along the banks of these two streams, and finally to turn to the west and investigate as far as possible the eastern ramifications of the Sierra Madre. My object consisted especially in verifying the truth of reports touching the existence of caves or cliff-houses in the interior of the great chain. I also desired to ascertain whether there were ancient remains in the mountains of the same type as those at their base.

The only ruins of any consequence which I saw between Casas Grandes and San Diego were those situated near the Boquilla, which are represented on Plate I. Figure 94. They consist of mounds, and of walls of lava blocks connecting them, which seem to have been intended for defensive purposes. The mounds are, as will be seen, smaller than those

on more open expanses, and the site is traversed by several dry arroyos. All the potsherds scattered about, although of the same kind as those at Casas Grandes, are much more decayed. A peculiar structure is the one standing opposite the ruins, and on the south side of the river. It is an artificial mound  $1\frac{1}{2}$  meters (5 feet) high towards the side from the stream, and 5 meters ( $16\frac{1}{2}$  feet) towards the water's edge. While the bulk is made of adobe, the base is surrounded by a casing of large flags of stone. The appearance of the ruins, the length and solidity of the stone walls, as well as the situation, lead to the inference that the village may have been located there for the purpose of defending the entrance to the valley from the south, or at least of impeding the approach of an enemy from that quarter. The population of the village cannot have exceeded three hundred souls.

This ruin lies in what is called the "Malpats," or lava-fields. The Cerro de Montezuma in the west, and rugged heights of lava in the east, approach each other, and a short distance south of the ruins the two ranges form a gorge, the Cerro de la Boquilla, a steep and rocky mass rising abruptly above the east bank of the stream. At San Diego, a short distance beyond the Boquilla, a bleak plain begins, which stretches to the west as far as the eastern slope of the Sierra Madre. The Rio de Palanganas is lined by cottonwood groves; but the Piedras Verdes has less shade. Along both streams rise, rather conspicuously, the white mounds of many ruins, scattered in small clusters. On the plain itself, as it is destitute of water, only an occasional small artificial mound appears.

I could not detect the slightest difference between the ruins situated on the two rivers mentioned, in sight of each other, and separated only by short distances. Plate I. contains (in Figures 95, 96, 98, and 99) plans of those groups, the

first two lying on the Palanganas near San Diego, and the other two on the Piedras Verdes. I have no comments to make touching these ruins, since they are of the same type as those near Corralitos and Carretas, therefore of the Casas Grandes variety, only smaller than the great houses. They suggest the former existence of quite a number of small settlements composed each of several large houses, many-storied, or at least two stories high in most places. Their elevation is difficult to ascertain, without excavating to the ground floor. One group on the Piedras Verdes was 1.6 meters (5 feet), and another  $3\frac{1}{4}$  meters (10 feet 10 inches) above the surrounding level. There were adobe enclosures connected with the mounds, as at Carretas and at Ojitos, and on the Gila; and the pottery was of the same kind as at Casas Grandes.

The plain between San Diego and the foot of the Sierra Madre is a gradual incline covered with grass, on which antelopes were grazing in herds when I crossed it on the 25th of May, 1884. The grass had been recently burnt off. The width of the plain I estimate at ten, perhaps twelve miles. Where it abuts against the mountains, scrubby oaks appear, and at the Puerto de San Diego the ascent of the Sierra commences. The Arroyo de la Cuerda here empties into the plain. On both sides of this arroyo, and partly across its bed, are dams and dikes exactly like those which I have repeatedly described in the preceding chapter. Between the dikes extend more or less regularly shaped plots of tillable land, called by the inhabitants of Casas Grandes "labores," or tilled patches. The quantity of water running down the arroyo must be considerable during freshets, but in the dry season there is only a little rivulet near the base of the mountain. Connected with these artificial garden beds are ruins of houses, small buildings containing from two to four rooms.

The walls seem to have been partly of adobe, partly of stones; and small stone enclosures are connected with them. (see Plate I. Fig. 97). The mound, which measures about twenty-one by twelve meters, indicates a one-storied building, and is surrounded by a system of stone enclosures on three sides, resembling a combination of the checker-board and central mound ruins of Arizona. The potsherds are like those of the other ruins, but much more decayed.

The so called Puerto de San Diego, a very picturesque mountain pass, ascends steadily for a distance of five or six miles. On its northern side rise towering slopes, the crests of which are overgrown with pines. In the south a ridge of great elevation terminates in crags and in pinnacles. The trail winds upwards in a cleft, and is bordered by thickets consisting of oak, smaller pines, cedars, mezcal-agave, and tall yucca. As we rise, the view spreads out towards the southeast and east, and from the crest the plain below and the valley of Casas Grandes, with bald mountains beyond, appear like a topographical map. Turning to the west, a few steps carry us into lofty pine woods, where the view is shut in by stately trees surrounding us on all sides. The air is cool; deep silence reigns; we are in the solitudes of the eastern Sierra Madre.

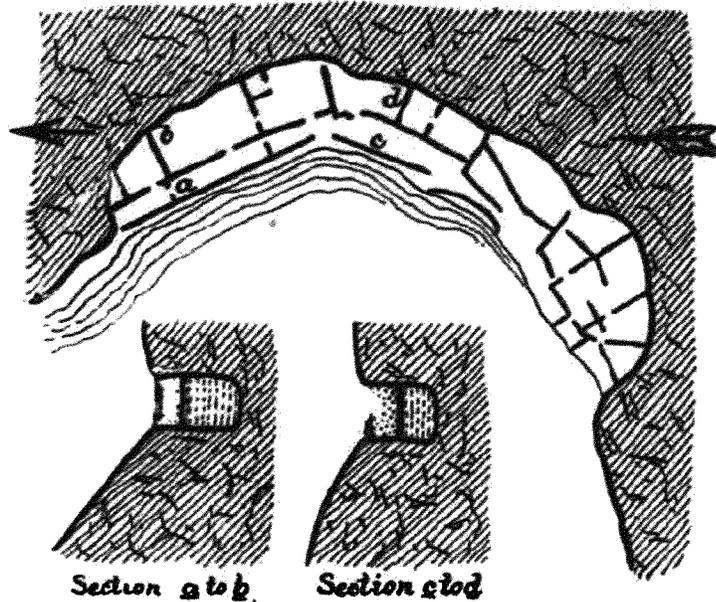
From the crest of the Casas Grandes chain narrow ridges run in every direction almost, forming long and narrow grassy valleys, with shrubs as well as clumps of trees growing in them. Turkeys, deer, and other game, roamed about in numbers at the time when I wandered through these sections. From the tops of the ridges an extensive view is occasionally enjoyed to the west, the northwest, and the southwest. Pine forests cover hill and vale, and higher summits loom up along the horizon. Only a few peaks of considerable altitude appear in the west, which my companions pointed

out as belonging to the mountains of Sonora. I doubt the accuracy of their statement, as it would be impossible to see the chains of Sonora from the Casas Grandes range.

These solitudes, rich in beautiful forests, in running water, and in narrow but fertile valleys, have for more than a century been the lurking places of the Apaches. It was difficult and very dangerous, to pursue them thither. There a branch of them, the so called Janeros, was formed out of the remnants of the now extinct tribes of Sumas, Janos, and Jocomes, and of bands of Apaches who had drifted at an early date into Western Chihuahua. Until 1884 the Chiricahuis occasionally roamed through this wilderness, and the band of the notorious Juh, who was drowned in the Rio de Piedras Verdes in 1884, made their home in these forests.

