EXCAVATIONS IN A 17TH-CENTURY JUMANO PUEBLO

GRAN QUIVIRA

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EXCAVATIONS IN A 17TH-CENTURY JUMANO PUEBLO

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GORDON VIVIAN

WITH A CHAPTER ON ARTIFACTS FROM GRAN QUIVIRA
SALLIE VAN VALKENBURGH

ARCHEOLOGICAL RESEARCH SERIES NUMBER EIGHT
NATIONAL PARK SERVICE • U.S. DEPARTMENT OF THE INTERIOR

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THIS PUBLICATION is one of a series of research studies devoted to specialized topics which have been explored in connection with the various areas in the National Park System. It is printed at the Government Printing Office and may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402 – Price $1.25 (paper cover).

Ruins of the San Buenaventura Mission Church.

ABSTRACT

At Gran Quivira, N. Mex., are early historic remains of 17 Pueblo house mounds, numerous detached kivas, a small Spanish church, and a mission establishment. One kiva, the small Spanish church, and 37 Pueblo rooms were excavated. Unpublished data from previous excavation of the mission structures are summarized. Culture contact with the adjoining Mogollon is examined and their probable presence as the "gente rayada" of the Spanish considered. The probable effects of a culturally mixed group lacking social stability are explored as a contributing factor in the abandonment of the area and dispersal of the people about 1672, well before the Pueblo Revolt of 1680.

Administration

Gran Quivira National Monument, established on November 1, 1909, and containing 611 acres, is administered by the National Park Service, U.S. Department of the Interior.

The National Park System, of which this area is a unit, is dedicated to conserving the scenic, scientific, and historic heritage of the United States for the benefit and inspiration of its people.

A superintendent, whose address is Route 1, Mountainair, N. Mex., 87036, is in immediate charge of the monument.

THE COVER: Detail of Figure 42.

FOREWORD

GRAN QUIVIRA NATIONAL MONUMENT preserves remains of Spanish Missionary Development in the Southwest and the ruins of associated aboriginal dwellings. Many portions of our knowledge about the interaction of the Spanish and Indian cultures is scanty. In 1951, R. Gordon Vivian, archeologist of the National Park Service, directed excavations at Las Humanas Pueblo at Gran Quivira National Monument.

Mr. Vivian's careful and detailed archeological work combined with his similarly careful review of the historical documents concerning the period, the area, and the site, have enabled him to publish this detailed work. Through the combined historical and archeological process, the author has been able to produce a report that is more complete than the two disciplines could have produced separately.

With pleasure I commend to professional and interested laymen alike this eighth report in the Archeological Research Series of the National Park Service.

George B. Hartzog, Jr.
DIRECTOR

PREFACE

THIS PAPER reports excavations conducted in three separate structures at Gran Quivira National Monument from March through May 1951. The monument is in Torrance and Socorro Counties, in central New Mexico, near the geographic center of the State. It is 40 miles east of the Rio Grande and just east of Chupadera Mesa. There were both earlier and contemporary Pueblo settlements along the Rio Grande and slightly earlier Pueblo groups on the Chupadera Mesa, but broadly speaking the Jumano settlements to which Gran Quivira belonged, formed the southeastern limits of the Pueblo area in early historic times. Beyond these Jumano settlements, to the south and to the east, was the range of the Jornada Mogollon and in later years this outlying region became the habitat of Apache groups. The Gallinas Mountains, a low range, lie some 15 miles east of Gran Quivira, across a shallow basin. Recent pipeline surveys indicate that this area to the east is particularly devoid of Pueblo remains.

Gran Quivira was some 20 miles south of the Saline Lakes and was the southern tip of a triangle of roughly contemporaneous pueblos. Abó was 18 miles to the north; Quarai and the mountain-dwelling Tiwas were deeper in the Manzano range. To the northwest was the populous middle Rio Grande; to the north and east were Paa-ko and the Galisteo settlements, and beyond these, Pecos.

Specifically, the ruin area at Gran Quivira National Monument is split by the base and county line between Torrance and Socorro Counties and portions of it are in Section 34– T 1 N, R 8 E NMPM; the remaining part, on the opposite side of the base line, is in Section 3, T 1 S, R 8 E (fig. 1).

The excavation at Gran Quivira was done by the Navajo crew of the Ruins Stabilization Unit, with the addition of some local labor; the group ranged from 6 to 10 men. The excavation was intended to expose Pueblo structures for interpretation to visitors. All waste material was trucked away from the ruins, out of sight; all test pits, trenches, and other exploratory work had to be backfilled and the area left in a condition that would provide good surface drainage, relatively uncomplicated stabilization, and easy visitor access. These requirements of waste removal and rough landscaping reduced the effective labor force available for digging, by a quarter to a third.

The excavated materials were worked on intermittently through 1951 and 1952 at Chaco Canyon. Early in 1953, I was given the opportunity to do library research and examine collections in Santa Fe. At that time Sallie Van Valkenburgh prepared her section on the artifacts, other than pottery. The final draft of the manuscript was typed by various members of my family and it was submitted to the National Park Service in July 1953. A scheme to have the report published by the Southwestern Monuments Association failed, and the report languished in the files for 6 years. Early in 1959 it was decided to make minor changes, bring some of the material up to date, and submit it for publication in the present medium. Press of other work delayed completion of this revision until early 1961. The most extensive additions have been made in the section on ceramics; otherwise this report is essentially the same as the report submitted in 1953.

I am indebted to my friend Ray Ringenbach, then superintendent of Gran Quivira, for making my stay there a pleasant one and for the many courtesies he extended. It was a pleasure to work with him. My superiors in the National Park Service, who were then, among others, General Superintendent John Davis, Naturalist Dale King, and Regional Archeologist Erik Reed, are due a large measure of thanks, both for giving me an opportunity to do the excavation and for time in 1953 to compile the material. Erik Reed, out of his encyclopedic knowledge, has been most helpful at all stages of this work. During the time that I was in Santa Fe, the staff at the Laboratory of Anthropology provided gracious assistance; the librarians cheerfully produced books and manuscripts from my often nebulous descriptions. I must mention the late Stanley Stubbs in particular; he gave much of his time to the study of sherds; he suggested lines of inquiry, and he filled in for me many gaps in Rio Grande prehistory.

The revision of the manuscript to its present form was done in Globe. The location map and plot of the ruins area at Gran Quivira were redrawn from basic plans in the Park Service files. Except as noted below, all drawings and photographs are the work of the author. Lorrayne Langham's unfailing good humor and expert work in typing the revision are greatly appreciated as is her accurate pen and ink rendering of the pottery designs taken from sherds.

GORDON VIVIAN
Globe, Arizona
January 1961.

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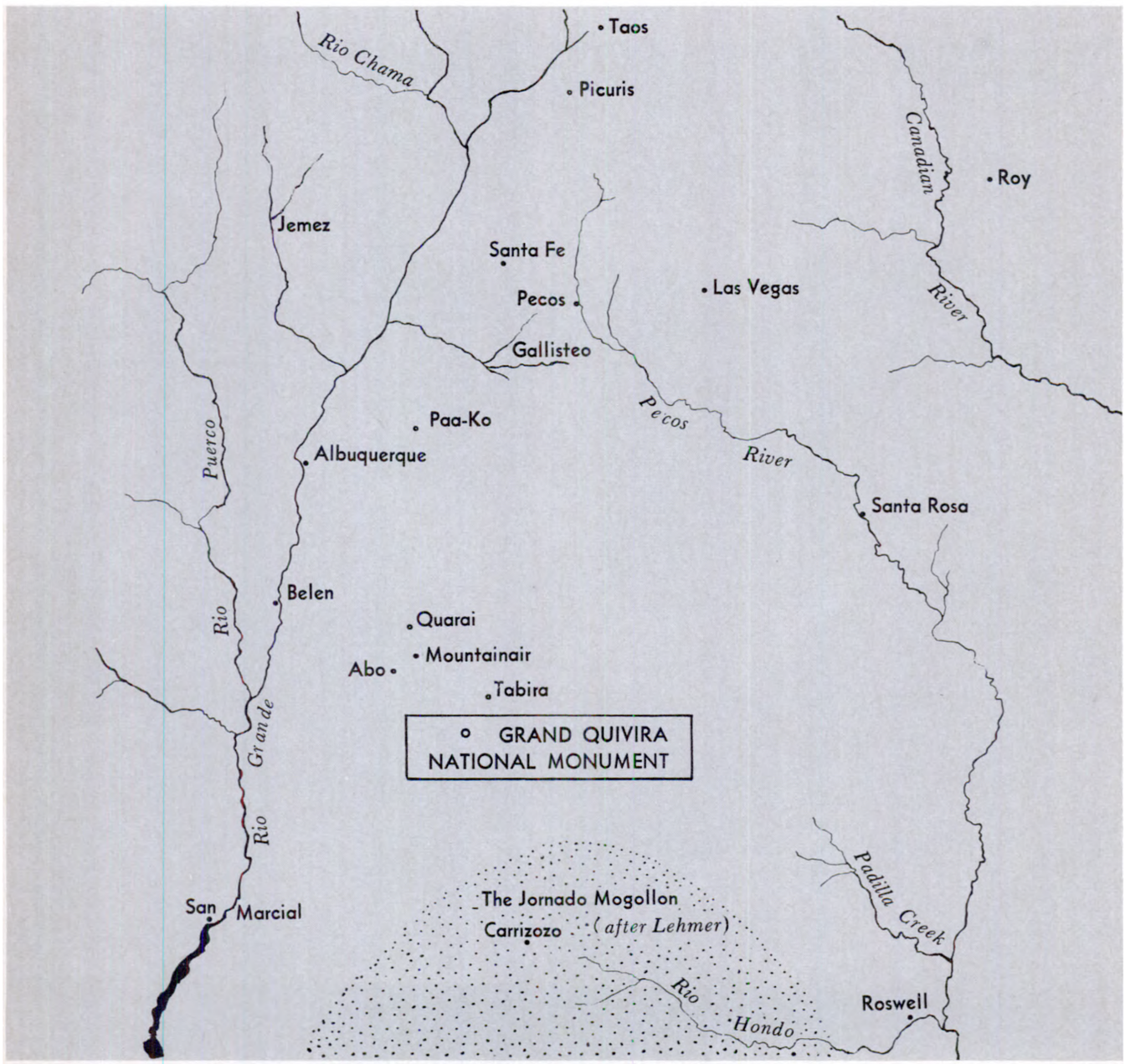
ILLUSTRATIONS

FIGURE 1 Vicinity map, central New Mexico, with particular reference to frontier Pueblo areas.



DETAIL OF FIGURE 25.

Gran Quivira

It has never been possible to keep livestock in the said Pueblo because there is not [sufficient] water, for what there is comes only from some wells [pozos] which are a quarter of a league from the place, forty or fifty estados in depth. And therefore it costs a great deal to get the water and it makes a lot of work for the Indians in obtaining it, and the wells are exhausted and there is an insufficient water supply for the people, for their lack of water is so great that they are accustomed to save their urine to water the land and to build walls.

Nicolas de Aguilar, 1663

NATURAL SETTING

Aguilar, the *alcalde mayor* of the Salinas Province, was but one of the first of a long list of observers who have commented upon the difficulties of the environment at Gran Quivira. Most of these commentaries illustrate, more vividly than temperature and rainfall statistics, the effect of this hostile land upon the fortunes of man and animal. Nearly 200 years after Aguilar, Maj. James Henry Carleton made a winter journey through Gran Quivira. On December 20, 1853, while approaching the ruins, his command was enveloped in a fierce blizzard and ". . . a cold vapor like a cloud came over the country, enveloping everything in a dense fog, and covering men and horses with a hoar frost." Carleton changed the direction of his march to the west and struck timber along the foothills of the Chupadera Mesa; there he waited out the storm with his horses picketed in the lee of long lines of blazing fires (1854: 306). And 100 years after Carleton, the present writer, either hauling water 26 road miles from Mountainair or cutting firewood, can remember scarcely a day when the wind was not blowing, either searing hot or freezing cold, across the exposed knob of Gran Quivira.

Amidst these rigors, the population at Gran Quivira occupied one of the many short, rolling limestone hills extending eastward from the base of Chupadera Mesa. The elevation is 6,600 feet. The site overlooks, to the north and east, the gently rolling sand hills of the depression between the Chupadera Mesa on the west and the Gallinas Mountains on the east, a distance of 15 to 20 miles. This long north-south basin is separated by low ridges into broad flat areas from which there was no natural drainage; the result was a series of intermittent lakes which filled during periods of extreme precipitation and which may have lasted as long as a year, but which were also dry for extended periods. The greater part of this north-south basin is now denuded and blowing away as the result of intensive dryfarming over the past half century.

The juniper- and pinyon-covered slopes of the Chupadera Mesa rise to the west and southwest of Gran Quivira and here at higher elevations, where farming is presently impossible, sufficient cover remains to support livestock operations. These depend for stock water upon deep wells and earth tanks. The nearest permanent water today is at Montezuma Ruin, 6 miles west of Gran Quivira, and there are occasional springs in the Gallinas Mountains, far to the east.

Annual precipitation during the past decade has averaged 12½ inches, with a maximum of 17½ inches for 1949; the periods of heaviest rainfall are July and August. The average annual temperature range is 0° to 92° F. The maximum recorded temperature was 103° on June 26, 1953; the minimum, −14° on February 1, 1951. According to the Thornthwaite classification, the area is a steppe, semiarid, microthermal region deficient in precipitation at all seasons (DC'd).

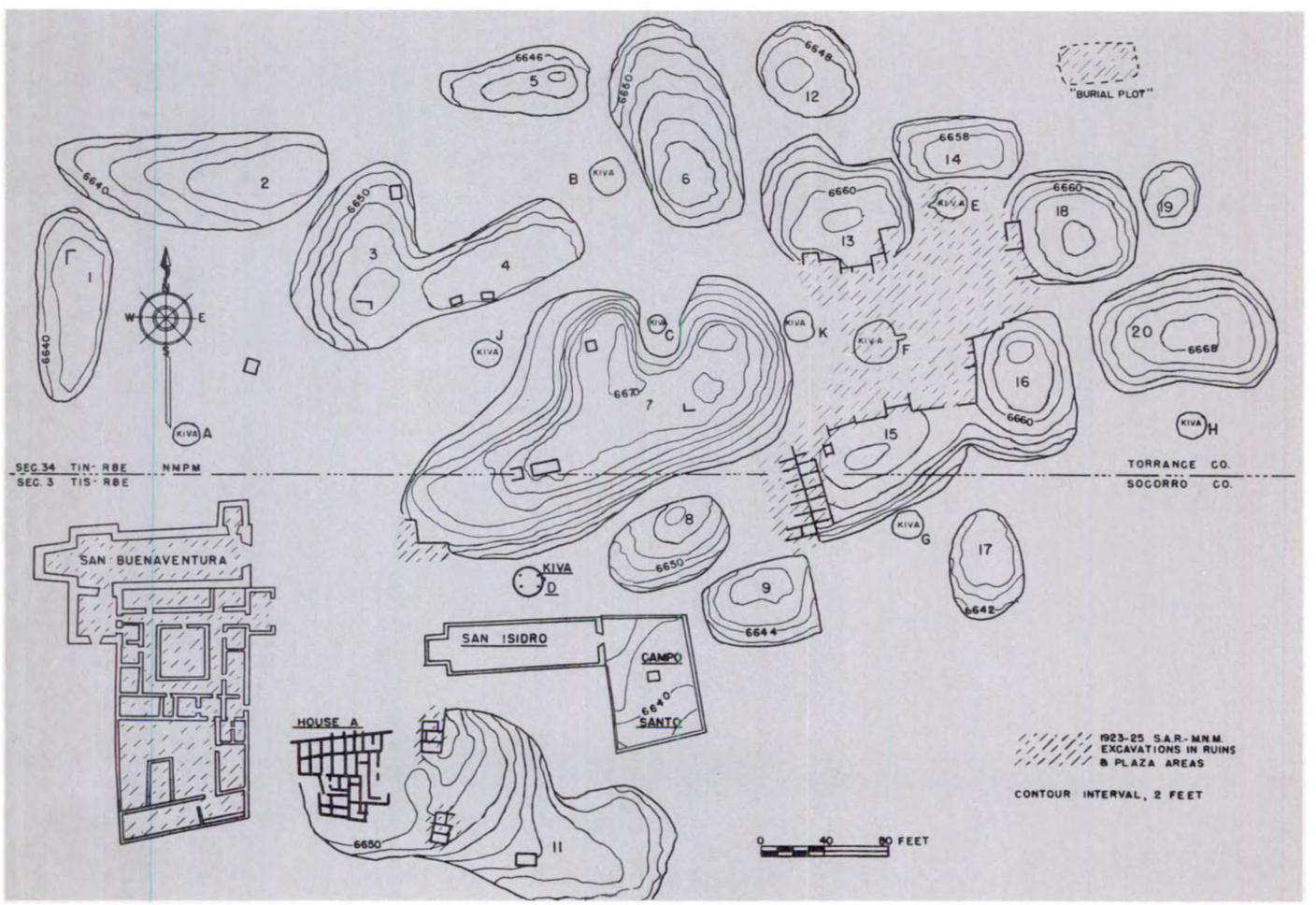
The water problem at Gran Quivira, both for domestic and agricultural use, has always been severe and has attracted the attention of students since the time of Carleton. The most recent and authoritative studies have been by Toulouse (1945: 362–372) and Howard (1959: 85–91). Suffice it to say that the problem has improved but little since Aguilar's time. The Chupadera limestone which underlies the surface contains gypsum deposits. The subsurface

water supply appears to be of an inland basin type derived from slow percolation through the gypsum. As a result, these waters, at depths of 600 to 875 feet, where there is a sufficient supply, are highly mineralized. Water from the deep well at Gran Quivira is not only unpotable, but unfit for any domestic use except sewage disposal. Limited quantities of potable water at shallow depth in the alluvium are present in some locations near the ruins, but in the main, the domestic supply in this area comes, as it does at the monument, from rainfall diverted to cisterns and by hauling it 26 miles from the town of Mountainair.

SITES (fig. 2)

Three separate structures were excavated: (1) approximately one-half of a Pueblo ruin, House A (some 37 rooms out of a possible 80); (2) a kiva, designated as Kiva D, which is a detached structure lying some distance from House A; and (3) the remains of the mission of San Isidro, a badly vandalized, partly excavated, and partly stabilized little church. While the structures will be detailed separately, the material culture from all of them will be treated together in

FIGURE 2 House A, Kiva D, and San Isidro, in relation to the general ruin area at Gran Quivira and to the excavations of 1923–25 by the School of American Research and Museum of New Mexico.



applicable sections since the bulk of it came from House A and there is no discernible difference in materials between the three locations.

Beginning with the modern period, about 1835 (Gregg, 1954: 116–117), the most imposing ruin, and the only one whose walls were well above ground and could be clearly traced, was the large mission church of San Buenaventura with its attached convento. This structure was cleared by the New Mexico State Museum and the School of American Research during the seasons of 1923 to 1925. Some additional work was done in the plazas and in scattered locations throughout the group of ruins. No further excavations had been undertaken between 1925 and 1951, so that the interpretive program for the monument was based throughout that time on the single excavated Spanish structure, the

FIGURE 3 Mound of House A, before excavation.

large mission of San Buenaventura. The native or Pueblo phase of the area's history was of necessity neglected. The excavations recorded here were conducted to provide this needed interpretive material, and the sites were stabilized to preserve them as exhibits in place.

Of the 17 house groups, that designated as House A (Mound 10) was chosen for excavation since it was the only large pueblo ruin mound entirely on Federal land at that time, before the transfer of State-owned lands within the monument boundary to the National Park Service. It was divided roughly by a plaza, and the west half was of a size that could be well handled in one season's work. Further, lying close between the mission churches of San Isidro and San Buenaventura, House A was easily accessible for interpretive use.

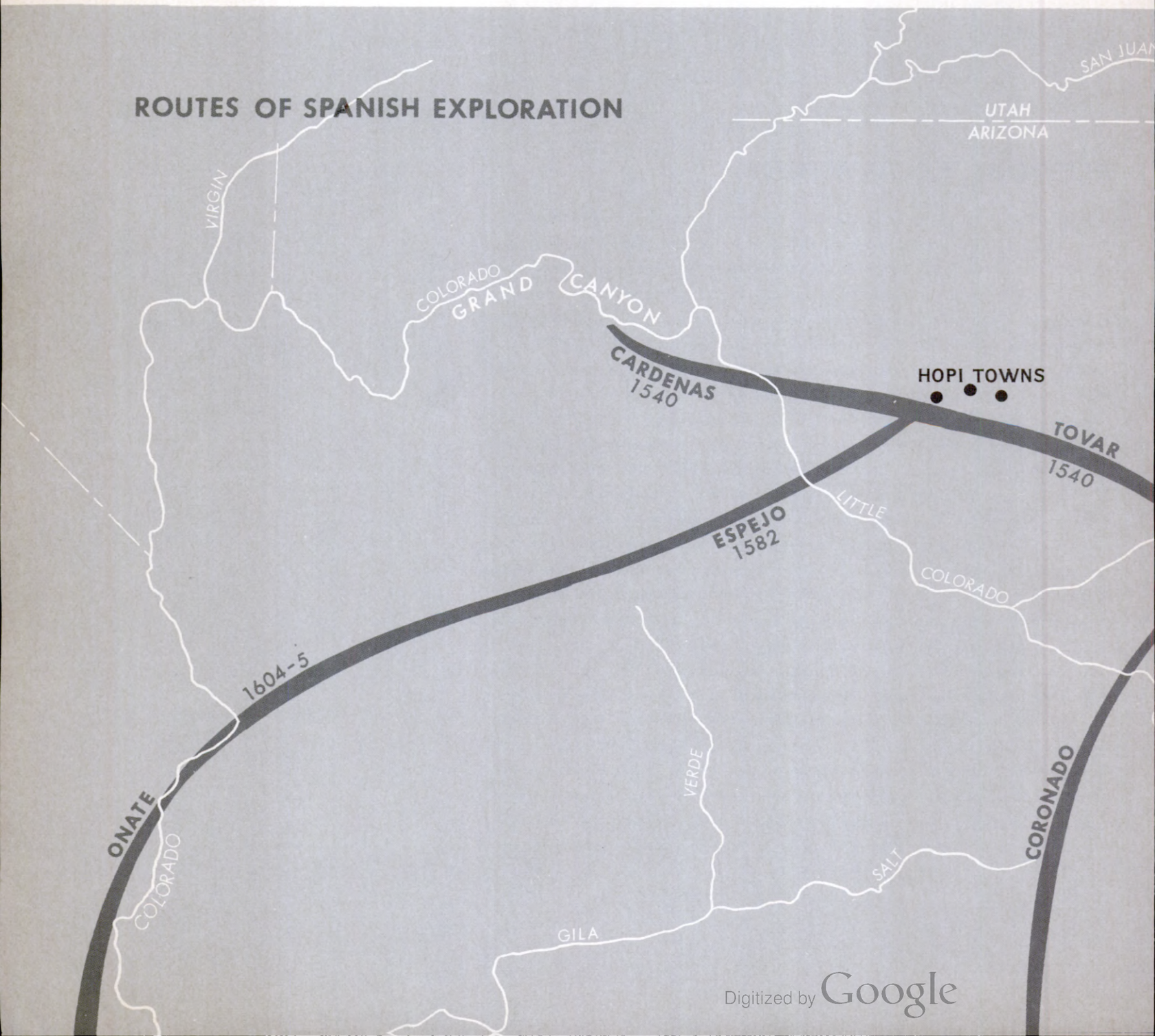
Kiva D was selected for excavation since it was the only kiva clearly on Federal land at that time which would fit conveniently into the interpretive group.

The work at the small mission, San Isidro, was undertaken primarily to preserve the remains of a badly vandalized ruin filled with the detritus of mining operations. The uncovering of interior walls and scattered artifacts came as somewhat of a surprise since this one spot has been the locale of extensive burrowing for treasure over the past century.

PREVIOUS EXCAVATIONS

From 1923 through 1925 the School of American Research, under the direction of E. L. Hewett, conducted excavations in various locations within the combined areas of the State and Federal monuments. The first year, with Director Hewett in charge, the expedition began the season by fencing the combined monuments; both State and Federal funds were used. Work of clearing the large mission church, San Buenaventura, was also started in 1923. The last 2 weeks in July, Park Service Superintendent Frank Pinkley of Casa Grande visited the area and assisted in the work at the mission during Hewett's absence. Later that year other excavations were conducted in a "burial mound" at the northeast corner of the ruin area. Here, wide trenches exposed 8 rooms and recovered 39 burials. Considerable effort appears to have been expended in outlining and clearing to its original depth a long, extended plaza area between two house blocks. In this phase of the program two kivas were located and excavated, and 24 "porch rooms" fronting a plaza area were cleared. Numerous related studies were carried on; Anna Shepard and Ida Bell Squires surveyed and made a map of the ruin area; Odd Halseth mapped and studied the system of water catchments and ditches; and other members of the group made accurate plans of the mission church and convento (Hewett, 1923).

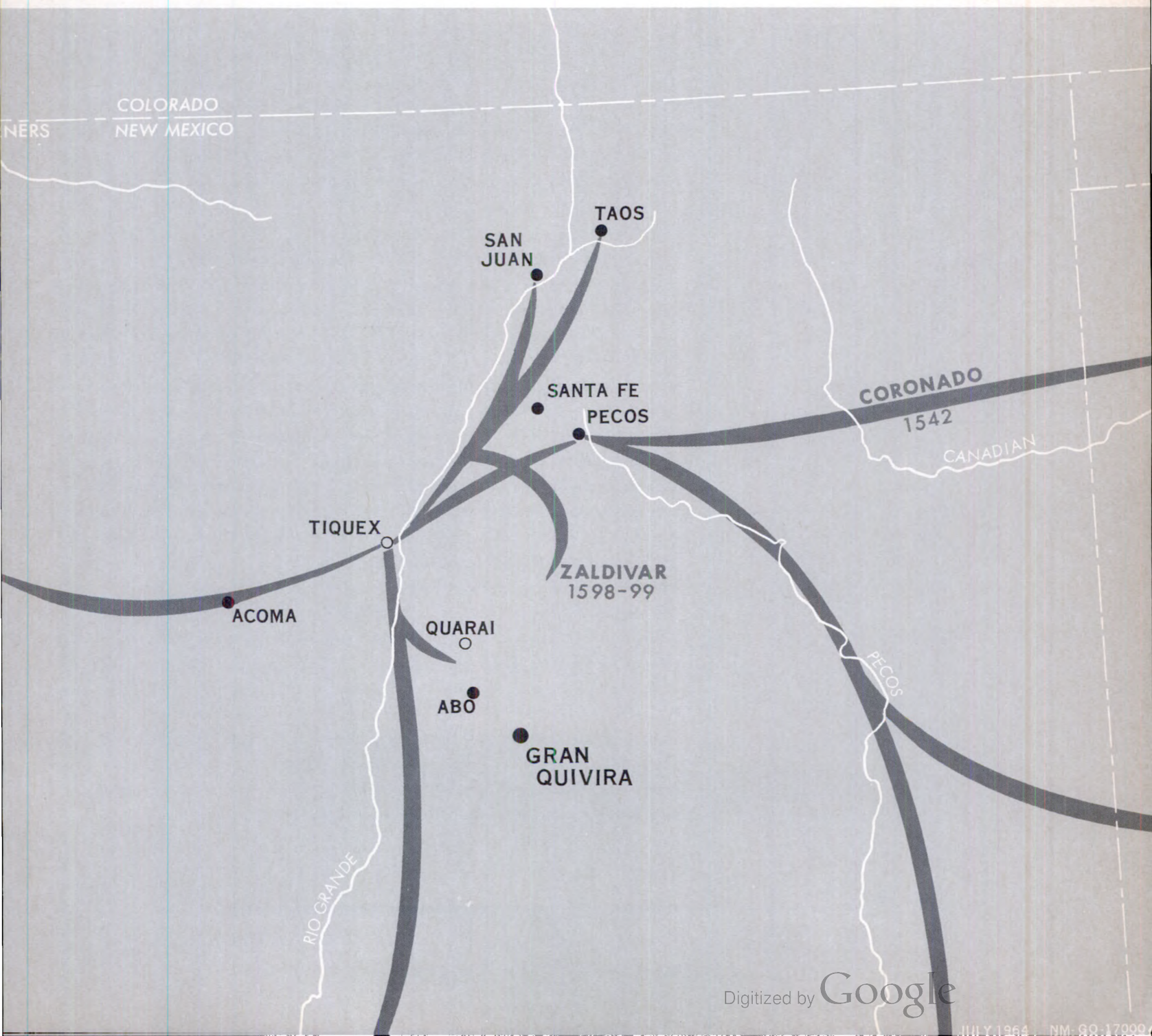
In September 1924, Wesley Bradfield returned to Gran Quivira to continue the work of the previous year. He extended the excavation in the large mission and cleared an additional 7 rooms in a house block (Pinkley, 1924). Hewett returned to Gran Quivira in 1925. At one point five teams, with scrapers, were employed in clearing plaza areas to their original levels. Nine burials were recovered from rooms or refuse areas, and a third kiva, fronting a plaza, was excavated. Clearing of the mission was continued, but, unfortunately, the specific areas of the mission exposed in each of these three seasons are not known.



HISTORICAL BACKGROUND

The greatest force we possess at present to defend ourselves and our friends is the prestige of the Spanish Nation, by fear of which the Indians have been kept in check. Should they lose this fear it would inevitably follow also that the teaching of the holy gospel would be hampered, which I am under obligation to prevent, as this is the main purpose for which I came. For the gospel is the complete remedy and guide for their abominable sins, some of them nefarious against nature.

Don Juan de Oñate, 1599



IDENTITY OF GRAN QUIVIRA

The group of 17 pueblo ruins at Gran Quivira represents but a small part of the large Indian population which occupied the general region on the east slopes of the Manzano range and the north end of the Chupadera Mesa at any one time during the period of Spanish exploration and missionary activity. This general area west and south of the salt lakes comprised the Spanish Salinas Province and included the pueblo of Jumanos under discussion here, the Tompiros of Piro linguistic affiliation in the center, and the mountain-dwelling branch of the Tiwas to the north, at Quarai, Chilili, and Tajique.

(*Note on spelling:* I have standardized the spelling of the name of the Pueblo Indians who once lived at the present site of Gran Quivira as Jumano, and the spelling of the name of the place during Spanish times as Las Humanas. The Indians of that place and of two additional pueblos were variously referred to by the Spanish as: Xumana, Jumano, Jumana, Jumanes, Humana, Humanes, Xoman, and Sumana. Modern usage, particularly by Scholes and Mera in their discussion of the identity of the people, follows the Spanish; there were three, or possibly four, pueblos of Indians who were called Jumano. Las Humanas, as the Spanish place name for the present Gran Quivira, was used fairly consistently by the Spanish. Following identification of the site in 1939, it has been called Gran Quivira-Humanas and Humanas by Kubler, Humanas and Las Humanas by Toulouse, and Las Humanas by Scholes.)

Of first importance is the identification of Gran Quivira as one of the inhabited pueblos of the Spanish documents. For some time Gran Quivira was identified as the Tabirá of the Spanish. However, Kubler (1939) concluded that Gran Quivira was the site referred to as Las Humanas and Scholes (1940) is in agreement with this view. Briefly, the reasons for the conclusions reached by Kubler and Scholes were: (1) Gran Quivira was of sufficient size to accommodate the large population attributed to Las Humanas; (2) Gran Quivira contains two churches, one with a convento, which was undoubtedly the mission under construction in 1660. Two churches were not recorded for any site in this region except Humanas. (3) The water supply was obviously short at Gran Quivira and there are numerous earthworks, allegedly for the collection and storage of water. The documents attest that the water supply at Las Humanas was a serious problem. (4) Gran Quivira is in the proper relation to Abó and Quarai. (5) Should Gran Quivira be designated as the Tabirá of the documents it would become necessary to locate another site in the near neighborhood which contains two mission structures. No such site or sites are known.

The site nearest Gran Quivira where there are two church structures, a large mission and an earlier chapel, is Quarai. The existence of the chapel was unknown at the time of Kubler's and Scholes' studies (Stubbs, 1959). Quarai, however, is more than 28 airline miles north of Gran Quivira and was a southern outpost of the Tiwas and, I think, could hardly have been confused with Gran Quivira, particularly since the large pueblo and mission of Abó lay between them. It appears without doubt then that the site with which we are dealing, Gran Quivira, was the one known to the Spanish as Las Humanas.

IDENTITY OF THE POPULATION

At Gran Quivira we are dealing with the archeology of a Pueblo group to which the Spanish had applied the term Jumano. This poses a particular problem in the identity of the population since the same term was used concurrently to designate other widely spaced and non-Pueblo groups. These include (1) settlements at the junction of the Rio Grande and Conchos River near La Junta (Espejo, 1582–83); (2) a rancheria as far west as Flagstaff, Ariz. (Farfan, 1598); (3) tribes on the edge of the buffalo plains to the east (Oñate, 1601). The distinguishing characteristic and common denominator of all these groups to which the term Jumano was applied was that they were all "Indios Rayados," people who practiced some form of tattooing or other body decoration.