These mountain fastnesses are well adapted to the residence of small clusters of agricultural Indians seeking for security. I therefore neither saw nor heard of ruins of larger villages, but cave dwellings were frequently spoken of. Some very remarkable ones are said to exist near the Piedras Verdes, about two days' journeying from Casas Grandes. I saw only the cave dwellings on the Arroyo del Nombre de Dios, not far from its junction with the Arroyo de los Pilares. They lie about thirty-five to forty miles west-southwest of Casas Grandes. The arroyo flows through a pretty vale lined on its south side by stately pines, behind which picturesque rocks rise in pillars, crags, and towers. The rock is a reddish breccia or conglomerate. Many caves, large and small, though mostly small, open in the walls of these cliffs, which are not high, measuring nowhere over two hundred feet above the level of the valley. The dwellings are contained in the most spacious of these cavities, which lies about two miles from the outlet of the arroyo. They are so well concealed that, along the banks of the stream,

it is easy to pass by without seeing them. The wall in which the cave opens is partly inaccessible, and a single trail leads up on a narrow ledge, which terminates, at an altitude of 27 meters (88½ feet), at the entrance of the cavity. The height of the cave, which is wholly natural, is 2½ meters (8¼ feet), and its greatest depth does not exceed 5 meters (16½ feet). I subjoin the ground plan of the cave, with its

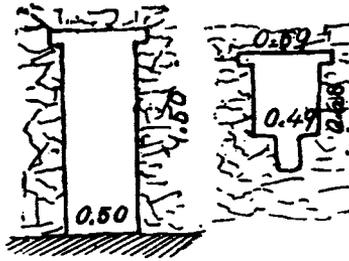


CAVE DWELLINGS ON THE ARROYO DEL NOMBRE DE DIOS, CHIHUAHUA.

partitions 0.34 m. (14 inches) wide, made of a white material similar to the adobe of the ruins in the Casas Grandes region. In front of the rooms runs, almost along the brink of the precipice, a wall which near where the trail enters the cave reaches as high as the roof, thus forming a corridor with the walls of the apartments in the rear. Where the

outer wall is lower, it is crowned with irregular battlements. In this purely protective or defensive exterior device circular loopholes are so disposed as to command the trail.

On the whole, the walls inside of this cave were not only well preserved, but they displayed more care and neatness in their execution than those of most of the cave dwellings which I had examined farther north. The doorways resembled those of Casas Grandes, only they were smaller, as were the windows. (See sketches annexed.) Lintels were formed



CAVE DWELLINGS AT NOMBRE DE DIOS.

of round sticks of wood, and over one window, which measured 0.68 by 0.59 m. (27 by 23 inches), there were nine of these round sticks placed side by side and plastered over with adobe mud. One doorway, which was not higher than 1.25 meters (4 feet), opened into a short gallery, the ceiling of which was formed by eighteen little canes. The only artificial objects which I noticed lying about were a few potsherds, and one metate showing very little traces of having been used. The Apaches have left traces of their presence in some very rude pictographs, and a number of names were also written on the walls, showing that I was by no means the first visitor there who could read and write. I was unable to decipher the inscriptions, which were nearly effaced.

The number of inhabitants which this cave could have sheltered is small. On the Rio de Piedras Verdes another cave is said to exist that contains thirty-four rooms; and I heard repeatedly of other ruins, but saw none. I could not penetrate deeper into the mountain fastnesses without an escort. From the scenery which presented itself to the eye as often as a crest was reached, I judged that the interior of the sierra, or at least that part of it east of the Sonora boundary line, is heavily wooded, and traversed by narrow valleys with perennial water.

Along the course of the Nombre de Dios, there are narrow strips of fertile soil, where the inhabitants of the cave dwellings described may have had their patches of cultivated ground. In winter it is colder than at Casas Grandes, and on the morning of the 24th of May ice formed on the surface of the water of the stream. The ancient dwellers in this region enjoyed also an abundance of game, deer, turkeys, and bears, being quite common, and fish in the stream. In the early morning, before the sun rises, the large green parrot which the people of Casas Grandes and vicinity call Guacamayo, or macaw, flutters from tree-top to tree-top, filling the air with its discordant screams. If the interior of the Sierra Madre is ever opened to travel and civilization, it will be found prolific in resources of divers kinds, and as interesting to the naturalist as to the student of archæology.

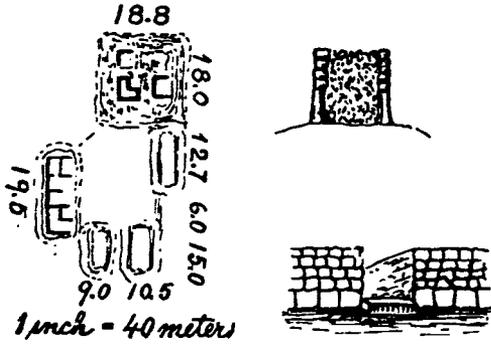
I returned from the Arroyo del Nombre de Dios to Casas Grandes by a different route, and on the return trip I examined the ruins on the Rio Piedras Verdes. Between the banks of that river and Casas Grandes on the northern flanks of the Cerro de Montezuma, I saw no vestiges of antiquities.

The Cerro de Montezuma forms a long and sharp ridge, running approximately from north to south. Its elevation above Casas Grandes I estimate at two to three thousand feet;

its slopes are bare, quite steep, and in places even precipitous towards the west. Valleys and gulches run down to the eastward, and in these valleys and near the base are some very well preserved specimens of dikes or dams, similar to those in the vicinity of Huachinera and Baserac. Some are laid on only one side of an arroyo, others on both sides. The walls look as if they had been but recently made, so neat and well preserved do they appear. They are one meter (39 inches) high, and  $1\frac{1}{2}$  meters thick, and in their rear extends a level and fertile surface. What attracts still more attention is the old trail by which the mountain is usually ascended. This is properly not wider than one meter, although it appears double that width, having been considerably eroded. It is not, as people at Casas Grandes state, cut out of the rock or scooped out of the soil, but simply worn out by much ancient travel, and it seems as if all the loose rocks, drift, or boulders had been carefully removed so as to clear it. The depth of the track is from 0.30 to 0.45 m. (12 to 18 inches). In one place, where it winds along a steep slope, it appears to be  $2\frac{1}{2}$  meters (8 feet) wide, but only part of this width is artificial, and the remainder a natural ledge.

The trail leads to the lowest or northern portion of the crest, and there, on a terrace slightly sloping to the eastward, stand the mound and defensive wall represented on Plate I. by Figure 100, called by the people of Casas Grandes "El Publito." I append here detailed sketches of both mounds and wall. The former constitute a hollow square, and are like those at Casas Grandes, and in that valley in general, but smaller. The buildings could not have been higher than two stories originally, and protruding walls of adobe show a thickness of 0.55 m. (22 inches). Pottery as usual is handsomely painted. The wall is built about twelve

meters to the east of it, on a slightly lower level, with a width of five feet; its original height it is impossible to determine. A passage with a step at its entrance formed by a large slab,  $2\frac{1}{2}$  feet wide, leads through this wall; a rudely semicircular enclosure terminates against it in the east. Inside of the enclosure stands a mound built of stones five feet high, and measuring  $4\frac{1}{2}$  by  $3\frac{3}{4}$  meters (15 by 12 feet). What this en-



PUEBLITO ON THE CERRO DE MONTEZUMA.

closure and mound were intended for I cannot well imagine, unless as a lookout placed in front of the main wall; but it protects only one side of the gateway. The total length of the wall is 77 meters (253 feet), and the work on it is well executed. Flags or slabs of stone set upright along the base of the wall support blocks carefully broken, which constitute a good facing, one on each side, and between the two facings smaller stones are filled in to constitute the body of the structure. The binding material is adobe. The little mound appears to be of solid stone-work, also well executed. All these structures suggest the idea of defences. Still we may inquire why the wall extends only across a portion of the width of the terrace. It could be turned both on the north and the south, and, besides, the crest rising to the south affords an enemy

every opportunity of assailing the wall from above or the rear. All around is perfectly bare, and no foe could approach, unless at night, without being exposed to detection. West of the house, along the brink of a precipice, rude defensive structures, analogous to those of the "cerros de trincheras" of Sonora, are erected on ledges and in crags. These are low parapets, and circular and square enclosures of small dimensions, but all nearly on the same level, and not concentric, as those at Batonapa; but their rudeness is in strong contrast with the fine finish of the eastern line of defence. Besides these, circles and polygons of stones clumsily piled are irregularly scattered over the terrace. It seems certain that these structures are not of the same age as the mounds, and the well built eastern wall of defence.