Such body decoration was a widespread practice among many Southwestern groups, and it is unfortunate that the Spanish had no specific word for tattooing in those times and were forced to use such words as: paint, stripe, or streak to describe the practice. While the particular word "rrayados or Rayados" appearing in the accounts probably refers to pattern tattooing, painting or dyeing may be indicated. "Identification of a tribe or group of tribes, who can be regarded as true Jumanos, as distinct from groups who may have had that name merely because they were rayados, will necessitate a careful sifting of historical, archeological, ethnological, and linguistic evidence" (Scholes, 1940: 275).

The problem for the archeologist, then, is to determine whether he is dealing with a Pueblo population which contained a tattooed element, and if so, if this tattooed part of the population represented a partially assimilated foreign group, as against Pueblos who did not contain a tattooed fraction. The other alternatives are (1) a tattooed population which had no ties with other tattooed groups, or (2) a Pueblo people who came to be known as Jumanos simply because they were in close trading association with a group of Plains Jumanos.

This latter alternative, a name derived solely from close association, was the one held for many years by most historians and was based on a single statement in Benavides. "Among this nation (Tompiros) there is a large one which must have three thousand souls; it is called Xumanes because this nation often comes there to trade and barter" (Hodge, Hammond, and Rey, 1945: 66). Kelley (1955: 991) has recently embraced this view in his study of diffusion by the true Jumanos of the Texas plains. In addition to Benavides, he cites references to wandering Jumano hunters and traders on the edge of the buffalo plains in the period 1623–29; to a visit by these same hunters to Isleta Pueblo in 1629; and to a temporary settlement which they established near Quivira Pueblo (Gran Quivira?) in the same year.

Kelley makes his point well, and establishes without doubt that representatives of his true Jumano, who wandered widely over Texas in the 17th century, could have had contact with Pueblos in the Gran Quivira area and westward to the Rio Grande towns.

Other evidence, however, which has been most lucidly presented by Scholes (1940), demonstrates that there were far more important reasons why the population of Gran Quivira were termed Jumano. (1) As far as the population of

this pueblo was concerned, the terms Jumano and Rayado or rrayado were synonymous and, (2) there was a large element of striped (rayado) persons in the population. The Jumanos of Gran Quivira were indeed Indians with stripes, tattooing, or other body decoration.

Scholes (1940 passim) cites this evidence from documents:

1. One Bachiller Gines de Herrera de Ortiz from a declaration made in Mexico City in 1601, ". . . and also with the intention of passing through a pueblo called that of the *Jumanas* which means "indios rayados" who have a stripe on (above?) the nose."
2. Oñate, 1598, in a formal decree referring to pueblos near the salt marshes, "The pueblos of patuozey, quelotzey, genouey, called *Jumanes* rrayados."
3. Fray Alanso Martinez in an Obedencia, Sept. 9, 1598, ". . . as well as three large pueblos of *Xumanes* or *rrayados*, called in their Atzigui language, genoby, quellotoezie, pataozie, with their subjects. . . ."
4. Oñate, 1598 in the "Interario" recording his visit to Abó ". . . And the pueblos of Xumanes or rrayados of which there are three, one very large. . . ."
5. Oñate again, Oct. 12, 1598 from Queloce (one of those noted above as being a Xumanes town) ". . . que llamen rayados" lists the chiefs of three towns from whom oaths of obedience were taken—the towns of Queloce, Xenoupe, and Patoce.
6. From depositions of soldiers taken in Mexico City in 1602 describing the "disposion y calidad" of the Pueblo Indians with whom they had come in contact while serving under Oñate, ". . . People of good appearance, men and women without stripes (rayas) although among all of them there are one pueblo or two of striped (tattooed?) people, "gente rayada."
7. Juan Rodriguez, 1602, stated that the pueblos were ". . . de buen disposion sin ningunas rayas, sino los *Jumanos* algunos de ellos *estan rayados*. . . ."

It is clear from this documentary material that while there are two divergent lines of thought on the identity of the Jumano population at Gran Quivira, the weight of evidence indicates that it did contain a striped or tattooed element. It follows that the archeologist must keep in mind that this may possibly represent either a foreign fraction or else strong cultural ties with a non-Pueblo group, since the habit of tattooing was not mentioned in connection with other contemporary Pueblos.

LINGUISTIC AFFILIATION

The general assumption that the Jumanos were of Piro linguistic stock is further strengthened by data which tends to show that the Jumanos used a dialect which could be understood by the Tompiro of Abó and that the Spanish considered the Jumanos-Rayados to be of the "same nation" as the Tompiro of Abó.

1. The oaths of obedience taken October 12 and 17, 1598, at two towns, Acolocu and Cueloce, list the captains of eight villages subscribing to the oath, four at each location. Assuming that those taking the oath together would be of the same language group it is suggested that the

first four towns named would be the Manzano Tiwa villages and that the last four were Abó and the pueblos of Jumanos-Rayados.

2. The fact that Tabirá (a Jumano *visita*) and San Isidro at Humanas were administered for so many years from Tompiro Abó, whose minister was undoubtedly proficient in the Tompiro tongue, would indicate that they, the Jumanos, belonged to the same linguistic group.
3. Aguilar in 1663 noted that it had been customary for singers from Abó to participate in the celebration of the patron saint of San Buenaventura (at Jumanas) because they were of the "same nation."
4. Freitas, 1661, noted also that orders given at the pueblo of Jumanas had been translated into the Tompiro language by an Indian interpreter and further ". . . that Fray Garcia de San Francisco is the only religious who knows and preaches in the Piro language, the language of the Indians of El Socorro and of the pueblos of Senecu, El Alamillo and Sevilleta; he can also make himself understood by the Indians of the pueblos of Xumanes, Abó and Tabirá." (Scholes, 1940.)

PERIOD OF EXPLORATION

There are no reports that any of Coronado's group penetrated to the Jumano area during his stay at Tiguex through the winter of 1540–41. But the Spanish did range widely in search of treasure, and during 1541 a certain captain, possibly Mondragón, led an expedition down the Rio Grande, just west of Jumanos, as far south as the Jornado del Muerto. Neither could the fabled expedition to the plains in search of Quivira have escaped notice by all the Pueblos. So, by the time that Coronado departed, the Jumanos, so far secure in poverty, were well aware of some gross aspects of European culture: the dress, arms and armor, and domestic livestock. Coronado, too, carried small items for trade and these, as well as information, could have passed through a series of pueblos. Of the more important aspects affecting their future, the Jumanos could neither have been ignorant of the Spanish need to support themselves off the native population, nor could they have been ignorant of the Spanish temper when such support was lacking, as evidenced by the army's sacking of Arenal Pueblo and the burning at the stake of prisoners.

Coronado left, and a generation passed, but if the memory of the Spaniard tended to fade, it was renewed as Spanish mining activities spread northward into Nueva Viscaya, or modern Chihuahua. There were increasing settlements in the Conchos valley, and the same sources that carried word south, of multistoried pueblos and riches, must have heralded the approach of another Spanish expedition, that of Rodríguez and Chamuscado in 1581. With Rodríguez and Chamuscado came the first intimation that the Spaniards intended to remain permanently in the Pueblo country. For when the party returned southward down the Rio Grande, after having explored the greater parts of Arizona and New Mexico, two friars, Rodríguez and Lopez, remained behind to begin the conversion of the Pueblos. Shortly thereafter, they were murdered by their hosts.

Within 7 or 8 months after the Rodríguez-Chamuscado group left, the Spaniards were back up the Rio Grande valley. Although this group with Espejo—Fray Beltrán, some 14 soldiers, and Indian servants—was too late to rescue the

two men who had stayed at Puaray, they also explored widely throughout New Mexico and Arizona. How close they came to the Jumanos of Gran Quivira is uncertain; the area may have been seen, or the Spanish may have also been describing the pueblos of Abó Pass to the north. At any rate the Spanish now had a description of the general Jumano country, exaggerated as usual in numbers of people and prosperity. Espejo referred to them as Maguas, a group of 11 pueblos. He estimated the population at 40,000, noted the lack of running water, but remarked on the abundance of turkeys and other foodstuffs. Their clothing was said to be buffalo hides, deerskins, and cotton mantas; they worshiped idols. Espejo concluded that the country appeared promising for the development of silver mines (Bolton, 1916: 180–181).

Luxán, the chronicler of the Espejo expedition, gave a somewhat more detailed description of the pueblo visited on this side trip to the east. He is also at variance with Espejo as to the chronological order of the trip. To Luxán, the people of this province, quite possibly Jumanos, appeared to be considerably more warlike than other Pueblo Indians for they were well armed with bows and arrows. Luxán described the houses as being built of slabs and rock around two large plazas. The houses were well built and were whitewashed inside. There were four caverns (kivas), and it is interesting to note that Luxán said that these kivas were where the people had their dances and also their baths. He too concluded that this was a rich country with pine and cedar forests and many mines ". . . but as we were only three we did not examine the land" (Hammond and Rey, 1929: 76–78).

In this, their first encounter, the Pueblos of the Jumanos region appeared less fearful of the Spanish than did their contemporaries who had had more experience. For, as the small Spanish force made the return trip to the Rio Grande, and then northward toward the pueblo of Puala near Bernalillo, at least 17 Pueblos abandoned their homes and fled toward the sierra on the east. While waiting for them to return to Puala, Luxán noted that the houses contained, "large quantities of maize, beans, calabashes, and other vegetables, cocks and hens and much crockery. We provisioned ourselves well of these things" (ibid. 80–81).

Then, the entire Spanish force with Espejo left on an excursion to the west, through Ácoma and Zuñi, and as far as the Verde River. Returning, they became embroiled at Ácoma, and were then refused food at two other pueblos on the way. Upon reaching Puala, they again asked for food and were met with mockery and insults.

> In view of this, the corners of the pueblo were taken by four men and four others with two servants began to seize those they could lay hands on. We put them in an estufa. And as the pueblo was large and some had hidden themselves there we set fire to the big pueblo of Puala where we thought some were burned to death because of the cries they uttered. We at once took out the prisoners two at a time and lined them up against some poplars close to the pueblo of Puala and they were garroted and shot many times until they died. Sixteen were executed, not counting those who burned to death. Some who did not seem to belong to Puala were set free. This was a strange deed for so few people in the midst of so many enemies (Luxán, from Hammond and Rey, 1929: 116).

The die of relations with the Spaniards was cast. Where they appeared strong and nearby Pueblos had been punished, there was submission; distance and strength increased resistance. Thus the Queres, neighboring on Puala, supplied the Spanish bountifully; as the Spanish forces moved eastward toward the plains they were furnished with food by the pueblo of Jumea; at Pocos, an impregnable village, they were refused. At Pecos the Indians submitted and provided them with piñole only after the Spanish had determined to set the pueblo afire. Here they seized two guides to lead them to the buffalo plains (Hammond and Rey, 1929: 118–120).

This force of Spaniards vanished down the Pecos River toward the mining settlements along the Conchos. It was the summer of 1583, and for 7 years until the De Sosa expedition of 1590–91, the Pueblo area would be free of the physical presence of the Spaniards. Their presence, in increasing numbers at the mining settlements in southern Chihuahua, and the activities of slave catchers working northward from the Conchos, remained a threat.

COLONIZATION

In late January 1598, the Oñate expedition of approximately 400 people, who had assembled near Santa Barbara, began moving northward, west of the Rio Grande and toward modern El Paso. This was the largest force ever directed toward the Pueblo country; it was the Spaniards coming to stay, to settle and colonize, to convert the heathens, to live off the country and the people, to establish the encomienda, and to grow rich from the mines. The nucleus of this body was 129 armed and mounted men. Some were traveling alone with only the arms furnished by Oñate; others brought wives and children and servants. There were 11 priests, and Negro and Mexican Indian servants.

They traveled on horseback; there were no less than 1,600 horses. There were 83 carts full of personal possessions and arms, including three cannon. Forming the great body of this winding march were approximately 7,600 head of livestock—1,500 cattle, nearly 3,000 sheep, milk cows, oxen, goats, mules and jackasses, and 55 hogs. This great train bearing down on the Pueblo country moved slowly. It paused to cross rivers and dry, open wastes. By May it had reached El Paso. It divided there and part of it came ahead, up the Rio Grande, with the slower carts and livestock following behind. By July the armed advance guard had reached Santo Domingo pueblo where it paused briefly. Another stop was made at San Juan, after which the party moved on to establish a headquarters at the pueblo of Yunque on the Chama River, where it flows into the Rio Grande. The main body, with the carts and the surviving livestock, reached there in August (Hammond and Rey, 1953, part I, passim).

During the stop at Santo Domingo, on July 7, "there was held a general council of seven Indian chieftains of different provinces of New Mexico, and each one in the name of his province voluntarily pledged obedience to his majesty" (ibid. 320). This general council of representatives from seven provinces or groups indicates that the Spanish, as they moved up river, had maintained very close contacts with a wide representation of Indians, and were either able to call in a council on short notice, or, were carrying these men with them as hostages.

It also suggests, since there was no other contact between the Jumano group and the Spanish, between this date and the mission assignments of September, that it was at this meeting that the names of towns making up each province were obtained, among them the Jumano towns of the "Atzigui" province.

When the main body of colonists arrived at the headquarters on the Rio Grande on August 18, 1598, a new church was started and at its dedication, on September 8, New Mexico was proclaimed a missionary province of the Franciscan Order. The decree, listing the pueblos within the missionary field, contains the names of Patuotzey, Quelotzey, and Genouey, who were called jumanos-rrayados. The mission assignments of the following day refer to the three large towns of Xumanas or rrayados who were called in their (Atzigui) language, Genoby, Quellotezei, and Pataotzei, with their subjects (Scholes, 1940: 276). The Jumano pueblos now were a small part, at the fringe, of a widespread missionary endeavor.

Within a month of the decree, of which the Jumanos were probably unaware, Don Juan de Oñate, with more than 100 men, left the headquarters at San Juan on the Rio Grande on a journey of discovery. They moved eastward, first to Pecos, then south through the Salinas region. One report on their travel beyond the Salinas says, "another day to the Xumas [sic] where within four leagues there are three pueblos, one very large like Cia [Zia] and two smaller ones, and the two pueblos of Salinas and the Xumanes all gave obedience to your majesty." Another document, the Itinerario, merely records the visit as, "and to the pueblos of the rrayados of which there are three, one very large and after seeing one and then the other . . ." Then on March 2, 1599, Oñate reported to the Viceroy that he had in person visited the province of Abó and the Xumanas (Scholes, 1940: 276–277).

In this first close encounter, there was no attempt to extract tribute, nor any attempt at conversion, since the Spaniards with Oñate were anxious to turn westward to discover the sea. If the Jumanos were overawed by the force of more than 100 mounted men, it was a situation that was not to last.

Then, in July of the next year, 1599, a force of 25 men under *Sargento Mayor* Zaldivar appeared at one of the Jumano towns to collect a tribute of mantas and asked also for provisions and tortillas as they said they were hungry. When the Jumanos offered them stones to eat, Zaldivar, with his small force, not caring to force the issue, retired from the field. But he did report this affront.

As a result, the Spaniards returned, under Governor Oñate, in greater force. Oñate first demanded a tribute of mantas and the Jumano gave him 12 or 14 as that was all they had. But the Spanish were not to be put off that easily. They withdrew, but returned the next day with an interpreter, saying now that they wished to punish the Jumanos for failing to supply *Sargento* Zaldivar. With this explanation, the Spanish force set fire to one corner of the pueblo, and as the people fled to the rooftops the Spaniards fired a fusilade of arquebus shots into them. Five or six were killed and several wounded. The populace appeared defiant and indignant at this, not believing it a just punishment. The Spaniards then hanged two of the more bellicose. Then, a dispute arose between a soldier and the interpreter as to what the interpreter had said, and the interpreter was also hanged.

This Spanish force at Las Humanas was not yet in desperate straits; they still

believed that New Mexico was a rich province and that it could be reached from the sea; they were still able to live fairly well off the native population. They were also aware that they were few, and that harsh measures were required to keep the Pueblos in submission. This dovetailed neatly with the desire to convert the natives from their "abominable sins" and to convince them of God's infinite mercy.

That fear and harsh measures were the instruments of Spanish policy should have become more evident after the battle at Ácoma Pueblo where the town was laid waste and the inhabitants enslaved. This lesson was lost, however, upon the people of the Salinas Province, for about Christmas time in 1600, five Spanish soldiers on their way to New Spain were attacked near Abó, and two, Juan de Castañeda and Bernabe Santillan, were killed. The Spanish attributed the murders to the Jumanos, but Abó was not a Jumano village. The deed was perhaps done by a group of traveling Jumanos. A punitive expedition by the Spanish quickly followed. It was met by Indians from several pueblos who had gathered for concerted action at "Agualco" (possibly Chilili, Scholes, 1940: 279). There, after a battle which lasted 6 days, the Indians were defeated. A part of the pueblo was burned and parts damaged, and one male Indian was given to each soldier (Hammond and Rey, 1953: 608–807).

One other large scale battle with the Spaniards at Las Humanas is only briefly reported. Fray Juan de Escalona, reporting to the Viceroy on October 1, 1601, said, "Since I will send a separate report of what happened in the war against the Jumanas, which was the last battle (the first was at Ácoma) I shall not dwell on the matter at this time." In a footnote to this, Hammond and Rey remark, "Neither Father Escalona's report of this battle with the Jumanos nor any other accounts of it have come to light. It is one of the very few incidents of the founding of New Mexico of which no contemporary report has survived" (Hammond and Rey, 1953: 693).

The Jumanos did not survive to join the Pueblo Rebellion of 1680. Now, in 1600, they had only some 72 years to remain a people before they abandoned their homes and were scattered. The beginnings of their destruction were in this period, where, in a harsh land, the loss of a few fanegas of corn, or the theft of blankets, reduced the population as surely as did the sword. That there were countless monthly levies of food and clothing made against the Pueblos, surely including the Jumano, is shown in the report of Captain Velasco to the Viceroy on March 22, 1601. He reported that the system used to support the Spanish population of 500 at San Juan

> . . . has been to send people out every month in various directions to bring maize from the pueblos. The feelings of the natives against supplying it cannot be exaggerated, for I give your lordship my word that they weep and cry out as if they and all their descendents were being killed. But in the end, necessity has compelled us to do this to keep from starving to death. . . . I have even seen and observed that the natives pick up the individual kernels of maize that fall to the ground; the Indian women will follow behind the loads for two leagues for this purpose. Practically all the Indians are naked. Some, however, wear some sort of Cibola skins, and the women wear small cotton blankets with which they cover their nakedness. The women build their little huts; the men weave the blankets.

> Despite this poverty, they were required to contribute one blanket, a skin, or a buckskin per house per year. Until this year this tribute has been collected with such severity that it availed them nothing to say that they had nothing but what they had on. The Spaniards seize their blankets by force, leaving the poor Indian women stark naked, holding their babies to their breasts (Hammond and Rey, 1953: 608–610).

MISSION PERIOD

The Spaniards in New Mexico were in a precarious position in 1601 when Oñate returned from his long excursion to the plains in search of Quivira. While he had been absent, many of the soldiers and Franciscan clergy had deserted San Gabriel and returned to New Spain. From 1601 until Oñate's resignation in 1608, the survival of New Mexico was seriously in doubt. The reported existence of rich mines had proved a fallacy; farming was not profitable. Men who had come expecting adventure and wealth found New Mexico a poor and disappointing country. By Spanish tastes it was freezing cold in winter and blistering hot in summer. It was also incredibly isolated. The average trip to Mexico City took about 6 months, and when the mission supply trains were organized, their round trip time was somewhat over 3 years.

Against this lack of material wealth, was the wealth of Pueblo souls. Spanish tradition of that period, insisting upon absolutism in both political matters and in religious orthodoxy, made it imperative that the converted Pueblos not be abandoned to return to paganism, but that they be maintained as subjects of the faith. It was the alleged success in the conversion of the Pueblos, no matter how thin or imposed the veneer of faith might be, that prevented the abandonment of New Mexico as a colony and changed its character from one of an intended self-supporting area, which would contribute to the Crown, to primarily a mission field. The decision to maintain New Mexico as a missionary field was outlined in a decree of the Viceroy, Don Louis de Velasco, on January 29, 1609. The faltering missions were to be reinforced by 6 friar priests, 2 lay brothers, and 10 additional soldiers, and it was specifically noted that the expenses of the clergy and everything necessary for the trip were to be charges against the royal treasury (Hammond and Rey, 1953: 1076–1077).

While conversion to and retention in the faith of the native Pueblo population became the official basis for the maintenance of New Mexico, at the expense of the Crown, the Pueblos had, since the first days of Oñate, in fact formed the economic basis for the colonization efforts. They were to remain as this economic basis and to become, further, the pawns in a vicious struggle between the civil governors and the clergy. The Spaniards in New Mexico were not yet self-supporting; they were, in large measure, dependent upon the Pueblos for food and clothing, and for a labor force. In the sometimes desperate struggle between the church and the state, and with the encomenderos often forming a third party, whoever controlled the Indians also controlled a large measure of economic power and the means for survival. The most lucid and detailed accounts of this fight for dominance in the New Mexican scene are to be found in Scholes, *Civil Government and Society in New Mexico in the Seventeenth* Cen-

tury (1935), *Church and State in New Mexico 1610–1650* (1936–37), and *Troublous Times in New Mexico 1659–1670* (1937–41). The brief résumé of this conflict, as it affected the Jumanos, is taken primarily from these works. They make fascinating reading for anyone concerned with the population decline and the steps preceding the abandonment of Las Humanas.

Population

Few of the men who followed Oñate to New Mexico were true colonists in the sense that they intended to till the land and establish an agrarian economy. The desertion of 1601 thinned their ranks. Until about 1650, the nonnative population in New Mexico did not exceed 1,000 persons and this population was made up of "Spaniards, Creoles, castes, and Mexican Indians." The leaders were the Spanish soldier-citizens, and while they did found families that eventually became attached to the land, they were, instead of settlers, true professional servants of the Crown. They formed the core of a standing military force and they became active in political life. They also became the leading encomenderos (Scholes, 1935: 96–98). In the decades immediately after 1610 the few immigrants added to the nonnative group came, if not from the lower, more ignorant classes, from farther south, as fugitives from justice. The total provincial society of this period has been characterized as one of ignorance, superstition, greed, and moral laxness. The long succession of governors, and at times even the clergy, exhibited these traits, and together they sometimes set an evil example for the lesser members of this society.

The Church

In 1610, the church was a powerful institution. The clergy possessed immunity from civil law. The church with its own system of courts and judges had jurisdiction over provincial officers. It held the powerful weapon of excommunication and for most of the period the church was also backed by the dread office of the Inquisition. It covered the crimes of heresy, apostacy, blasphemy, bigamy, the practice of superstition, sorcery, propositions subversive to the faith, denial of ecclesiastical authority, lack of respect for ecclesiastical persons and institutions, solicitation in the confessional, and evil-sounding words. No nonnative member of the population was exempt; Spaniards, Creoles, Negroes, mestizos, mulattoes, clergy, laymen, officials, and private citizens were subject to its authority. The civil courts were forbidden to interfere in its affairs and the broad definitions of heresy and related spiritual crimes made it easy to bring charges against civil officials who resisted the policies of the church (Scholes, 1936: 17–18).

Prominent New Mexicans who were arrested or tried by the Inquisition on various charges included Governor Lopez and his wife, Doña Teresa; Sargento Mayor Gomez; Captain Aguilar, the *alcalde mayor* of the Salinas district; Capt. Diego Romero; Capt. Cristobal Anaya; and Governor Peñalosa. At one time in New Mexico, the church seized Governor Peralta (1610–14) and held him prisoner for several months, first at Sandia Pueblo and then at Zia. ". . . long before witches were being tried in Salem and men were punished for free thought

in Boston, Santa Fe had its own witch problem and men were dragged through its streets to do public penance for offending the church" (Scholes, 1935; 105).

The clergy no doubt felt that their rights and powers were still insufficient, considering the magnitude of the task they faced. They were charged with continuing the conversion of a Pueblo people scattered up and down the Rio Grande, to Pecos and the Salinas country on the east, and to Zuñi and the Hopi towns far to the west. They first had to reach, and establish themselves in, these far-off areas in a hostile country; the military escort for friars was always an item of contention with the civil authorities. There were the practical problems of requisitioning quarters, of forcing the natives to construct a mission, or of setting aside native quarters until one could be started, and of seizing farmlands and pasturage for the mission's support. These were the necessary adjuncts to the main tasks of imposing a new faith on a solidly conservative people, of stamping out all native religious acts and ceremonials, of destroying the influence of the native leaders, and the imposition of a rigid monogomy on a people whose code of moral and sexual relations was somewhat flexible (Scholes, 1937:144).

One primary cause of strife between the clergy and the civil administration and the encomenderos, their compatriots, was the use of Indian labor. Every Indian working at the mission as a farmer or herdsman, mason, carpenter, laborer, porter, cook, personal servant, or sacristan, was that much less labor available to the governor or an encomendero. To weaken the economic base of the missions and to make more labor available for themselves, the governors often took the part of the Indians against the church. Governors Lopez and Eulate, in particular, tried to hinder the building and repair of churches; Lopez encouraged the Indians to disregard the friars' orders, and permitted some return of native ceremonies. Lopez decreed that all labor at missions was to be voluntary and to be paid for at the rate of 1 real per day.

In the welter of charges and countercharges, it is evident that while many accusations were exaggerated, the church did possess a solid economic foundation based upon the labor of the Pueblos. In the 17th century the most important herds were owned by the mission friars and were tended by Pueblo herdsmen. The surplus livestock was exported to the mines of New Biscay, in the Conchos region, and the proceeds were used for the purchase of vestments, organs, images, and other church accessories. Improper activities were conducted on a large scale. Charges brought against Governor Lopez during his *residencia*, the public accounting of his term of office required of every outgoing governor, conducted by his successor and open to clerical and lay grievances, included claims by the clergy for heavy losses in maize for lack of Indians to till the fields. This indicated large scale farming as well as herding operations on the part of the church. (Scholes, 1938: 66, 67).

Civil Governors

Civil governors, whose normal term of office was 3 years, were the natural enemies of the Indian population and the church. They were a greedy and rapacious lot whose single-minded interest was to wring as much personal wealth from the province as their terms allowed. They exploited Indian labor for trans-

port, sold Indian slaves in New Spain, and sold Indian products such as maize, mantas, dressed hides, and other goods manufactured by Indian slave labor.

Payment of tribute to the governor began with Oñate. Frequent levies against the Pueblos have been previously noted for this period. The Velarde investigation of 1601 reported that "Altogether they [the Pueblos] pay the governor a tribute of about 2,000 cotton blankets a yard and a half long and almost as wide, 500 dressed buckskins, 5,000 or 6,000 fanegas of maize and beans and a very small number of fowls" (Hammond and Rey, 1953: 630). When the new governor, Peralta, founded the villa of Santa Fe in 1610, he found that Indian labor was absolutely essential for the building projects there. To undertake this construction, groups of Indians were summoned from the several pueblos in relays. They were not paid and were given only the most meager rations of toasted maize or nothing at all. The Spanish were still apparently dependent upon the Pueblos for maize collected as tribute.

Peralta was followed by Ceballos and he by Eulate in 1618. In addition to his harassment of the church, Eulate was also charged with rounding up Indians in lots of 40 to 100 for forced labor on the colonists' farms, and using them as burden bearers for tributes, wood, and other cargo. Eulate was apparently the first to issue the soldiers permits to seize any orphan boy or girl in the pueblos and use them as personal servants. It was also during Eulate's term that the capture and sale of Apache slaves became widespread. Eulate sent several slaves to Parral to be sold for his personal account, along with 16 wagonloads of goods. Each governor improved somewhat on the methods of his predecessors and the charges of the clergy against the rapacity of the governors varied only in detail. Baeza (1634–37) seemed to specialize in pinyon, for he forced the Indians to gather them in great quantities and to carry them on their backs to his warehouse; other Indians were weaving and painting quantities of mantas, bunting, and hangings for his caravan to New Spain.

Governor Rosas (1637–41) was the first to establish a large workshop in Santa Fe for production of items, particularly cloth, for export. Both Pueblos and "Utaca" captives worked long hours there under conditions of virtual slavery. The inventory of one shipment sent by Rosas for sale in Parral included 1,900 varas, or 1 mile, of coarse woolen cloth, 122 hides, 79 jackets, 198 dressed skins, 900 candles, 24 cushions, 106 hangings, and 476 mantas (Bloom, 1935: 242). He was also charged with using an unpaid labor force to grow large quantities of food.

Governor Lopez (1659–61), who championed the rights of the Indians against the church in order to free more labor for his personal gain, began his term of office by importing from New Spain a large stock of goods for sale. He opened a store in the Casa Real and was in business. He had agents rounding up Indians to manufacture goods for export. By now the Pueblos along the middle Rio Grande had been taught to make the extra carts needed for the governors' caravans. Lopez was among the more active of the governors; he sent three caravans of goods south for sale in New Spain. The inventory of one included 1,300 deerskins, 600 pairs of woolen stockings, 300 fanegas of pinyon, and quantities of jackets, shirts, salt, and bison hides. Another caravan included 70 Apache slaves; a healthy Apache boy or girl brought 30 or 40 pesos.

At the end of Lopez' term, claims against him included the labor of 60 Indians for 17 days carrying pinyon from Cuarac and Las Humanas to the Rio Grande, 19 Indians for 6 days' labor carrying maize from Tabirá and the Jumano Pueblo to the house of Nicolas de Aguilar, and additional labor from Las Humanas as, 23 Indians for 5 days, 51 Indians for 3 days, and 12 Indians for 6 days. Also in this bill of particulars were charges for some 1,399 stockings and the cost of washing 500 hides at Jemez.

Encomenderos

The system of encomienda was brought to New Mexico from New Spain. The encomienda was a grant, by the governor, to a Spaniard, of the right to collect tribute from a certain group or village of Indians. This granting of the right of encomienda was in return for certain duties and obligations, or in recompense for services to the Crown, such as assisting in the founding of New Mexico, performing governmental duties, and for forming part of the standing professional military force, the citizen-soldiers. Of these duties, the most important became the military obligation; the encomenderos were leaders of the local militia for protection against marauding nomadic bands, and for frontier duty in reprisal, against the Navajos and Apaches. The frontier duty became irksome in time as the encomenderos' ranching interests increased. For, while the encomenderos were often in league with the governor, frontier duty could be used by the latter as a form of banishment to keep recalcitrant encomenderos in line. Taos or the Hopi towns were the Siberias of 17th-century New Mexico.

The encomienda was not an outright grant of a town or pueblo to the encomendero; it was only the right to collect tribute from such a village, and a rather rigid code of laws had been drawn up for the protection of the Indians against the encomendero. In New Mexico the enforcement of these laws was rather lax and the effect was sometimes quite the same as owning the pueblo. One of the more basic of the laws for protection of the Indians, forbid the encomendero from living at the pueblo in which he held the right of encomienda. It was also one of the more frequently violated statutes, and several New Mexico encomenderos either lived at their pueblos or had ranches nearby.

In these violations, the church usually took the part of the Indian, joining in complaints that the encomendero's livestock trampled the Pueblo fields, while the argument of the encomendero was that he furnished protection against Navajo and Apache raids, and that he was instrumental in converting the natives to the faith. Disciplinary actions against the encomenderos were rare except in the most extreme cases. Governor Lopez had the home of encomendero Antonio de Salas at Pojoaque Pueblo torn down and a Salas son banished to the Hopi country. Peralta fined Asencio Archuleta 50 fanegas of maize and 50 mantas for abuses against the Indians. Evidently these fines were remitted to the Indians for, ". . . seeing that the Governor actually executed the decrees, the Indians, 'greedy for mantas', provoked and invited the Spanish to commit acts of violence in order to claim damages" (Scholes, 1936: 48). By the 1660's the number of encomenderos in New Mexico had become fixed at 35. Some seemingly held an entire pueblo, while others were granted portions of the tributes

from one or more towns. As examples, Francisco Gomez Robledo held the entire encomienda of Pecos while Capt. Diego Romero held half of Cochiti and half of Zia. Tributes were normally collected in two installments in May and October of each year (Scholes, 1940a: 251).

PUEBLO OF LAS HUMANAS, 1610–72

The last large scale battle with the Spaniards, briefly noted by Father Escalona, was in 1600 or 1601. Despite the losses suffered there, the Las Humanas pueblo was still the largest of the Jumanos-rrayados group—as the Spanish must have been well aware during the 1610 conscription of labor for the building of Peralta's Santa Fe. Benavides said the pueblo contained 3,000 Indians in 1627. Somewhat negative evidence indicates that Las Humanas was granted in encomienda well before 1620. A viceregal decree of that date, regarding, among other things, the collection of the encomienda, specifically prohibited such collections of tribute at Zuñi and Hopi because they remained unconverted. By implication, all other pueblos were converted and subject to encomienda and this would include Las Humanas. About 1658 Alonso de Rodríguez and Miguel de Inojos were in court over the tributes from a one-third part of the encomienda at Las Humanas. In 1669 another share, one of the "three parts" of the encomienda "of the Pueblo of Jumanos of the Tompiro nation" became vacant through the death of Alfred González Bernal (Scholes, 1940: 282–283). It is suggested that the litigants of 1658 and 1669 were quarreling over a third of an encomienda which may have become divided through inheritance and that because of this—its large size and opportunity for large tributes—Las Humanas had been in encomienda since the early part of the 1600's.