A trail similar to the one by which the Pueblito is reached leads up the ridge to the south, and finally to the summit of the Cerro. Another trail leads on to the terrace of the Pueblito from the north, and still another climbs up from the west through crags and crevices. It is easy to see that these trails are all ancient.

Following the first of the three trails, the highest point of the mountain is reached. Thence the slopes are steep to the east and west sides, more gradual to the south and north. Like all the slopes of the Cerro, it is partly rocky, partly covered with small bunches of grass, with cactuses growing between the tufts. At the Pueblito *Opuntia* grow in clusters to a large size; higher up everything is low and stunted, and nothing obstructs the wide view. In the north it embraces the country as far as the Sierra Florida in the vicinity of Deming, New Mexico; in the south it is not so extensive, as the Sierra del Ancon and the Sierra del Cristo close the view intervening between the Casas Grandes valley and Galeana in that direction; in the west the levels at the foot of the

Sierra Madre, and the different branches of that chain as far as Namiquipa, appear with remarkable clearness; and in the east we look over the ranges beyond the Casas Grandes River and far into white and arid plains.

On the highest point stands the ruin of a circular tower, built of plates of stone laid in adobe mud, five feet in thickness, and with walls in places still eight feet high. I noticed no entrance or door, so that it looks as if the walls had to be scaled in order to get inside. There is indeed a heap of stone rubbish lying outside, which led me to suspect that a flight of steeps built outside might have afforded the means of entrance. This feature is found in the many-storied watch-towers near Zuñi, some of which are in use to-day. Inside of the tower are partition walls from two to three and a half feet thick; there is also a niche. The central partitions may have been of adobe. At a distance of ten meters, and seven feet lower than the outer circumference of this tower, a wall of stone encompasses it which is now not over four feet high, and in most places two feet thick. The stones appear to have been piled up loosely without binding between them, and nowhere did I notice a gateway or entrance.

I could not find any pottery around this ruin, and the absence of such objects confirmed me in the supposition that this tower was a post of observation. I copy what I wrote in my Journal of May 30, 1884, on the day I explored the ruins on the Cerro de Montezuma: "The position of the Cerro is a very remarkable one. Isolated, and dividing the valley of Casas Grandes in the east from the valley of San Diego and the Piedras Verdes in the west, it absolutely dominates both, and the whole plain at the foot of the Sierra Madre from its farthest southern termination to the Pajarito. Every flank, fold, pass, or crest of the Sierra Madre on its eastern face is seen. To the east every plain, valley, range, and pass

from the Boquilla to beyond Corralitos, and in the far north the Sierra de la Hacha, and even the Florida, are dimly visible. The view is immense, and access to the tower, except from north and south, very steep and difficult." It is not to be wondered at, therefore, if it has been regarded as only a post of observation, never inhabited, but temporarily occupied by videttes looking out for the safety of permanent settlements situated below.<sup>1</sup>

Neither at the tower, nor at the Pueblito, did I see any traces of permanent water.

While the probabilities are quite strong that the tower was a military construction, it is not to be overlooked that it may have been a place of worship. The two are often combined in Indian life, and the trails that converge on the top of the Cerro de Montezuma become an interesting feature, indicating that there was much travel up and down the mountain.

The trails leading over the crest of the Cerro are the most direct route from Casas Grandes to the ruins on the Piedras Verdes. This seems to point to the fact that the villages or groups of houses on the Piedras Verdes and Palanganas were in close communication with the villages on the Casas Grandes River, and that some of the settlements on both sides of the Cerro were coeval. The trail leading from the central watchtower to the south, as well as that rising to it from the

<sup>1</sup> García Conde, *Ensayo Estadístico*, p. 74. "A distancia como de dos leguas al S. W. está un divisadero ó atalaya en un picacho que domina un terreno extenso por todos rumbos, con el objeto quizá de descubrir la aproximación del enemigo. En el declive meridional del mismo picacho hay innumerables líneas de piedras colocadas á propósito, pero á distancias irregulares en cuyos extremos se ven montones de piedras sueltas." These parapets, which from the description of the statistician of Chihuahua indicate something similar to the "cerros de trincheros" of Sonora, I have not seen. Mr. Bartlett also alludes to the tower on the top of the Cerro in his *Personal Narrative*, vol. ii. p. 362. He did not visit it himself, but says, "This fortress can be discerned with the naked eye, and on looking at it through my spy-glass it showed quite distinctly."

north, indicate that the tower was visited from the Casas Grandes and Piedras Verdes, as well as from the Palanganas or from the settlement near the Boquilla. It is not unlikely that the villages along the three streams formed, if not one great cluster politically united through a common government, perhaps a confederacy or league.

The ancient culture which flourished at Casas Grandes and in its neighborhood was similar to that which existed on the banks of the Gila and Salado in Arizona; the architecture especially is of the same type. But at Casas Grandes there was a marked advance over any other portion of the Southwest so far visited by me, shown particularly in certain household utensils, in the possible existence of stairways in the interior of houses, and in the method of construction of irrigating ditches. Nevertheless the strides made were not important enough to raise the people to the level of more southern tribes. Their plastic art, as far as displayed in the few idols and fetiches, remains behind that of the Nahuatl, Tzapotecas, Mayas, etc. They seem to have reached an intermediate stage between them and the Pueblos, though nearer to the latter than to the former.

That a sedentary tribe, if permitted to reside for any length of time in a country like that of Casas Grandes, should achieve some progress in art and industry is natural, for the resources which this country presents are great enough to favor progress in art and in industry, and the climate is not tropical enough to exhaust and dampen energy. In this respect it was more favorable than the Tempe delta.

It is not improbable that the Casas Grandes region — in which I include the valleys of Corralitos, Janos, Ascension, and the stretch as far as the Boquilla and the Piedras Verdes and Palanganas Rivers — at one time contained a population

more dense than that of any other part of the Southwest inhabited by sedentary aborigines. Of their numbers it is impossible to form an estimate, as we do not know which and how many of the villages were contemporaneously occupied. That all of them were inhabited at the same time can hardly be supposed, as that would be unusual for Indian communities and customs, and furthermore the degree of decay is quite different in the various ruins in the same vicinity. For the largest settlement, which is the one now in ruins at Casas Grandes, three to four thousand souls would be, according to my impression, a reasonable estimate.