The caravan to New Mexico of 1609–10 brought both the new governor, Peralta, and Fray Alonso de Peinado who came with church supplies, renewed hope, and eight new friars. Missionary activity had been on the decline since the desertion of 1601; now with the arrival of these recruits there began a build-up of missionary activity and the conversion of the natives was put on a much sounder basis. Peinado increased the range of missionary work; by 1613 missionaries had penetrated to Chilili. This auspicious start was then nullified by the arrival of a new prelate, Isidoro Ordoñez, in 1612. He was a controversial figure, and his papers to office may have been forgeries. To the great detriment of mission work, Ordoñez soon became embroiled in an open fight with Governor Peralta. The quarrel, which resulted in the arrest of the governor (and the incident of his being covered with an animal skin like an Indian and taken to jail on a horse), set the unhappy tenor of church and state relations in New Mexico for the next several decades.

Ordoñez was not on amicable terms with all of the friars under his jurisdiction, and soon Peinado "banished himself" to Chilili, where he continued his labors free of the wrangling in the capital. The new prelate gave his time to subjugating the civil arm and elevating the church in all matters. The friars were dissatisfied and some attempted to return to New Spain. Little time or effort

was left for missionary activity, and it was not until 1622 that the mission field was extended from Chilili to Abó (Hodge, Hammond, and Rey, 1945: 263 fn).

The Jumanos-rrayados still remained outside the fold, at the fringe of the Pueblo area, and the need was ever for more friars. Twelve arrived in the early winter of 1626 accompanied by Fray Alonso de Benavides, the new custodian of the church and the commissary of the Inquisition; they joined the 14 friars already in New Mexico. Sotelo Osorio was the new governor and he and Benavides were on fairly friendly terms. Benavides was an indefatigable worker and publicist, and from his brief sojourn in New Mexico (1626–29) he wrote the famed *Memorial* and the *Revised Memorial of 1634*. He is credited with the first recorded missionary efforts there in 1627, if not the first attempts at conversion of the pueblo of Las Humanas.

Benavides wrote that he had been followed at Las Humanas by Fray Francisco Letrado who continued the conversions and who "established there a convent and a very fine church." This was substantiated in part by the *Relación Verdadera*, of Fray Esteban de Perea. Fray Perea, who had previously served in New Mexico, returned to the missionary field in 1629 to succeed Benavides. He brought with him 30 friar recruits, and the *Relación* notes the assignment of eight of these recruits to the Jumano area; "Father Fray Antonio de Artiaga, preacher; Fray Francisco de la Concepción; Fray Thomas de San Diego, reader of theology; Fray Francisco Letrado, Fray Diego de la Fuente, Fray Francisco de Azebedo—Priests—[and] Fray Garcia de San Francisco and Fray Diego de San Lucas, Lay Religious . . ." (Bloom, 1933: 225–226).

In discussing the possible Indian name of the Jumano pueblo where the conversions by Benavides took place, Scholes (1940: 280) observes that while both Benavides and Perea refer to it as a large place, neither names it as other than "Jumanos." Later documents also merely refer to it as "the pueblo of the Jumanos." Since in Oñate's time there were one large and two smaller Jumanos-rrayados pueblos, Scholes assumes, as a point of discussion, that the larger one is the village referred to by Benavides and Perea. The oath of allegiance of October 17 was given at Cueloce—and Scholes expects that the oath would have been administered at the largest pueblo of the group. This, then, leaves Genobey and Patoce as the smaller villages, and Cueloce as the large pueblo of the Jumanos—or Gran Quivira.

It is suggested here that the reason the village of Jumanos was always referred to by that term, instead of by some Indian name as were other pueblos, was because the Jumanos-rrayados always remained its most distinguishing characteristic. Benavides' idea, that the pueblo was called Jumanos because that nation often came there to trade and barter, has been discussed previously. It is worth noting in this respect that Benavides was the only Spaniard who ever referred to the plains Jumanos trading at Gran Quivira, while several others specifically noted trade with the Apaches. The Valverde Investigation of 1601, when the Apache were sometimes known as the Vaquero, says of trade among the eastern Pueblos:

> There is no buying or selling or barter among them nor do they have public places where they come to buy and exchange. They trade only with the buffalo hunting Vaquero Indians who bring them dried meat and fat

and dressed skins; they give them maize in trade and cotton blankets painted in various colors, which the Vaqueros do not have (Hammond and Rey, 1953: 628).

Nicolas de Aguilar, a close observer of the scene at Las Humanas, said in 1663 of this trade with the Apache of Seven Rivers:

> But God willed that they [Apache] should not be reduced to peace, and a pact was made with them that they should not pass beyond the pueblos of Humanas and Tavira, where they come to barter. . . . This pact has been observed and the Indians of Cuarac have been ordered not to go to the pueblos of Humanas and Tavira at the times when the Apache Indians of Los Siete Rios should come to trade, for, if the nations should avoid seeing each other there would be no war. . . . The Indians of Cuarac having upon this occasion gone to the pueblo of Humanos upon command of Father Fray Nicolas de Freitas, he wanted to punish them, for there were at that time Apache Indians in the pueblo of Humanos, and it was possible that if the two nations should see each other they might again start trouble, for this is the usual thing among them (Hackett, 1937: 143).

The Apaches regularly came to trade at Las Humanas after the 1650's, if not before. Freitas' statement of 1661 regarding Las Humanas ". . . that pueblo is the most populous one in these provinces whither they gather from all parts to trade antelope skins and corn . . ." (ibid. 135), indicates further that Las Humanas was a regular trading center for Apache-Pueblo barter. That it was so considered is shown by the Spanish attempt to prevent the Apaches of Seven Rivers from trading north of the Jumano-Tabirá area, and from their strict prohibition against the inhabitants of Quarai from coming into contact with the Apache at Las Humanas. The statements of Freitas and Aguilar also make it appear that Las Humanas, for a time at least, was on far better terms with the Apaches than were pueblos to the north, where trouble was "the usual thing among them."

In the long period between the conversion by Benavides, and the renewed activity there in the 1660's, the pueblo of Jumanos at Gran Quivira was not far out of the main stream of events. Governor Peralta, with his conscription of labor for the construction of Santa Fe, began the ever increasing demands of the civil governors upon the Pueblo peoples. Eulate, through his long term of office from 1618 to 1625, not only rounded up groups of from 40 to 100 Pueblos to work on the colonists' farms; he also, at the same time, advised the Pueblos to resist the church. He encouraged them to return to their old pagan customs and ceremonies. He abused and insulted the clergy in the presence of Pueblo groups. And while defending the Indians against the teachings of the church in the matter of traditional religious customs, Eulate gave their children into slavery. It will be recalled that he was the first to issue *vales* or permits to the soldiers empowering them to seize any orphan boy or girl in the pueblos as personal servants. While the intent, or excuse, was to give them a Christian upbringing, the effect was slavery.

Benavides' brief missionary efforts at Las Humanas were followed by the ministry of Fray Francisco Letrado. Letrado was one of the new recruits brought back from Mexico by Custodian Esteban de Perea in the spring of 1629, and he, presumably, began his labors at Las Humanas by the middle part of that year (Bloom,

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1933: 225–226). Letrado's was a short term; his name next appears as that of a martyr at Zuñi in 1632. Years later, in 1660, Mendoza stated that there had not been a *doctinario* in Las Humanas for 29 years; this would fix the date that Fray Francisco Letrado left his charges there as 1631.

While Benavides wrote that Francisco Letrado had "established a convent and a very fine church," Scholes (1940: 282) is of the opinion that Letrado established a convent only in the sense that he was the director of a resident mission, and that if he had actually started building a church, it was completed by Acevedo who is generally credited with the church structures at Abó, Tabirá, and Las Humanas. This view is apparently based on a single statement by Aguilar, during his trial by the Inquisition in Mexico City, in 1663.

Scholes possibly had in mind such imposing structures as San Gregorio de Abó, the magnificent church at Quarai, and San Buenaventura. Considering the size of the little church here, San Isidro, its thin walls and the fact that it is dug, in part, into a hillside—this in comparison with the native population, the largest in the area—then it appears entirely possible that Francisco Letrado may have directed its construction during his brief stay from 1629 to 1631. This is dealt with in more detail in the chapter on "Excavations: The Chapel of San Isidro."

Fray Letrado's success among the Jumanos of Gran Quivira is not known, but the typical problems that he faced, and the mechanics of converting a pueblo, were recorded by Esteban de Perea for a similar event at Zuñi, also in 1629. This was the conversion of that group by Father Fray Roque. First there was the example set for the Indians by the soldiery:

> . . . and to give that people to understand the veneration due to the Priests, all the times that they arrived where these were, the Governor and the soldiers kissed their feet, falling upon their knees, cautioning the Indians that they should do the same. As they did; for as much as this the example of the superiors can do.
>
> A house was bought for lodging of the Religious and at once was the first church of that Province, where the next day was celebrated the first mass. And hoisting the triumphal Standard of the Cross, possession was taken. . . . To the first fruits of which there succeeded, on the part of the soldiers, a clamorous rejoicing, with a salvo of arquebuses; and in the afternoon, skirmishings and caracolings of the horses. Since they were knowing people of good discourse; beginning at once to serve the Religious by bringing them water, wood, and what was necessary.

After this auspicious start, there was a period of cooled fervor when the Indians became indifferent and in which, "they did not assist, as they were wont, to bring wood and water." Fray Roque directed his energies to the head men of the village and with divine help won over these "Caciques and Captains of the Pueblo." Then, after instructing them in ritual for a few days, Roque determined upon a mass baptism for Zuñi.

> . . . and in order to make this act spectacular, he ordered a high platform to be built in the plaza, where he said mass with all solemnity, and baptized them . . . singing the *Te Deum Laudamos* etc.; and through having so good a voice, the Father Fray Roque—accompanied by the chant—caused devotion in all (Bloom, 1933: 228–234).

Perea's interesting description of converting Zuñi to the Roman Catholic faith suggests that Letrado at Las Humanas, as Benavides before him, was not concerned with individual conversions, but relied upon mass appeal and mass baptism to establish a functioning church. The soldiery at Zuñi, besides affording protection to Roque, gave the affair somewhat the aspect of a fiesta with arquebus shots and skirmishings and caracolings with the horses. This was an insecure base at Zuñi and the Indians murdered Francisco Letrado there 3 years later.

The civil governors of Letrado's time and immediately thereafter—Nieto 1629–32 and Mora to 1634—had little effect on the distant Jumanos except as the annual tribute was concerned. Unless, as has been suggested, the pueblo was in encomienda this early, Spanish influence did not materially increase during the few years after Letrado left. The 1634–37 term of Gov. Martinez de Baeza was again one of renewed activity. De Baeza was building his fortune on the export of goods gathered from the Pueblos. Some Indian populations were sent out to gather pinyon nuts and hides, and to transport these on their backs to the governor's warehouse. Other pueblos wove mantas and wall hangings. The proximity of the Jumanos to the pinyon-covered Chupadera Mesa and their trade with the Apaches for hides must have made them a prime source of revenue.

Luis de Rosas, governor from 1637 to 1642, brought new methods of commerce and increased dislocation to the Pueblos. He established a workshop in Santa Fe to which were brought groups of conscripted Pueblos for the manufacture of textiles, and we assume that in this period no single pueblo, as Las Humanas, could have escaped the forced labor. Governor Rosas' policy of enslaving the nomadic tribes redounded to the detriment of all the Pueblos, and the effects of this harsh policy continued long after Rosas was out of office and had been murdered. From one foray against the Utes, Rosas sent 80 prisoners as conscripts to his shop in Santa Fe. An attack upon friendly Apaches during a trading expedition to the plains resulted in additional prisoners, some of whom were sent to the workshop in Santa Fe, while others were sold as slaves in New Spain.

These slaving expeditions aroused the Apaches in particular, and they retaliated by attacking the pueblos and the frontier settlements. In reprisals in 1640 the Apaches burned an estimated 20,000 fanegas of corn. During that same year a "peste" or epidemic killed 3,000 Indians, or 10 percent of the aboriginal population (Scholes, 1937 passim). It is no wonder that after having been subjected to Christianity with such increasingly disastrous results the Pueblos longed increasingly to return to their traditional ceremonies for solace and hope.

Still, Christianity was making at least some physical progress, for near the end of Rosas' term, 1642, a mission report noted that Abó now had two *visitas* and that one of these was Las Humanas.

Rosas was followed by Flores who died shortly after taking office. The cabildo in Santa Fe took over and were soon supplanted by Governor Pacheco. These were indeed troublous times in New Mexico, and the energies of the principals for both church and state were taken up with fighting each other. Ex-Governor Rosas and one Sandoval were murdered, and Pacheco executed eight members of the Santa Fe cabildo and their supporters. He threatened to behead Covarrubias, the custodian of the church in New Mexico. In this the Indians

were injured but innocent bystanders, for Pacheco had orders read prohibiting the Pueblos, on pain of death, from obeying the clergy in any way.

Despite the conflicts between the Spaniards, slave raids against the Apaches increased, as did Apache reprisals. Friar Andres Juarez, in 1647, reported that expeditions were constantly being organized for the purpose of seizing Apaches to be sold in New Spain, and that Apache retaliation was increasingly severe, "as happened during the time of the past governor when they killed 40 in one pueblo and seized eight prisoners" (Scholes, 1937: 99 and passim). While some Apache groups maintained trade relationships with Las Humanas into the 1660's, the pueblo was not immune to attacks. Governor Samaniego y Jaca noted one such instance in 1653,

> . . . when in the same manner he [Mendoza] went on my orders to the Sierra Blanca to make war on the Apache nation, enemies common to our Catholic holy faith, who we affirm have profaned and robbed the holy church of the Jumanos and who took as prisoners of war twenty-seven women and children . . . (Scholes, 1940b: 281).

Scholes notes further that as a result of this incident the church may have been partially destroyed.

By 1660 the missionary effort was revived at Las Humanas. The situation in regard to construction of churches there is still a bit clouded; three men are involved. The first of these was Letrado, and the possibility that he should be credited with construction of the chapel of San Isidro will be discussed further. It is probable that San Isidro was the church partially destroyed by the Apaches about 1650. The second friar was Francisco de Acevedo from the mission of Abó. Aguilar later testified that Acevedo had administered to the area for 30 years, had always taken Indians from Abó to Las Humanas to celebrate the feast of San Buenaventura, and that further, Acevedo had built churches in Abó, Tabirá, and Las Humanas (Scholes, 1940: 281). There are two possibilities. One is that Aguilar was crediting Acevedo with construction, or completion, of the chapel of San Isidro. The second possibility is that he was crediting Acevedo with starting the construction of the massive San Buenaventura. If either of these is correct, the construction was done while Acevedo was stationed at Abó and was administering to Las Humanas as a *visita*.

The third friar involved was Diego de Santander. In 1660 Fray Diego de Freitas referred to Las Humanas as being a new conversion, or one that up to that time had not had a resident minister. At one point Freitas quoted Santander as completing the construction of a church, and at another point made a slighting remark in regard to these activities, ". . . or as he [Santander] says later, building from its foundations the church and convent of the pueblo . . ." (Hackett, 1937: 160–161). At any rate, the revived missionary effort saw Santander installed as father guardian and minister in 1660; he is credited with directing the major part of the construction of San Buenaventura, if not with its inception.

The last years of the pueblo of Las Humanas at Gran Quivira saw accelerated and intensified the disastrous trends that had conditioned its existence throughout the Hispanic contact. It, and the entire Salinas province, came under the domi-

nance of Nicolas de Aguilar, *alcalde mayor*, an energetic disciple of the civil governors in their feud with ecclesiastical authority. The renewed missionary activity resulted in an extraordinary amount of labor required to construct the large San Buenaventura and its convento; the pueblo was held in encomienda necessitating the payment of tributes; the clergy busily trying to stamp out the age-old religious ceremonials and the accompanying *catzina* dances, while, at the same time, the civil authorities encouraged the Indians to perform them. Lastly, drought and Apache depredations took their toll.