Part of the ruins at Casas Grandes is beyond all doubt the best preserved ancient specimen in that district, while at the same time it is by far the largest cluster. It may be that Casas Grandes was last abandoned, or the better preservation may be due to its extent and the size of its houses. The usual supposition is that Casas Grandes was the "capital" of a certain range or district, and that the smaller ruins are those of minor villages, just as Tenochtitlan formed the main seat of the Mexican tribe, while Ixtapalapan, Mixquic, Huitzilopochco, and Tepeyacac constituted outlying settlements. But I doubt whether there was any governmental tie uniting the villages on the Rio de Casas Grandes between the Boquilla and Corralitos with those near Janos or those near Ascension, even if all these groups were contemporaneously occupied. It is inconsistent with the nature of Indian institutions that clusters geographically separated should be politically connected. It is more likely that such a connection may have existed between the villages on the Piedras Verdes and Casas Grandes, and the different constructions on the Cerro de Montezuma seem so to indicate. It is my impression that several tribes, probably of one and the same stock, occupied

the country in separate and autonomous groups, and that Casas Grandes is probably the last refuge of one of these tribes.

What that tribe was, what language they spoke, what were the causes that produced their downfall, and what has become of them, are all questions which I do not presume to answer; but it is well to present here whatever scanty information touching the past of Casas Grandes has been preserved to us, either in Indian folk-lore or in Spanish documents.

There is still a possibility of finding some clue to the questions enumerated above in the traditions of Sonoran tribes, or in those of the Tarahumares and Tepehuanes. What leads me to this supposition is, that while I was in Eastern Sonora several Opata Indians assured me that Casas Grandes was built by the Opatas in former times. Upon what facts this tale was based I could not learn. Certain it is, however, that the architecture of the ruins is strangely like that on the Gila, and since the ancient buildings there are claimed by the Northern Pimas as those of their ancestors, and we know that the Southern Pimas, or Nebomes, still occupied similar edifices in Sonora in the middle of the seventeenth century, some color is given to the surmise that the builders of Casas Grandes may have been of the same stock as the Pimas, Opatas, Yaquis, and kindred groups. I was also informed that the original name of Casas Grandes was Hue-hue-ri-ki-ta in Opata, but I place no great stress on this. The word appears to me as one manufactured for the occasion, since it is a literal translation of "great houses." I have already related that, according to local Opata traditions, the people at Casas Grandes before the Spanish occupation warred against the Opatas near Huachinera; but that tradition fails to state whether the aforesaid people then occupied the villages now

in ruins, or whether they were the Sumas who were found in possession of the valley when it was first discovered.<sup>1</sup>

I have already stated that, when the Spaniards entered Central Sonora, they heard of a tribe called Sunas, which was either living in or roving through the eastern portions of Sonora, or what to-day is the State of Chihuahua. The district of Casas Grandes was first visited by a missionary, as far as I am able to ascertain, in 1660, or thereabouts. Fray Andres Perez, a Franciscan, made the first attempts of Christianization there among the Sumas, as the Indian inhabitants of the valley were called, and also Yumas. He found the aborigines to be very docile. He was succeeded by Father Aparicio, who soon died.<sup>2</sup> In the early reports concerning

<sup>1</sup> Alegre (*Historia de la Compañia de Jesus*, vol. ii. p. 404) states that the Sumas already in 1649 molested Sonora; but it is not clear whether these Sumas were those of Casas Grandes, or a branch of them living in the vicinity of Fronteras and on the Upper Yaqui.

<sup>2</sup> According to Alegre (*ut supra*), Father Marcos del Rio, a Jesuit priest and missionary at Huassavas in Sonora, made the first successful effort to convert the Sumas. "Consiguió la dulzura y el celo del Padre Marcos del Rio, ministro de los Guasabas que por marzo de 1651 se dejó ver la primera vez en sus tierras á convidarlos con la paz de parte del Gobernador, y con luz del Evangelio. Para prueba de la sinceridad de sus proposiciones, llevó el Padre un sello del gobernador. Ellos lo creyeron, y luego vinieron á Oppotu, pueblo de los Guasabas, mas de cien caciques con sus hijos y mugeres en señal de confianza." The fact that they came to Opoto indicates that these Sumas did not live at Casas Grandes, but in the territory of Sonora, probably near Fronteras. In regard to Fray Pedro de Aparicio I refer to the documents following. Francisco de Gorraez Beaumont, *Informe*, p. 235. According to Fray Antonio Valdés, *Patente*, p. 245, Don Francisco de Gorraez Beaumont, when he was Governor of New Biscay, sent Fray Andrés Pérez to Casas Grandes: "Avisándole de todo lo necesario para el efecto mencionado, el cual se ha ejercitado mas de dos años en catequizar, bautizar y casar mucha cantidad de Indios, por mar poblacion, reducirlos á doctrina y obediencia real, prometiendonos muchos frutos y muy grandes adelantos en la continuacion y cuidado que se debe ir asegurando en aquellas nuevas plantas que se han reducido al verdadero conocimiento; y para este efecto ha estado sustentando dicho Señor maese de campo al religioso con su hacienda, dándole la misma cantidad que S. M. (que Dios guarde) da á los ministros de esta provincia que son mas de trescientos pesos sin el maiz con que los socorren cada año, y lo va continuando despues que acabó el oficio de gober-

these efforts, the Great Houses are mentioned as already in ruins, and the inevitable Montezuma tradition was at once attached to them,<sup>1</sup> which indicates that the Sumas themselves had probably no recollection of the past history of the place, and were therefore not the builders and inhabitants of the ancient buildings.

I refer to the first part of this report for whatever scanty notices I have been able to collect touching the condition and degree of culture of the Sumas.<sup>2</sup> It is noteworthy that, while the Indian inhabitants of the Casas Grandes valley are described as of a mild disposition and given to the pursuit of agriculture, the Sumas around El Paso were always turbulent nomads, who gave the Spanish authorities a great deal of trouble. With the appearance of the Apaches in Chihuahua, the tribes of Casas Grandes, Janos, and Carretas broke out also. In 1684 a secret council was held near Casas Grandes, which was attended by the Sumas, Janos, Jocomes, and other tribes from Southwestern and Southern Chihuahua.<sup>3</sup> The

nador ; pues á los dos religiosos que fueron ahora, el uno nombrado Fray Pedro de Aparicio y el otro Fray Nicolas de Hidalgo, los había con la misma cantidad que dió al primero." Andrés Lopez de Gracia, *Carta al Gobernador Don Antonio Oca Sarmiento*, August 16, 1667, p. 342 : "Si bien echando mucho menos á nuestro reverendo Padre Fray Pedro de Aparicio, de que dí cuenta á V. S. de su muerte ; y áhora la doy de nuevo por el grande sentimiento que los Indios han hecho chicos y grandes." It seems that the church had already been commenced in 1667 : "La obra del templo y su convento crecía" ; but it was abandoned for a short time after the death of Father Aparicio : "Despues de su fallecimiento algunos de los Indios se han ausentado, parado la obra." The death of Father Aparicio must therefore have taken place at Casas Grandes, and about 1667.

<sup>1</sup> Francisco de Gorraez Beaumont, *Informe*, p. 234 : "Por haber traído noticia que en este pueblo de las Casas Grandes era panino de minería y segun tradición antigua y ruinas que se veian que decían ser del tiempo de Montezuma."

<sup>2</sup> Part I., page 89.

<sup>3</sup> Alegre, *Historia*, voi. iii. p. 53 : "Determinaron tener una junta general cerca de un grande edificio ó ruinas antiguas que hasta hoy llaman Casas Grandes, de qué hemos hablado en otra parte. Allí se había de determinar de comun acuerdo el modo, lugar y tiempo de hacer la guerra, y se citaba para fines del mes de octubre con motivo de hacer las primeras hostilidades á la entrada del invierno."

outcome of their deliberations was open revolt, which, while locally suppressed, still placed the Spanish colonists in a critical position. In consequence of it, the settlements of the Spaniards in the vicinity of Casas Grandes were abandoned for some time. In 1727 there existed at Casas Grandes only half a dozen families of Sumas and Conchos Indians, and a single Spanish hacienda. In 1748 even that hacienda was in ruins.

Thus we cannot gather from documents of Spanish origin, as far as known to me, anything in relation to the past of Casas Grandes in prehistoric times. That the Montezuma tale should at an early date have been attached to the ruins is natural, as it was to the Casa Grande of Arizona. It was declared to be one of the "stations" which the Central Mexican tribes made during their supposed wanderings from north to south. Even the number of souls (600,000) is given in 1727.<sup>1</sup>

I regret to leave Casas Grandes and its interesting ancient monuments without being able to say more about them.

<sup>1</sup> Rivera. *Diario y Derrotero*, p. 48: "Al día diez y siete, al rumbo de el Sueste, pasando luego que comencé á marchar, por las ruynas de vn palacio que fabricó el Emperador Montezuma, quando desde las partes de el Norueste de la Nueva México, como trescientas leguas y de vn parage q̄ se nõbra el Teguayo, salió con seiscientas mil personas á poblar la ciudad de México: procurando en aquel sitio tan ameno fértil, dar descanso á la multitud grande de Yndios que conducía; Conocebe en lo soberuio de los edificios, y en su magnitud, ser fábrica suya: pues siendo su figura un paralelo grande. Tiene cada lado doscientas y cinquenta toyses de Paris. Conservandose hasta oy algunas maderas, que permanecen en los altos de el tal palacio, que avn haviendo pasado mas de tres siglos. se reconoce algo, de lo magnífico de su fábrica." Still more grotesque is the description of the adobe of Casas Grandes given by Mota-Padilla, in *Historia de la Nueva Galicia*, p. 357: "Por vnos edificios de piedra bien labrados, de que tienen tradicion haber sido fábrica de los primeros Mexicanos, quando salieron de entre el Norte y Poniente con su primer emperador Moctezuma á poblar la Nueva España; y no hay dusa que admira el primor del ajuste y labrado de las piedras, y se discurre que la union de estas sería con el sumo de algunas yerbas."

They belong to the class of ruins which are beyond the reach of historical knowledge ; but I have no doubt that, when the folk-lore of tribes living to-day at a distance from the place becomes thoroughly known, much will be revealed that may to some extent remove the veil of mystery now shrouding their past. I also venture to suggest, that at the earliest possible date the ruins of Casas Grandes be thoroughly investigated, since excavations, if systematically conducted, cannot fail to produce valuable results.

Between Casas Grandes and the line of the Mexican Central Railroad extends a stretch of arid country which is unknown to me; and not less arid is the expanse between the range known as the Corral de Piedras and El Paso del Norte. Around the latter place I have heard of ruins, but was unable to see any. In the mountains east of the pass, on the Texan side, caves have been discovered which showed traces of former habitation. Among other things sandals of yucca were found of nearly all sizes, from that of the foot of a child to that of a full-grown man. I also heard of pottery and of stone implements having been found in these caverns; they are natural, not artificial, but I could not ascertain whether they had been partitioned. It is known that in the sixteenth century only roving tribes occupied the region of El Paso del Norte, and that the first permanent establishment there within historic times is due to the efforts of the Franciscans. Fray Garcia de San Francisco (or de Zuñiga) settled the Mansos in that vicinity in 1659. Previously they had roamed up and down the lower course of the Rio Grande in New Mexico, having their headquarters mostly in the vicinity of Doña Ana and Fort Selden.<sup>1</sup>

<sup>1</sup> Part I., pp. 165, 166. I briefly refer to the main documents quoted: *Auto de Fundacion de la Mision de Nuestra Señora de Guadalupe del Paso del Rio del Norte* (1659, MS.); Benavides, *Memorial*, p. 9; and Rivera, *Diario y Derrotero*, p. 26.

South of El Paso del Norte, at the hacienda of San José, casual diggings have brought to light some antiquities, among which were metates and a fetich of stone. The remainder of Chihuahua is unknown to me as I have only traversed it by rail; but I cannot refrain from alluding here to the statement of Villagran, that while Juan de Oñate was marching with his soldiers and colonists through Central Chihuahua in 1598, they noticed in the deserted regions quantities of potsherds "good and bad, sometimes gathered in heaps."<sup>1</sup>

As I have made no explorations farther to the south than the vicinity of Casas Grandes and Oposura in Sonora, this chapter terminates the descriptive portion of the second part of my final report to the Institute.

<sup>1</sup> *Historia de la Nueva México*, canto ii. fol. 11 :

"Assi la cuidadosa soldadesca,  
Á mas andar sacaba y descubria  
Desde los anchos límites que digo,  
Patentes rastros, huellas, y señales  
Desta verdad que vamos inquiriendo,  
Á causa de que en todo el despoblado.  
Siempre fuimos hallando sin buscarla,  
Mucha suma de loça, mala y buena.  
Á vezes en montones recogida."

XV.

CONCLUSION.

AT the present stage of my knowledge regarding the vestiges of the past of the aborigines of the Southwest, as well as of their present condition, I do not venture to enter into any theoretical discussions or speculations. The investigator who dwells far from the centres of scientific knowledge must be content with presenting his mite of modest research with as little comment as possible. A conclusion to this long report can therefore be only a short *résumé* of what has preceded.

Glancing at the contents of the fourteen chapters devoted to archæological description, we cannot fail to notice that the vestiges of sedentary aboriginal life are scattered over a large proportion of the area embraced in what is commonly termed the Southwest of the United States. With the exception of the great plains and vast arid plateaux, wherever permanent water could be secured we find traces of tribes accustomed to sedentary life and familiar with its characteristic arts. In many regions these evidences are slight, and show that the occupation has not been of long duration, or that it has not produced any high culture; in some localities civilization attained a development superior in degree as well as in form. Such differences, however, are only varieties of one general type. The ancient culture represented in the ruins of the Southwest appears therefore to have been nearly uniform in every section.

Although the communal pueblo houses of the north seem to be different from the structures on the Gila and at Casas Grandes, they still show the same leading characteristics of being intended for abodes and at the same time for defence. In the northern villages, however, both features are intimately connected, whereas farther south the military purpose is represented by a separate edifice, the central house or stronghold, of which Casa Grande is a good specimen. In this the ancient village of the Southwest approaches the ancient settlements of Yucatan and of Central Mexico, which consisted of at least three different kinds of edifices, each distinct from the others in the purposes to which it was destined.<sup>1</sup> It seems, therefore, that between the thirty-fourth and the twenty-ninth parallels of latitude the aboriginal architecture of the Southwest had begun to change in a manner that brought some of its elements that were of northern origin into disuse, and substituted others derived from southern influences; in other words, that there was a gradual transformation going on in ancient aboriginal architecture in the direction from north to south.