The designation of Tabirá as a *visita* of Las Humanas increased the importance of the new mission of San Buenaventura there; this importance however, did not ease Fray Santander's problems, but only served to increase them. The greatest portion of this difficulty stemmed from conflict with the civil government under Lopez (Don Bernando Lopez de Mendizabal) and Lopez' agent, Aguilar. There were several areas wherein this conflict was particularly bitter. One of these areas concerned the use of Indian labor for construction of the mission church and convento, for the maintenance of the structures, and for church activities in general. Lopez raised the wage rates to be paid by the clergy for such work, from one-half real per day to one real. This labor was ordered to be strictly voluntary on the part of the Indians except that two Indians, a sacristan and a *cantor mayor*, were to serve the church in exchange for exemption from tribute. Both Governor Lopez and Aguilar took the point of view that even assistance in the choir and at the altar were to be voluntary. The controversy was particularly bitter in the Salinas area and at Las Humanas where Santander required vast amounts of labor for the construction of San Buenaventura and its large convento, and where the Indians under Aguilar were being used in large numbers to accumulate quantities of salt, hides, and pinyon for the governor's account (Scholes, 1937: 406–407). As for the construction of San Buenaventura: if we can believe the testimony of Fray Nicolas de Freitas—one of the more belligerent of those upholding church rights—when Fray Santander was engaged in this construction, Governor Lopez ". . . commanded under penalty of death that no Indian work on the structure; but the Indians continued at great risk in the construction of the edifice, for they had no church" (Hackett, 1937: 161).

Another point of contention between the church and the civil authorities was the size of the livestock herds kept by the church. If the edict that Indian labor was to be paid was enforced (and this would make San Buenaventura an expensive project), and if the mission church was to have vestments, organs, and the necessary embellishments, there had to be some means of raising the required funds. In the past money for certain mission activities had been raised through the sale of mission livestock and of various commodities such as salt, pinyon, hides, and textiles. The livestock was herded and cared for by the Indians, and the commodities were either gathered and processed by the Indians or made in community workshops maintained by the church. The church was thus in direct competition with the governor and his agents for Indian labor. Lopez banned the sale of mission cattle in the mining towns of the Parral area, their nearest source of revenue. The clergy protested vehemently.

The clergy charged that Lopez closed the road to Parral because the mission cattle cheapened those which the governor was wont to sell in Parral. They

pointed out that they were attempting to teach the natives by precept and virtue, and that the natives were influenced by decency of the churches and by ornamentation and ritual. Lopez replied that churches with costly ornaments and decoration were not necessary; that a few huts of straw and some cloth ornaments, with spoken masses, were ample (ibid.: 188–189).

One direct result of this controversy over cattle raising was seen at Las Humanas where Governor Lopez charged Santander with excessive use of Indian labor in drawing water from wells for herds of livestock; Lopez estimated the herds at a thousand head of sheep and goats and a hundred head of horses and cattle. In a letter to Santander in July 1660, he ordered the herds moved to Abó where there was a stream. Aguilar, who executed the order, later testified that the livestock consisted of 700 ewes, 20 oxen, and 30 horses. He also noted that the wells at Las Humanas were a quarter of a league from the mission and were 40 to 50 estados deep. Even the rainy season afforded little relief, he said, because the ground was excessively sandy and the water so quickly absorbed that pools or impoundments were useless. Fray Freitas challenged the accuracy of these statements saying that there were no more than 400 sheep and goats and only 6 to 8 oxen involved and that the deepest of the 32 wells measured only 5 estados in depth. Nevertheless, the herds were moved to the mission at Abó. This move did not end the argument, for during the *residencia* of Lopez, conducted by his successor, Governor Peñalosa, the clergy filed claims against him for the loss of 1,347 head of livestock at Abó and Las Humanas (Scholes, 1940: 282).

A good deal of the animosity at Las Humanas seems to have been the result of the personalities involved—Fray Freitas (from Quarai) Santander, and Aguilar—three lone Spaniards contending with each other in the wilderness. Aguilar was the chosen instrument in carrying out the policies of Governor Lopez, a task he approached with enthusiasm whenever these ran counter to the desires of the clergy. Throughout Aguilar's tenure the clergy in New Mexico was making determined efforts to stamp out native religious practices and particularly certain public dances which the Spaniards knew by the name of *catzinas*. Governor Lopez, in direct contradiction to the friars, frequently and publicly encouraged the Indians to perform these dances, and on occasion ordered them to do so. The clergy's primary complaints against Aguilar on ecclesiastical grounds, were that he encouraged the performance of the *catzinas*, and that he not only failed to punish Indians for various sins, but that he also prevented the clergy and pueblo officials themselves from carrying out just punishments for immoral practices.

He was charged, for instance, with announcing to the population assembled in the plaza of Las Humanas that they could live just as they chose and that they were not to be punished for any faults by the priest, the *fiscales*, nor the captains. Following this he put his pronouncement into practice and pardoned two Indians at Tabirá whom the captains had caught in illicit intercourse, ". . . scolding the captains for bringing them to him." On another occasion when Fray Freitas, guardian of Cuarac, took some 20 Indian cantors and sacristans to Las Humanas to help celebrate mass, Aguilar ordered them each given 50 lashes. This was the occasion of Aguilar's statement that he tried to keep the Indians of Cuarac

(Quarai) from coming in contact with the Apaches trading at Las Humanas (Hackett, 1937: 135).

Statements by both Aguilar and the clergy, regarding permission given to the Indians to perform certain duties, to receive or escape punishment, prohibitions against performing services for the clergy, and assignments of Indians to them all tend to show that Aguilar was the final authority over many facets of the Indians' lives. For example, ". . . if the religious had wanted one or two Indians [to gather wood] it would have been easy to give them, just as [Aguilar] gave them cooks and herders." (Hackett, 1937: 144). Aguilar also had his own troubles. He was excommunicated, and he charged that Fray Nicolas de Freitas tried to shoot him with a pistol. Fray Fernando de Velasco stated that he attempted to hide Indians away from Aguilar by urging residents of Tabirá and Las Humanas to take away the horses and go to the forest so ". . . that rascal of an Aguilar could do them no harm." Sometime later at Chilili this same Fray Velasco tried to kill Aguilar with a knife which he carried in his sleeve.

With the succession of Peñalosa to the governorship in 1661 and the arrest of Aguilar the next year, the trials of the beset Jumanos were not at an end. They were still subject to two strong-willed masters, each with claims upon their services. While the governor was patently engaged in accumulating wealth through the sale of goods gathered or made by Indian labor, the clergy had for many years enjoyed great freedom in the employment of large numbers of Indians for purposes that could not be considered absolutely essential for the routine services of the church. Each faction took its toll in Indian labor. On the one hand Indians toiled in the workshops of the Governor in Santa Fe, and on the other hand the clergy employed them in large numbers in constructing the vast edifices of San Buenaventura and in gathering pinyon for such luxuries as an organ at Abó. The real losers in the controversy between Santander and Freitas, and Lopez and Aguilar, were the Jumanos, who were the economic basis of wealth and power in the community. Not only were they economic thralls, their way of life was seriously threatened. It was in the period beginning with Peñalosa that the clergy made renewed efforts to stamp out native religion and burned more than 1,600 masks, prayer sticks, and figures.

The fortunes of the entire Spanish effort in New Mexico were sinking to a new low in the late 1660's. In a letter to the Tribunal in 1669, Fray Juan Bernal explained that it was not possible to send a prisoner, one Bernado Gruber, to Mexico because of the overall weakness and exhaustion of the colony. One of the greatest of the difficulties that faced the population, both Spanish and Pueblo, was the increasing activity of the hostile Apaches. Bernal stated that the Apaches attacked both Spanish and "Christian" Indians alike, ". . . and they hurl themselves at danger like people who know no God, nor that there is any hell." In this the Pueblos were no doubt innocent bystanders, hated by the Apaches because of their close, though unwilling, association with the Spanish who had long since begun the practice of raiding the Apaches for slaves.

A second great misfortune detailed by Bernal was a period of severe drought that had begun about 1666. By 1669 no crops had been harvested for 3 years. In 1668 a large number of Indians had died of hunger, "lying dead along the roads, in the ravines and in their huts." At Las Humanas more than 450 died

of starvation. There was no corn or wheat to be had and for 2 years the Spaniards had been reduced to eating hides which they had stored. By this time the drought had affected the range; the herds were dying off and there appeared to be no relief in sight (Hackett, 1937: 271–272).

The long famine which cut down the population also weakened the survivors so that they became easy prey for the inevitable epidemic or "peste" which followed. This still further reduction by the "peste" made Las Humanas an easy victim of the increasingly warlike Apaches. The depredations of which Fray Bernal complained in 1669 were not the last. On September 3, 1670, the Apaches of the Seven Rivers district made an attack on Las Humanas and left a trail of ruin behind. The church was profaned and laid waste, images were smashed, the sacred ornaments were broken in pieces, and "many other atrocities" were committed. Eleven people were killed and 30 prisoners taken by the Apaches (Scholes, 1940: 283).

The attacks were followed by short periods of peace, but when hostilities broke out anew it was Las Humanas and the Saline pueblos which, because of their exposed position, bore the brunt of Apache fury. Fray Ayeta reported another general outbreak in 1672 in which the entire province was affected. Theft of sheep and cattle was the principal Apache objective, but livestock was killed if theft could not be accomplished. No herds were safe and the small flocks which did survive were saved only through constant vigilance and by being kept in the patios of houses at night (Hackett, 1937: 302).

Raids, drought, the "peste"—all were taking their toll of the Jumanos and their final dissolution was close at hand. There was Bernal's statement of 1669 that 450 people had died of starvation there the preceding year. We do not know how many died in the resulting "peste" but 41 persons were lost in the Apache attack of September 3, 1670. The total losses could not have been less than 500 people. Ayeta gave the population at the time of abandonment as 500 (Hackett, 1937: 298). With more than 500 dead and a like number of survivors, Las Humanas had lost more than half of its population in the few short years after 1666.

The total abandonment of Las Humanas appears to have taken place either in 1671 or early in 1672. Ayeta wrote that "from the year 1672" six pueblos were depopulated—Cuarac, Las Humanas, Abó, Chilili, Las Salinas (Tajique?), and Senecu (Hackett, 1937: 298). Escalante stated that there were six abandoned pueblos in the Saline district—Chilili, Tajique, Cuarac, and "Abó, Jumancos and Tabirá of the Tompiros" (Scholes, 1940: 283). The mission assignments, undated except to the year, record that for 1672, ministers were appointed for Tajique, Cuarac and Abó, but there is no mention of Las Humanas and Tabirá (Bloom and Mitchell, 1938: 112–115). Thus it appears that Tabirá and Las Humanas were already abandoned by early 1672 and that the abandonment of the other Salinas pueblos followed soon after. The surviving Jumanos moved west and south, some to join the Piro villages on the Rio Grande, others to the Manso mission at El Paso. In exchange for their homeland, they took with them what must have seemed the dubious boon of Christianity.

GRAN QUIVIRA: TREASURE

Modern Gran Quivira enjoys a persistent and unearned reputation as the locale of a treasure trove existing from Spanish times. And of all the digging that has been done at Gran Quivira, the most persistent efforts over the longest period of time have been carried on within the walls of San Isidro, the small church structure whose excavation is reported in this paper. Just how such a bleak and poverty-ridden site, in a country so poor in minerals that its subsurface wealth is restricted to scanty supplies of unpotable water, came to be associated with rich treasure, is something for conjecture. The tales of riches are based upon the supposition that about the time of abandonment, or at the time of the Pueblo Rebellion in 1680 in some versions, the Spaniards buried here for safekeeping either valuable bells or an accumulated treasure from mining operations.

The stories of treasure possibly originated with the survivors of the abandonment of 1672 since there are references, about a century later, to buried treasure at the site. By Carleton's time, 1853, the immediate area about the ruins and churches bore evidence of the indefatigable treasure seeker; Carleton noted that just prior to his arrival, the area had been visited by a party of Texans interested in recovering treasure.

One particular treasure hunt at Gran Quivira, ending in the church of San Isidro, and presumably beginning there also, started in the 1780's and was continued by one family until 1933. One Don Pablo Yrisarri began his probings at Gran Quivira in the 1780's after having come into the country by way of El Paso where he probably obtained his treasure chart. The El Paso area, the end of the journey for many of the Jumano survivors, was a prime source for later treasure maps. It's a delightful picture—the descendants of the displaced Jumanos selling treasure charts of Gran Quivira to gullible Spaniards. Judging from later interests of the family it is almost certain that Yrisarri began digging in San Isidro. His secret was passed on to a son and a grandson (or great-grandson), a Jacobo Yrisarri who first appears in the records of Gran Quivira in 1916 or 1917. At that time he was reported to have been digging within the mission of San Isidro, following a chart scratched on a white stone that had been found by his grandfather. With this stone as a guide he began to sink a deep shaft in the apse. He was interrupted, however, and according to the files, "taken to Santa Fe and fined," we assume, for violation of the Antiquities Act.

Just who initiated this action is not certain, but it could well have been Dr. E. L. Hewett, who was reported to have had difficulties with treasure hunters both prior to and during his excavations at the monument.

With the area now a National Monument, and with unauthorized mining for treasure illegal, treasure seekers took recourse in permits. A letter of September 27, 1934, from Secretary of the Interior Harold Ickes, notes that "Permits to excavate for this supposed treasure have been previously granted to J. B. Wofford and Alfred J. Otero, the first permit granted in November 1930." Wofford does not figure otherwise in the history of Gran Quivira and it is not certain whether the permit of November 1930 was granted to Wofford alone or was a joint permit to both he and Alfred Otero. In any event, Otero was the holder, in 1932, of a permit to excavate for "certain buried treasure alleged to be con-

cealed on Government property at Gran Quivira." The permittee was bonded in the sum of $500 to insure cleanup of the premises and to cover cost of repairing damage to walls or other structures.

It was Jacobo Yrisarri who turned up again to undertake the work under Otero's permit. Thus, some 16 years after he had been evicted from the monument and hailed into court, Yrisarri was back cleaning out the shaft he had started in the apse of San Isidro. He was following two lines of evidence to the treasure. There was on one hand the white stone unearthed by his grandfather which bore a map to the treasure. On the other hand, the Yrisarris were following a treasure story almost identical to that published by Maj. J. H. Carleton in 1854. In that version the treasure "mentioned by Charles V of Gran Quivira," was located in a stone-covered cellar at the foot of a hill some 300 yards east of the church of San Buenaventura (Carleton, 1854: 312). Rather than dig at the point indicated in the story, the Yrisarris were following the map on the white stone. This map was interpreted to mean that a shaft should first be sunk in San Isidro. From this shaft, then, a tunnel would be found running northwest where it intercepted a second tunnel running eastward from San Buenaventura to the treasure cellar at the foot of the hill.

Yrisarri began work on September 17, 1932, with a force of 10 men, later reduced to 3 men. He reached a depth of some 40 feet and began tunneling westward. In November of that year Associate Engineer Atwell made an investigation of the treasure workings and his report is the only comprehensible data on the undertaking. Yrisarri's shaft had reached a vertical depth of 42 feet. It appeared that he had been following a large crevice in the limestone, but the shaft was timbered so that close examination was not possible. Solid rock was encountered at the 42-foot level. At this point a horizontal drift, now 23 feet long, was being driven in a westerly direction, toward San Buenaventura (and in roughly the opposite direction from the treasure). This was to intercept the tunnel from San Buenaventura to the treasure cellar, at a distance of 40 feet. Most of this horizontal tunnel was also timbered, but Atwell saw that it followed a natural crevice some 5 feet wide. He remarked that the walls of the crevice beyond the timbering, resembled those of cave formations ". . . like Colossal Cave or those in Carlsbad." The material in this crevice was loose. It was being picked up by hand and loaded without the use of picks or shovels. There was also a fairly strong current of air in the crevice, and it seemed probable that the limestone formation here was strongly fissured, with the possibility that small caverns or rooms existed under San Buenaventura (Atwell, 1932).

Yrisarri returned to his diggings in January 1933, after an extended Christmas vacation. By early February the tunnel, or cleaning of the crevice, had been extended to 36 feet, just 4 feet short of his projected interception with the other tunnel leading directly to the treasure. Work was halted at this point.

The permit issued to Alfred Otero, under which Jacobo Yrisarri was operating, expired on December 31, 1933. In 1934, Yrisarri attempted to have this permit extended, since he expected to receive additional financial backing. The extension and a new permit were denied and Jacobo Yrisarri's connection with Gran Quivira was ended. Photographs taken in 1934 show a windlass still in place over the shaft. In 1940, the shaft was backfilled and the site obliterated

as much as possible, though continued settling has marked the spot until the present.

Yrisarri's shaft occupied most of the apse and the forepart of the sanctuary in San Isidro, and the clearing done adjacent to this shaft destroyed the floor and any walls or features in the immediate area. The tailings from the shaft were dumped in the sanctuary and in the nave just beyond, and when they overran this area, were carried to the southeast, across the south wall of the nave and into the brush outside the church. These tailings were never removed under the bond posted and they remained until removed by the National Park Service in connection with the excavation of San Isidro.