I have alluded only to the most striking examples of Southwestern aboriginal architecture, the large houses. In regard to another kind, the small detached buildings, it must be observed that the small house is probably the germ from which the larger structures were evolved, and that the small houses also undergo modifications, especially from north to south, in the size of the rooms. I repeat here what I said in my preliminary report to the Institute of August 11th, 1883: "There is a gradual increase in the size of the rooms in detached buildings in a direction from north to south, which

<sup>1</sup> The Calli, or dwelling; Tecplan-calli, or official house; and Teo-calli, or house of worship. These terms are from the Nahuatl of Mexico. There were other buildings temporarily devoted to special purposes, but these three were the leading forms.

increase is most distinctly marked over the area where the detached house alone prevails."<sup>1</sup>

There are regions, like Central Sonora, where the small house is the only architectural type now remaining from ancient times. It will be noticed that the square or rectangular dwellings of the Opatas of the Sonora River confirm the impressions above recorded. If we compare them with the dimensions of the huts now inhabited by tribes living still farther south, we find their size increase as we advance from a colder climate to a warmer one.<sup>2</sup>

Large halls are not found in the ruins of the north. They appear to be almost the rule at Mitla and in Yucatan; and they are met with on the Gila, under a climate which is semi-tropical.

Equally noteworthy is the increase in dimensions of the doorways and windows. In the lofty structures of Arizona and Chihuahua there is considerable resemblance to the doorways of ancient edifices in Yucatan and other southern States of Mexico.

The outer coating of the walls is of course different in the arid northern countries from that in the moist regions of the tropics. Elsewhere I have mentioned the plating, with polished slabs, of the walls of Mitla, which was applied, I suspect, not merely for ornamental purposes, but with a practical object.<sup>3</sup> Where summer rains are as violent as under the tropics, a coating of adobe or gypsum would be unable to resist them for any length of time.<sup>4</sup> In the South-

<sup>1</sup> *Fifth Annual Report*, p. 62.

<sup>2</sup> Compare notices of the houses of the central plateau of Mexico, of the coast of Vera Cruz, and of the State of Oaxaca, in my *Archaeological Tour*, pp. 20, 124, 128, and 265.

<sup>3</sup> *Ibid.*, pp. 293, 304.

<sup>4</sup> Juan Bautista Pcmar, *Relacion de Texcoco* (1582, MS.), says of the buildings of ancient Tezcoco: "La forma y edificio de sus casas son bajas, sin sobrado nincuno, unas de piedra y cal, y otras de piedra y barro simple, las mas de adobes

west a thinner coat was sufficient; still there is improvement in such coating, from the northern sections to the southern, shown by the finish of the wash applied to the surface.

I have alluded to the appearance of artificial mounds and artificial platforms or terraces on the Gila, and perhaps also in the Casas Grandes region. It is well known that both of these structures are conspicuous in the ruins of Southern and Central Mexico. The estufa, however, is a specifically northern feature, and therefore disappears as soon as the climate becomes more equable and finally tropical. But if we consider one of the objects for which the estufa was used, we find it represented in the south also. It is proved that the estufa was not so much a structure for religious purposes as it was the regular abode of the males, including the boys after they had attained a certain age. In this respect it finds its counterpart in the Telpuch-calli, or "House of the Youth," of the ancient Mexicans.<sup>1</sup>

Military constructions do not seem to play, in the Southwest, the conspicuous part which they assume farther south. In the New Mexican pueblo the defensive element is combined with that of shelter, and only in rare instances is there a defensive wall added to the already strong edifices. Watch-towers are additions, wherever the site is favorable, or wherever they were looked upon as necessary. Places of refuge

de que mas usan en esta ciudad, por ser muy buenos porque los hallamos hoy dia á edificios viejos hechos de mas de doscientos años á esta parte, tan enteros y sanos que largamente pueden servir en edificios nuevos." Adobe houses were certainly plastered outside, as is intimated by the same authority further on, although not positively. I also found adobe houses at Mitla decorated inside with "a thin layer of white plaster." *Archæological Tour*, p. 292. Judging from the white composition which I found at Cholula in the great mound, that plaster was made of unburnt lime, and therefore of much greater durability than the gypsum whitewash, or the yellow clay, daubed over ancient buildings in the Southwest.

<sup>1</sup> For the Telpuch-calli, see my *Social Organization and Mode of Government of the Ancient Mexicans* (Twelfth Annual Report of Peabody Museum, p. 557).

seem to be peculiar to the Southwest. Southern Arizona, Sonora, and Chihuahua contain, so far as I know, the greatest number of them. The pueblos on the Salado and Lower Gila had circumvallations, but the resemblance of such adobe enclosures to the stone enclosures connected with other ancient buildings in the same districts seems to suggest that they had more to do with cultivation than with the safety of the inhabitants, for which reliance was had upon the central house of each village rather than upon the wall surrounding it.

Cliff-houses and cave dwellings are, as I have repeatedly stated, expedients resorted to out of necessity and favored by natural features, but cannot be considered as a separate type. They occur south as well as north, and are an ethnological feature based upon geological opportunities. Although there is considerable difference in appearance between the ancient architecture of the Southwest and that of Southern Mexico and Central America, there is in reality only a gradual transition, brought about principally by physical causes. Life under the tropics, wherever nature is not too exuberant, is conducive to permanence of abode in a higher degree than in a colder climate, and with permanence only can advances in a certain direction be made. But the nomad is by no means less intelligent than the village Indian, and in many respects he is even his superior; for, as I have observed in the first part of this report, the difference between the two may be compared to that between a man who has travelled extensively and one who has spent his lifetime inside a village community. The example of the Navajos proves that when the nomad once gives up his objections to steadiness of abode, he becomes a more successful and more enterprising villager than the sedentary native who has remained *in statu quo* for centuries past. In all speculations upon the origin of certain clusters in Central Mexico, found living in a state

of considerable advance in architecture and other arts, we are not authorized to conclude *a priori* that they had been sedentary Indians from time immemorial. The Southwest presents cases well authenticated of wild tribes becoming villagers, and of villagers turning to a wandering life. I allude to the Navajos and to the Mansos as an example of the former, and to the Pápagos of Arizona as an example of the latter. We also know of tribes one part of which was living in villages, while the remainder led a roving life. Such were the Jumanos of Chihuahua, in comparison with their kindred in New Mexico, and the Sumas of Casas Grandes, as compared with the Sumas at El Paso del Norte. If Central Mexican folk-lore speaks of wild tribes having become sedentary, and having achieved greater success than their precursors, we need not discard such tales as improbable.

Moreover, the abodes of nomads indicate sometimes greater mechanical skill on the part of their builders than do those of the village Indians. Thus the Comanche tent is by no means a contemptible achievement. It is improper also to extol the stone house at the expense of the house of wood. The long house of the Iroquois was a very intricate structure, and the same may be said of the houses of Alaskan tribes. We should bear in mind that it is much more difficult to frame than it is to pile, and that most of the stone or adobe work in North America is only careful piling.

In artificial objects there is also progress from the north to the southward, but not so steadily marked; uniformity is the rule, and progress is local rather than general. An instance is the beautiful pottery found at the ruin near San Matéo in Western New Mexico, at a place surrounded by ruins covered with potsherds inferior in quality as well as in decoration. In comparison with more southern specimens,

even the finest vessels of Casas Grandes appear inferior; there is a certain tendency towards shapes and decorations of the tropics, but they are far from being as elaborate. I have no need of treating in detail of the articles in stone and bone, and of textile fabrics. Artificial objects depend largely upon the natural resources in the immediate surrounding, and hence they vary in degrees of perfection from locality to locality. But I must insist upon one prominent feature, the decorations of the pottery all over the Southwest bear a marked resemblance. The symbols are the same on the San Juan River in Northwestern New Mexico as in the Sierra Madre and at Casas Grandes, with the single exception, which I have purposely not mentioned before, that at Casas Grandes two new figures appear. One is the heart, and the other resembles the symbol of a flag, as it is sometimes found in ancient Mexican pictographs. The heart is also found on New Mexican pueblo pottery, but always as the heart of some animal, the body of which is painted on the bowl or jar. Zuñi vessels abound in representations of this kind. At Casas Grandes the heart stands by itself, accompanied by the well known conventional signs for clouds, water, lightning, the whirlwind, etc. On the same vessel on which I noticed the heart I also noticed the flag, and I saw both figures only on one jar at Casas Grandes, although I had noticed the heart on a potsherd from the vicinity of Huachinera in Sonora. It may be conjectured that, with the advance made by the old inhabitants of Casas Grandes, they had also invented new symbols.