DETAIL OF FIGURE 5.

EXCAVATIONS: HOUSE A

They [have] round timbers and flat roofs, so that in the wet season it rains in. . . . In other rooms of these houses they store maize, cotton, ollas and such vegetables as beans, calabashes and greens.

Marcelo de Espinosa, 1601

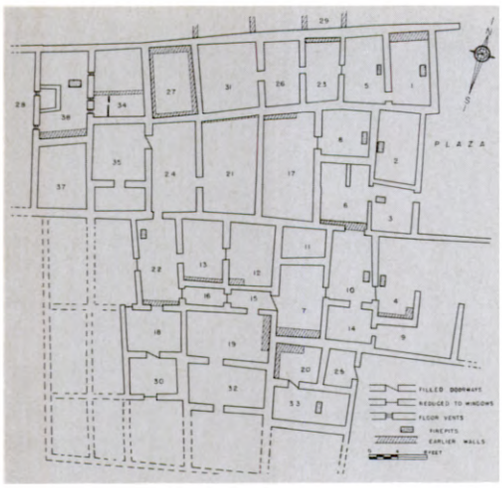

FIGURE 4 Plan of House A. See figure No. 2 for the relation of excavated rooms to the total site and to the work done in 1923–25 east of the plaza.

The structure designated as House A (Mound 10) forms the southwestern limits of the ruin group at Gran Quivira. Beyond it, to the west, lies the open area later occupied by the great mission and convento of San Buenaventura. To the north and northeast are the remaining 16 house groups, the several kivas, and immediately adjacent, the chapel of San Isidro (fig. 2). The excavations were confined to the western half of the mound; 37 interior rooms were cleared. Remains of older walls were exposed within the rooms and extensions of these were traced to the north.

Of the 17 pueblo ruins at the monument, House A was of average area and one of the lowest in height. To the north it was overshadowed by Mound 7, rising some 20 feet above it. Since the results of the earlier excavations are not available, and since they appear to have been made in the same type of structures as House A, not much can be said about the age or growth pattern of the Jumano village. The first overall impression of the village is that the large Mound 7 must have been formed from the collapse of at least a three-story pueblo, and that several of the other ruins could have been two-story sites. But after excavating and stabilizing the walls of House A, it is difficult to envision a pueblo of the same masonry reaching three stories.

House A was built over the remains of an older structure; it is reasonable to assume that the other mounds also represent at least two periods of construction, one over the other, and that the maximum height attained in any one level of occupation was not more than two stories. It will be recalled that the Spanish tended to gather the smaller and more isolated pueblos into larger villages to facilitate both civil and ecclesiastical administration. While we have no record of such additions to Las Humanas, there is the possibility that some of the mounds represent quite late additions made either for administrative purposes or as a gathering together against Apache raids. Village layout in the Jumano area is ably discussed by Mera (1940b) who separates sites into two groups on the basis of whether they are of the compact Pueblo type, or are in open, scattered units, the results, he believes, of a rancheria ancestry.

Prior to excavation, House A was covered with the usual dense brush (fig. 3). The eastern and southern parts lay on a slope so that the true limits of the room area were difficult to define. The mound was a rough oval with the north side straightened by the exploratory excavations of 1923–25. Its greatest dimensions lay east and west—160 feet. It was 80 feet north to south. It was cut in the center, at the north side, by the small plaza outlined in 1923–25. The same work had also cleared two rooms at the west and possibly four or five at the east side of the plaza.

With the underbrush cleared, the outlines of most of the interior rooms were easily followed. Where walls did not extend a stone or two out of the rubble, deep depressions marked a room's center. Excavation began near the center of the mound for ease in disposing of the fill. All of it was eventually trucked away. Once a room corner had been located, a cut was made across the narrow way of the room to floor level. This cut provided a simple cross section of the fill and the remainder of the material within a room was then removed along the lines of the natural strata exposed. Testing below floor level and on the exterior was accomplished after the major part of the excavation was well on its way to completion.

PLAN (figs. 4 and 5)

The entire structure is rectangular, with its long axis lying east-west, the center open for a small plaza. Arrangement of the rooms is rather haphazard. Dr. Erik K. Reed has suggested that the ground plan with the small plaza and the many doorways is reminiscent of the convento of San Buenaventura next door (personal communication).

The 37 excavated rooms can be roughly divided into two sections on the basis of size and arrangement. To the north are two rows of moderate-sized rooms, 19 altogether, averaging some 4 to 5 feet in width and 9 to 11 feet in length. The long axis of these rooms is north-south and there was intercommunication in each row by east-west doorways. They resemble Kidder's transverse section "apartments" at Pecos. There was no evidence of communication between the two rows from north to south. And, except for a single doorway, there was no communication between this and the second group of 18 rooms adjoining them at the south. The rooms in this south group are in general smaller and they are arranged in heterogeneous fashion with their long axis both north-south and east-west. Doorways in this group permit communication both from north to south and east to west.

A comparison of layout and architecture is furnished in the same neighborhood by Pueblo Pardo approximately 1.5 miles south of Gran Quivira, although House A outlived it for some years. Fourteen rooms, a small part of the total site, were excavated during 1941 by the R. E. Allen-Washington Jefferson College Expedition. The ground plan of the 14 rooms at Pueblo Pardo shows a comparable arrangement of small and closely packed rooms, arranged in no definite pattern. Although doorways are not shown, Toulouse states that they were found in all but four rooms (1960: 14, fig. 3).

MASONRY (fig. 6)

The masonry was poor; walls were haphazardly constructed and the mortar was weak. Most walls seemed incapable of bearing a second story. The masonry units were limestone blocks, broken along their natural bedding planes. They were quite variable, ranging from 2 to 5 inches in both height and depth and from 4 to 15 inches in length. This limestone was found close at hand. It underlies the entire ruin area and outcrops under the missions of San Isidro and San Buenaventura. The strata is cracked and fissured so that the quarrying process must have been an easy one; more than likely a good part of the material was obtained with little expenditure of time and labor. The walls were two stones wide, with no central core or hearting. Each facing stone extended approximately halfway through the wall, and the stones were laid uncoursed and at random.

The extremely poor mortar employed in the construction also contributed to the lack of stability. It was a dark material, quite sandy, containing crumbs of charcoal and humus, traces of ash, and other refuse, and apparently scraped

FIGURE 5 Central group of rooms in House A, looking southwest.

FIGURE 6 **Masonry details and doorways in Room 3.**

from the surrounding surface. The clay content was extremely low and the binding qualities poor to non-existent. This mortar was applied abundantly; joints between the random stones were 1 to 2 inches thick.

This type of haphazard construction would appear to be typical, not only of the remainder of the site, but of other Pueblo structures erected during this general period along the eastern frontier. Construction was similar if not worse in Kiva D which we excavated; the few standing walls from the 1923 excavations are likewise poor as they are at Pueblo Pardo, just to the south. At Pecos, the late Alfred V. Kidder refers to Bandelier's description of the masonry as "judicious piling" (1958: 68). Paa-ko seemed little better off (Lambert, 1954: pl. VII). Exposed sections of the aboriginal work at Abó and Quarai exhibit the same style with somewhat better results since the builders there were favored with a more tractable material in the form of a Permian sandstone.

The walls extended from 8 to 12 inches into the underlying soft strata and there was no change in the masonry below floor level. In a few instances, an occasional vertical slab was incorporated near the bottom of walls. In just as many instances an extra slab was left against, but not incorporated in, the wall below floor level. Since the floors were usually an accretion of refuse built on more refuse, the occupants at the time the building was erected probably had no clear idea themselves as to just what constituted a floor level or where it would be established. Floors merely became thicker as trash accumulated and was compacted through use.

FLOORS

Floors were formed, and consolidated by use, from a combination of the underlying sandy refuse and the lower leavings of trash from the current occupation. In no instance was a foreign material brought in to form a floor surface. On the average, the floors were 1 or 2 inches thick. Rooms 1 and 38 showed two possible levels lying close together while in the remainder of the site only a single floor surface was present. In the main, the floors were rather indistinct and difficult to determine since, in most cases, they graded imperceptibly downward into the underlying refuse and upward into the accumulations left within the rooms. Those toward the plaza on the east side, with the most apparent use, presented the best surfaces; in others deeper within the pueblo the line between the floor and the refuse both above and below it was practically indistinguishable.

DOORWAYS AND WINDOWS (fig. 7)

Of the 37 rooms, 6 had no doorways or windows although wall heights were sufficient to carry them had they been present. There was a single opening in 12 of the rooms, and 13 had 2 openings; there were 3 rooms with 3 openings in each, 1 with 4, and 1 room with 5. Altogether there were 30 wall openings; of these, 26 were classed as doorways and 4 as windows. The doors were quite narrow, the widths ranging from 16 to 24 inches. Sills were rather high above the floor—10 to 17 inches. Of the doorways, five were found intact to their full height with the remains of wood lintels in place. The lintels were small poles or limbs, three to five to an opening, the individual pieces 1.5 to 2 inches in diameter. The wood, although quite decayed, appeared to be juniper. The intact doorways were remarkably uniform in height—2 feet to 2 feet 3 inches. In setting the height there was no apparent regard to the distance of the sill above the floor—a door was roughly 2 feet high whether it began 10 or 17 inches above the floor.

In comparison with other late Pueblo sites on the eastern frontier, the high and narrow doorways are fairly typical. At Pueblo Pardo, Toulouse found doorways whose sills were an average of 1.6 feet above the floor (1960: 14). For Paako, Lambert recorded 14 rooms with doorways in the historic section. Heights of the sills above the floor were 5 inches to 1 foot 9 inches. Heights of the doors themselves were slightly more than 2 feet; widths were 1 foot 4 inches (1954: 29). At Pecos, the doorways were likewise comparatively high and narrow with sills 6 to 18 inches above the floor. Lintels like those of House A were three or four cedar rods (Kidder, 1958: 90).

Of the 26 doors in House A, 7 were found with the lower third blocked with masonry, leaving, assuming that all were about 2 feet tall, a windowlike opening some 16 inches to 2 feet wide, and 18 inches high, about 2 feet above the floor. This size corresponds quite closely to the dimensions of the smaller openings to be described as windows. In each case where the lower part of a doorway had been filled, the top of the fill was finished level and showed some use.

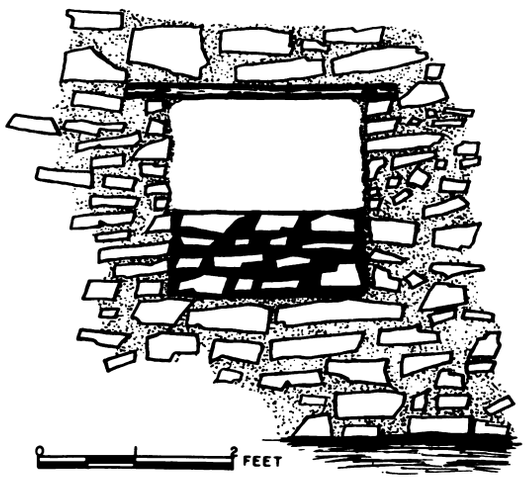

FIGURE 7 Details of typical partially filled doorway, reducing the opening to "window" size.

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Four "windows," two intact, remained, all in interior walls. Dimensions were: height 16 inches and widths 12 to 18 inches; they were from 2 feet to 3 feet above the floor. They thus correspond very closely in form and location to the openings left above the seven partly blocked doorways just noted. Where lintels were intact, or casts remained, they were similar to those over the doorways—of small poles 1 to 2 inches in diameter.

VENTS AND BINS (fig. 8)

These two features are described together since they are associated with each other in the site. There were five wall vents and two bins in House A. Two of the vents opened into bins; the other three were in rooms in which the bins were also located. There would seem to be some connection between the two features. Two of the vents opening into bins were at floor level; one of the other three was also at floor level and two were 2 feet 4 inches above the floor. The five vents were simple rectangular openings through the wall, framed by stone, and about 7 by 9 inches. In no case was the opening rounded by plaster, nor did any of them contain a plug or covering.

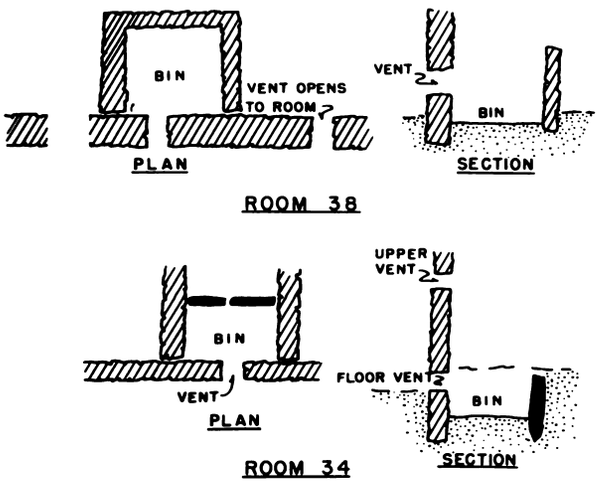


FIGURE 8 Relation of floor and wall vents to bins, House A.

Bin Room 34

This was a subfloor bin set off by a masonry wall and taking up the southern 3 feet of the room. The west side of this bin was divided by a partition of slabs, leaving a space through the wall from adjoining Room 38.

Room 38

The masonry bin here was an above-floor structure, set midway of the wall on the west side. The inside dimensions were 2 feet 4 inches by 2 feet 8 inches. The greatest wall height remaining was 2 feet 4 inches. The rectangular vent opened into this bin through the wall from Room 28. The remaining three wall vents also opened into Room 38. One was in the west wall not far from the bin, and the other two were in the east wall where they went through to Room 34. One of these was directly above the bin in Room 34.

Toulouse records a single slab-lined bin without vent in a room corner at Pueblo Pardo (1960: 15). At the historic site of Paa-ko to the north, on the northeast side of the Sandia Mountains about halfway between Gran Quivira and Pecos, there were from 1 to 4 bins in each of 13 rooms. Illustrations show single bins in room corners and multiple bins of three and four compartments taking up one side of a room. Lambert referred to openings in bins as "hand holes." Of three hand holes in a double bin at Paa-ko, two were circular, about 6 inches in diameter, and one was rectangular (Lambert, 1954: 24–26).

While there were 14 wall vents not connected with bins in the earlier sections of Paa-ko, they had become "scarce" in the historic reoccupation and only three were found. They, also, were cylindrical, with diameters of 5 to 6 inches and were located close to floors. Also noted was the common occurrence of similar

vents at Puye, Bandelier's Puaray, and Kuaua (ibid.: 27), and D-shaped windows or armholes at San Marcos Pueblo (Reed, 1954: 327). No storage bins or wall vents are reported at Pecos.

Reiter recorded some 80 bins at Unshagi in the Jemez and he says of them, "Many had small openings through one side, hand-holes resembling vents, while others were solidly walled" (1938: 50–51). It was his belief that the bins there were for the storage of corn, the "silos de maize" quoted by Bandelier, and until there is a better suggestion advanced there is no reason why this should not stand. In this connection, however, it should be remembered that the Unshagi bins were in specialized rooms which contained vent-deflector-firepit combinations suggestive of ceremonial usage. Bins likewise occurred in similar rather highly specialized rooms in the Rio Grande and at the glaze site of Atsinna at El Morro.

Altogether, on the eastern frontier at about the historic period, storage bins were rather scarce and of variable occurrence: one next door at Pueblo Pardo, 2 at House A, more than 13 at Paa-ko, none at Pecos. They are not well documented for the Rio Grande but are frequent to the northwest and north at Unshagi and earlier, at the Gallina sites on the Chama where they have been found full of burned corn (Hibben, 1938: 136), and to the west at Atsinna. Bins contain vents or "hand holes" at House A, at Paa-ko and at Unshagi on the Jemez. Certainly, in the general area east of the Rio Grande they were too few to constitute specialized construction for storage of maize.

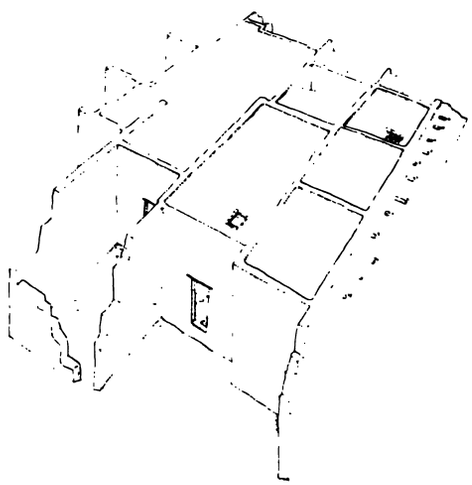


FIGURE 9 Restoration of House A, looking southeast with the plaza in the foreground.