Plastic pottery displays greater improvement in southern ruins than the painted ware; still it is not without reserve that I make this statement, as at San Matéo I saw evidences of great skill and taste in indented ware. I saw painted ware with handles representing animal heads that fairly compared

with anything from Chihuahua. What is most noteworthy is the fact that at Casas Grandes human figures executed in alto-rilievo were found on vessels. Of such a stride as this I have no knowledge either in New Mexico or in Arizona, although the canteen from the Estanque Verde, near Tucson, clearly represented a duck. But in that case the whole vessel had the form of the animal, while at Casas Grandes the plastic decoration is independent of the general shape.

Articles of personal decoration seem to have been the same all over the Southwest, and made of nearly the same material; if any metal at all has been found it has been only a very few specimens of copper. Neither bronze nor silver, still less iron or gold, in a worked or crude state, has been found. At Casas Grandes I heard of copper rattles, and of a turtle made of hammered copper; although I believe in the authenticity of the rattles, I have doubts about the accuracy of the report concerning the turtle.

The fetich of the American panther, or puma, found at Casas Grandes, is quite interesting, as showing that this important prey-fetich, which plays such a prominent part in Pueblo mythology, was also recognized in Northwestern Chihuahua; and it was represented with the same characteristics (the long tail curved back) as among the Pueblos.

The only large figures found are the mountain lions, or panthers, discovered by me on the mesas north of Cochiti in New Mexico. It is also noteworthy that buildings used exclusively for places of worship have not been discovered.

In alluding to an apparent transition in architecture from north to south, I by no means desire to convey the idea that such a transition must necessarily imply a common origin of the tribes that inhabited the different regions in former times. The greater part of the Southwest and of Mexico presents the same character of aridity, and the tropical re-

gion there is less extensive than the arid area. Architecture therefore has either taken a higher flight in decorative art, or it has shrunk to modest dwellings constructed of perishable material. Still, the fundamental plan of the most elaborate buildings recalls the simpler types of northern edifices.<sup>1</sup>

Modern science recognizes language as the surest ethnographic criterion. It is admitted that when two tribes geographically separated speak the same tongue, or dialects of it, they must have sprung from the same original stock. While this is true in the main, it may still be subject to contingencies. In the first place, language is not immutable; it changes in some cases even more rapidly than customs. Contact between tribes speaking distinct idioms brings about the gradual formation of a new one containing the elements of both, but sometimes so disguised that it may be difficult to trace the original components. Thus a new language is forming to-day among the Maricopa Indians, who, mingling and intermarrying with their neighbors the Pimas, teach their children words and phrases from both idioms. The result, if the tribe survives, will be the formation of a new mode of speech. Again, the overpowering of one tribe by another may bring about the gradual extinction of the language of the vanquished, and the substitution of that of the conqueror, but modified by the former. Such changes require many centuries, and we have not had the aborigines under our observation long enough yet to see one idiom completely displacing another, except where European languages have superseded those of the Indians. But prehistoric times were subject to no such limitations, and the possibility is not to be disregarded that clusters who were found speaking a certain idiom in the six-

<sup>1</sup> I refer to the works of Lewis H. Morgan on this subject. See *Houses and House Life of the American Aborigines*. Also Juan Bautista Pomar, *Relacion de Texcoco*, MS.

teenth century may originally have belonged to a different stock. While, therefore, language is certainly the safest guide in the search for original relationships, it is well to bear in mind the above contingencies, and their possible results.

Myths and traditions sometimes afford means of tracing relationships, but they are not infallible guides; a folk-tale travels as well as an object of art or of industry. The Zuñi Indians have a story called the Red Feather, bearing considerable resemblance to the Greek myth of Orpheus and Eurydice. The natives of Durango in Mexico had a similar tale,<sup>1</sup>

<sup>1</sup> *Apostólicos Asanes de la Compañía de Jesús*, lib. i., cap. iii. pp 23 and 24 : " Vivía este en el río de Santiago casado, y dexando cierto día á su muger buena y jana se fué á buscar sal á la costa de tierra caliente, y de buelta ya, la encontró en el camino : Y aunque la requirió adonde ivapni le habló palabra, ni se detuvo ; Siguióla el marido, dexando sobre una peña el tercio de sal, que trahía cargado, y vió que se entrava en *Mucchita*. De que adivinando lo que havia sucedido, empezó á llorar su viudéz ; Acertaron á passar por allí los custodios de aquel infierno ; Les contó sus desconsuelos, compadecidos aquellos personases de sus lágrimas, le dieron unas varillas, diziendole, que á la noche, quando saliera á bailar, la flechára con una de ellas, y que si acertaya á herirla, lograría, que ella le conociese, y bolvería á su casa. Pero que advirtierra, que havia de llevarla con especial cuidado, hasta llegar á su tierra, donde havia de tratarla blandamente, sin gretarla, ó reñirla, hasta que con el tiempo cobrára fuerza aquella alma ; porque al eco solo de vna voz alta moriría eternamente, y no podría ya ni él, ni otro sacar de aquel lugar alma alguna. Cogió el Indio las varillas, y luego que vió á su muger bailando acertó á flecharla en una pantorrilla, con que ya conoció al marido ; llevóla este con el cuidado, que se le havia advertido. Llegado á su casa, supo como havia muerto el mismo día, que la encontró. Para festejar el regozijo de su resurreccion convidó á todos sus parientes ; y como el paradero de todos los convites era la embriaguez, abrió las botijas, para que bebieran todos. Por ser él que estaba mas alegre, rapetía mas los brindis, de que le resultó lo que otras vezes ; y el prorrumpir en aquellas furias, á que provoca el vino, dando tales gritos que llegaron á oídos de aquella tierna alma ; quien solo de este achaque murió segunda vez, y se fué á *Mucchita*, donde yace eternamente sepultada." The Zuñi tale of the "Red Feather" is quite similar, according to what Mr. Cushing told me. The guardians of *Cothluellonne* (the lagune at the bottom of which the souls pass the time in constant enjoyment, and especially in dancing) furnished the disconsolate husband the means wherewith to recover his spouse. They visited him at night, in a cave near Cothluellonne whither

but I should be loath to admit that this indicates an original connection between the Tcpehuanes and the Zuñis. It may as well have originated in both places independently, as it certainly did in Greece and in Zuñi. The tale of twin heroes, children of the Sun-Father, who in mythical times freed the earth from monsters hostile to mankind, is widespread over the Southwest.<sup>1</sup> We find it also in Guatemala, in the tales about Hunahpu and Xbalanque.<sup>2</sup> I have already spoken of the tale, preserved by the Opatas, of the manner in which the sun and moon were created at Baguigopa on the Upper Yaqui, and of its striking analogy with some of the creation myths of the Nahuatl of Central Mexico. In this case the resemblance is more significant, as both the Opatas and the Nahuatl belong to the same linguistic stock. Among the Pueblos the last resting place of the soul is at the bottom of a lake; a similar belief existed among the Opatas;<sup>3</sup> and the Nahuatl had their souls cross a river before they entered upon their final abodes.<sup>4</sup> These are not the only instances of resemblance between the folk-lore of the Southwest and the South that might be quoted.

he had retired, and spoke to him under the disguise of white owls. The manner in which he lost his wife after her resurrection is somewhat differently told.

<sup>1</sup> Compare Part I., pp. 289, 303, and my *Contributions to the History of the Southwestern Portion of the United States*, p. 22.

<sup>2</sup> *Popol Vuh*, part i., chap v. to xiv. inclusive.

<sup>3</sup> *Estado de la Provincia de Sonora*, p. 628: "Sus viejos, que entre ellos tienen grande autoridad, les enseñan patrañas muy ridículas. Diré una sola . . . estos les han persuadido (con algunos resábios de la fabulosa laguna Stigia) que en muriendo van sus almas á una espaciosa laguna, en cuyas orillas por la banda del Norte estaba sentado un hombrecillo muy pequeño, que llamaban *Butzu Uri*. Este, pués, las recibía, y colocándoles apiñadas por su multitud en una gran canoa, las remitía á la otra banda del Sur, á dar residencia á una reverenda vieja que se llamaba *Vatecom Hoatziqui*. En una por una las iba comiendo, y á las que hallaba pintadas con las rayas con que se afean las caras, las arrojaba á la laguna diciendo que no las comía porque tenían espinas, y las no pintadas pasaban á su vientre contentas de gozar de una inmundísimo bienaventuranza."

<sup>4</sup> Sahagun, *Historia General de las Cosas de Nueva España*, ed. 1829, vol. I., app. to lib. iii. cap. i. p. 263.

Of greater importance are dim traditions preserved by Southwestern tribes which point to their origin in a certain direction, and to shiftings of the tribes in ancient times. While the Pueblos declare that they came to the surface of this earth in Southern Colorado, and the Navajos claim that they first lived in a region not very remote from that pointed to by Pueblo mythology, they also speak of wanderings of tribes, of which they possess only a vague recollection, in the direction of the south. The belief seems to be general among them that the drift of the shiftings has been from more northerly regions to southerly climes. What importance must be placed upon this can only be determined by future investigations of folk-lore. Ribas asserts that all the tribes of Sonora and Sinaloa agreed in affirming that their ancestors originally issued from the north.<sup>1</sup> The same is reported from Chihuahua by Villagran and by Mota-Padilla.<sup>2</sup>

Linguistic evidence supports such traditions to a certain extent. The great Uto-Shoshonee stock of languages embraces a number of tribes, ranging from Alaska to Central Mexico and Nicaragua. It is shown that the Nahuatl, the Sonoran tribes (with exception of the Seris), the Indians of Jalisco and Durango, the natives of Western Chihuahua, the Arizonian Pimas, and the Moquis belong to the same linguistic branch as the Shoshonees, Yutes, Comanches, and many tribes of the Northern Pacific slope.<sup>3</sup> The Navajos, and their outlying branches of the Apaches, are of the same linguistic stem as the Tinneh of the extreme Northwest.

<sup>1</sup> *Historia de los Triunfos*, p. 20: "Y finalmente, en los informes que sobre esta materia hize, siempre hallé rastros de que todas estas naciones, que se van asentando de paz en nuevas reducciones, salieron de la parte del Norte."

<sup>2</sup> Villagran, *Historia de la Nueva Méjico*, cantos 9 and 11. Mota-Padilla, *Historia de la Nueva Galicia*, chap. i. p. 21.

<sup>3</sup> Gatschet, *Classification*. Also Brinton, *The American Race*, p. 133.

The linguistic status of the New Mexican Pueblos is not yet definitely ascertained; as Dr. D. G. Brinton very justly remarks, "No relationship has been discovered between either of these and any tribe outside the territory."<sup>1</sup>

Thus the tales of slow wanderings, or rather shiftings, of Indian clusters from colder to warmer climes across the Southwest, become by no means improbable; but such movements must not be imagined to have been on the same scale as the irruption of vast hordes, such as Europe witnessed in the early part of our era, and which early writers upon Spanish America have conceived to have occurred in Mexico in prehistoric times. I say this not in order to censure deserving men who centuries ago took pains to record the fading traditions of tribes then first becoming known to Europeans. At their time ethnology was not yet a science, and they wrote according to the prevailing state of knowledge, and according to the points afforded them for comparison. Hence arose misconceptions and honest exaggerations, which have become deeply engrafted upon ethnological thought, and have cast a veil over ethnological facts. The movements of tribes have been slow and disconnected; there has been, it seems, a general tendency to drift towards the tropics, but never in a continuous stream. Neither is it certain that the groups that were met with as occupants of Central Mexico, Yucatan, and Central America in the sixteenth century were originally homogeneous. Some, perhaps many, of them may have been conglomerates, made up from fragments of vanished tribes speaking different languages, which finally coagulated into a new idiom.

This is a picture of the prehistoric past of the Southwest, somewhat different from that which, modelled upon the ancient history of Europe, has often been presented. On a pre-

<sup>1</sup> *The American Race*, p. 116.

vious occasion I thus wrote to the Institute on the subject: "The picture which can be dimly traced of this past is a very modest and unpretending one. No great cataclysms of nature, no waves of destruction on a large scale, either natural or human, appear to have interrupted the slow and tedious development of the people before the Spaniards came. One portion rose while another fell; sedentary tribes disappeared or moved off, and wild tribes roamed over the ruins of their former abodes."<sup>1</sup>

While the drift of shiftings of tribes has been generally from north to south, it is by no means certain that numerous deviations from that course have not occurred. It is even probable that retrograde movements took place. Hence, principally in Mexico, the conflicting statements about migrations and the quarter from which tribes reached the districts where they were found established. Furthermore, the narrower the continent becomes towards the south, the greater is the possibility of casual or intentional invasions from the outside, important for the ethnography of the interior. This is an element which could hardly have played any direct part in the Southwest, except along the coast of Sonora. There contact with peoples from outside of the American continent was possible, but no traces of such contact are known. But it must be remembered that very little, if anything, is known of the folk-lore of the Yaquis, Mayos, and Opatas. It seems certain, however, that even the New Mexican Pueblos, or some of them, had a notion of the existence of the sea before the coming of the Spaniards. This is easily accounted for by the commercial intercourse of the Zuñis with tribes of Northern Sonora and of the Lower Colorado River. From the side of the Mexican Gulf it was much more difficult to reach the interior populations, and yet marine shells whose

<sup>1</sup> *Fifth Annual Report*, p. 85.

home is the coast of that gulf were found in the ruins of Casas Grandes.

It should not be overlooked, also, that there are said to be traces of a slow movement across the plains to the eastward, and of remains left by tribes who appear to have settled at intervals along the banks of the few rivers that traverse the steppes of Eastern New Mexico. If the existence of these traces should be confirmed, the question of the connection of tribes in the Mississippi Valley with the Southwest in pre-historic times would acquire some importance.

Further than what I have intimated in these pages, I do not venture to go for the present. The time has not yet come when positive conclusions in regard to the ancient history of the Southwest can be formulated. In the course of the past ten years new methods of research have been developed in ethnology, as well as in archæology, and at some future day these may lead to the solution of questions which at present are perhaps not even clearly defined.

SANTA FÉ, NEW MEXICO,  
April 20, 1891.

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