ROOFING

There were roofing remains in some degree in all excavated rooms. In no instance was there evidence of more than a single roof. Considering the position of the roof fragments in the fill—near the floor and below almost all of the wall debris—this single layer seems proof enough that there was only a single story to House A. While salvage is always a possibility, the lateness of the site and the rather consistent level at which roofing remains were found in the fill rule against this possibility.

Roof construction was badly decayed but sufficiently undisturbed so that the separate layers and the direction in which they had been placed could be made out. Typical construction was: (1) poles 3 to 5 inches in diameter laid quite closely on 16- to 20-inch centers, the short way of the room. These were pinyon and juniper; (2) over these at right angles were small juniper poles, 1 to 1.5 inches in diameter laid touching each other; (3) above this were two layers of fine vegetal material, the top layer laid at right angles to the layer below. These layers were approximately one-half inch thick on excavation, and appeared as a mixture of juniper bark, grass, and twigs; (4) the final covering of the roof was the same dark, sandy, and refuse-laden topsoil that was used as mortar in the walls. Because this material disintegrated easily, roofing casts were rare. Quite likely, with this covering, House A at the time of its occupation resembled a large, rectangular refuse heap (fig. 9).

PLASTER

There were traces of plaster in almost all rooms, enough so that it is certain that this was the accepted manner of finishing walls. Eight layers were recorded in one room. The layers were thin and the surfaces of some, but not all, had at one time been given a thin whitewash coating. Heavy deposits of smoke and grime had largely obscured the whitened surfaces. The material used for the whitewash was not determined. The surface of the plaster had not been smoothed, and it was evident that it had been applied by hand or with a coarse cloth.

FIREPITS

There were 10 firepits, all basically the same, except for the addition of "firedogs" to 3. All were in rooms toward the outer limits of the pueblo, none in the dark interior. The usual orientation was parallel to the long axis of the room and against one of the long walls. Two exceptions were in Rooms 33 and 38 where the firepits were near the center of the room and parallel to the short dimension. All firepits were rectangular, raised slightly above floor level and constructed of well trimmed slabs. Dimensions were rather standardized with widths of 9 inches, lengths of 18 inches, and depths of 5 inches. The bottoms were always floored, often with worn manos or parts of metates.

An addition to the general form of firepit was found in three cases. Here two taller stones had been incorporated in the back wall of the pit. These, set upright, projected roughly 5 inches above the rest of the firepit. Such "firedogs" are fairly common elsewhere. There were several at Unshagi, although in each instance, there were more than two to a firepit, "perhaps two or three along each side" (Reiter, 1938: 49). Toulouse found at Pueblo Pardo two stones incorporated in one side with a third, or movable, firedog located in the pit (1960: 15). Only three similar rectangular fire hearths at Paa-ko held firedogs; they were like those in House A and were described as leaning over the hearth at an oblique angle (Lambert, 1954: 27). Kidder reports that none was found at Pecos, but that they were quite common at Puye (1958: 137). Their evident use at House A was for the support of the comal or stone griddle, a utensil with which the inhabitants were plentifully supplied.

BENCHES AND EARLIER WALLS (fig. 10)

When the excavations started, a low wall at the north end of Room 1 was recorded as a probable bench. This practice continued until it was found that some of the things which we were calling benches could never have served for such a purpose. Some were little more than remnants of double walls with very irregular tops. As the investigations continued below floor level and to the north of the site, it was found that the "benches" were remains of an earlier house which the builders of House A had merely enclosed within the present structure.

A much older building had once stood on the site on which House A was built. In all probability the roofing was gone (salvaged?) and most of the walls had disintegrated when the new structure was started. The builders of House A apparently used most of the fallen rock, but where a wall or remnant still stood the new walls were merely built around them. In some cases these low, enclosed walls were leveled to serve as benches. In other rooms they were too narrow to have been used for anything but shelves, and in a few other cases their height and irregular upper surfaces would have precluded their use for any purpose.

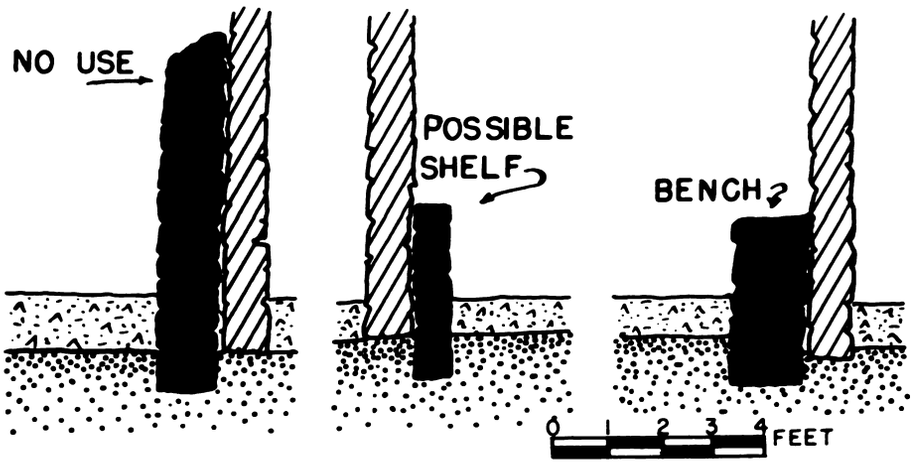


FIGURE 10 Typical remains and possible uses of earlier walls enclosed in rooms of House A.

The extent of this earlier building was not determined, for to have done so would have meant the destruction of a good part of House A. Indications were that it underlaid most of the west side of House A and extended some distance to the north. There was a thin layer of sandy refuse below the floors of House A, but tests revealed no definite floor levels, except perhaps in Rooms 1 and 38.

At Pueblo Pardo, Toulouse found only one bench and it does not seem to fit this category of reused wall, since the front was thin masonry and the space between it and the wall was filled with soil (1960: 15). Lambert found five benches in the historic section of Paa-ko; one was described as a masonry throne, one was of adobe, and the remaining three were stone masonry. These Paa-ko benches were rather low, from 4 to 16 inches, and were slightly more than 1 foot wide (Lambert, 1954: 24).

PLAZA

No more than half of the plaza was excavated. The north end had been outlined during the work of 1923–25. The surface, before this later work began, was covered with a thin layer of stone and wall debris. Below this was the usual accumulation of refuse. The surface of this refuse was irregular, but packed

from occupational use. It was also pocked by numerous small ash deposits and loose depressions, all in no particular pattern. There were no features such as fire hearths, post holes, or traces of a shelter to suggest that this had been an outdoor living or work area.

Altogether, the area was perhaps too small to have served as a true plaza about which the house was centered, and in which many of the household tasks could have been carried on. More than likely it was restricted to use as a central, protected entranceway into the building. The outlines of other ruins on the area do not suggest similar small plazas or courts and Toulouse did not indicate that they were present at Pueblo Pardo. If construction and occupation of House A was very late in the life of the site, this enclosed plaza or court may have been a measure adopted for its defensive value at the time of increasing Apache raids. On the other hand, I recall Reed's suggestion that the court and the many doorways were reminiscent of the convento of San Buenaventura and that House A may have been refurbished as a convento and residence during the occupancy of San Isidro. This may well explain the plaza, and perhaps some extra doorways. If it was so occupied, possibly by Fray Francisco Letrado, it was also reoccupied by the native Jumanos.

TREE-RING DATES

No tree-ring dates were obtained from the site. Numerous specimens were saved from the remains of roofing, lintels, etc. These, however, proved to be juniper, undatable in the present state of knowledge (Bannister, personal communication April 23, 1953).

FILL (fig. 11)

The final use of House A was as a small, covered refuse dump. Quite likely the process of filling with refuse was going on during a large part of its occupation, and surely this was the final indignity heaped upon it soon after it had ceased to serve as living quarters, but before the roof had collapsed. While there were refuse accumulations all through the house they tended to be lighter on the west side, away from the doors fronting on the plaza. Refuse increased in depth toward the east side. The accumulations ranged in depth from 10 inches on the west side to a maximum of 2 feet 6 inches in rooms fronting on the plaza.

It does not seem likely that the 37 rooms were all abandoned at one time, and that following abandonment the rooms came into use as refuse dumps. This would have meant a long and tortuous trip through the dark house to make the deposits on the west side. Rather, I think, the refuse accumulated in the west while adjoining rooms were occupied. Living in House A was a gradual process of backing away, in an easterly direction, from the growing garbage in the west. Once the refuse reached the eastern third of the house the occupants moved across the plaza to the east half of the site. It then became a matter of con-

venience to step into the plaza and toss refuse into the open doors on the west—the only protected spot from which it would not have promptly been blown back into the occupied rooms.

The refuse in the rooms was in rather flat strata and had not been dumped in through the roof. Once the roof and walls had collapsed, the deposition of refuse stopped. Nowhere was there refuse on top of fallen roof material. The deposits contained many items of European manufacture and numerous instances of European influence—the "soup plate" pottery forms, candlesticks, crosses, and the like. From this, then, it is apparent that the deposits were made and House A was occupied very late in the life of the community; once its inhabitants were gone there were few, if any, other folk remaining on this lonely and besieged outcrop.

There was no line of wind- or water-deposited material between floor and fill. The use of the floor and the deposition of refuse was one continuous motion, so

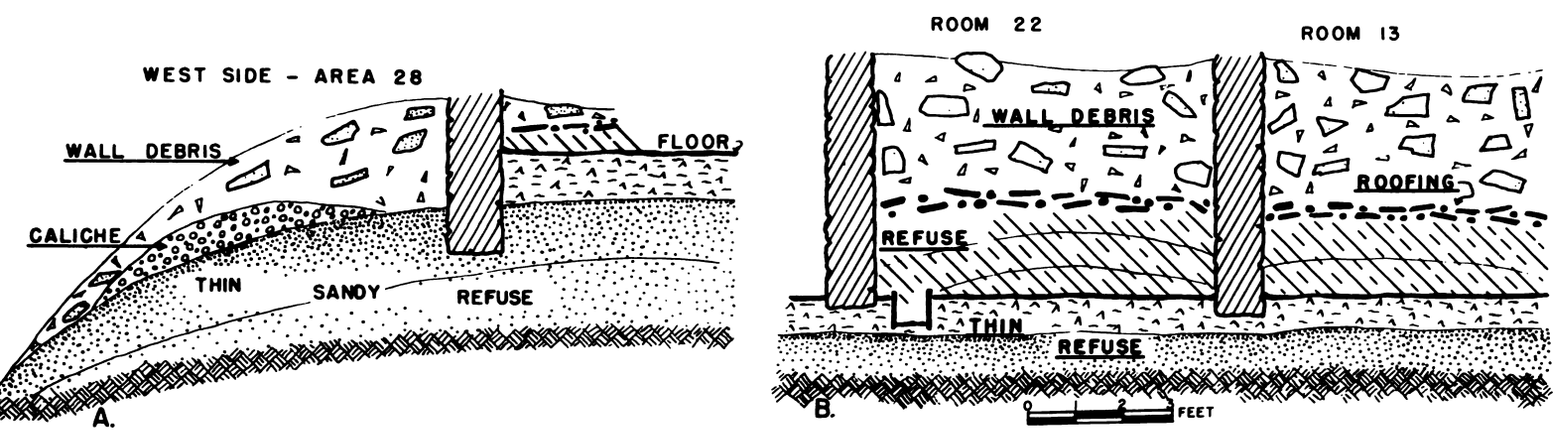


FIGURE 11 A, section through the west edge of House A, showing underlying refuse from an earlier occupation. B, typical section through room depesits in House A.

to speak, and, while artifacts were recorded as being on the floor, within an inch of the floor, or at a certain depth in the refuse, we were not able to determine with any certainty where material was in proximity to the floor, which pieces were left there in situ, and which came in with the first trash. The few exceptions were the occasional pieces of jars, whose position indicated that they had been sitting upright on the floor when broken. The same is true with regard to the many manos, metates, and griddles. No griddle was found in place on a fire-pit. There were 37 griddle fragments and two additional pieces which might be considered as reasonably whole. None of the metates could have been said to have been in the position of use, and there were no mealing bins in evidence.

The refuse was particularly rich in ground- and pecked-stone artifacts. Of the nearly 500 specimens taken from the site, 285 were either manos, metates, or stone griddles, with manos in the majority.

In the discussion of the roofing, it was noted that the remains lay above the refuse. There were, in many cases, thin lenses of windblown sand in conjunction with the roofing, just below or mixed with it, as though the house with its

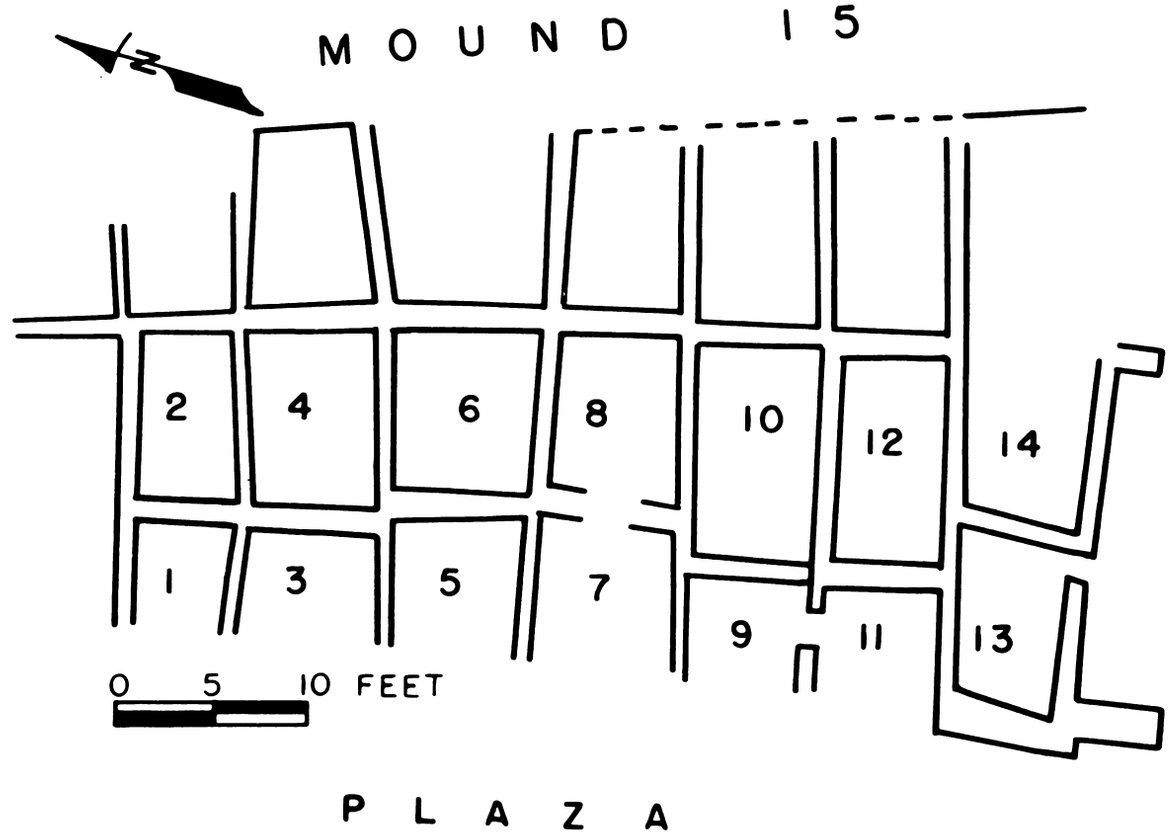
blocked doorways or solid walls on the west, the direction of the prevailing winds, had remained fairly tight until the final collapse was well under way.

ARCHITECTURAL COMPARISONS

It has been noted that the Pueblo housing units at Gran Quivira were rather scattered (fig. 2), and that Hewett cleared several plaza areas between these units, as well as conducting a random sampling of the rooms and "porch rooms" fronting on the plazas. Available floor plans of the excavation in Mound 15 show a pueblo that was seven to eight rooms wide (fig. 12). The plan is similar to the units at Pecos and Paa-ko.

Even with the addition of those rooms cleared by 1925, only a very small part of the total Pueblo architectural establishment at Gran Quivira during historic times has been exposed. The rather scattered village plan is in contrast to the more compact arrangements seen at Paa-ko and at Pecos. In both of those sites, late construction around a central plaza or quadrangle is much better conceived and much "tidier" than the scattered smaller pueblos at Gran Quivira. Construction along the sides and top of a ridge at Gran Quivira, with the resultant differences in elevation, also add to the impression of haphazard planning.

FIGURE 12 1923–25 excavations on the west side of Mound 15. The rooms fronted on a probable plaza between this and Mound 8. (After Hewett.)



House A is characterized by the use of detached kivas, a single story, stone masonry, a heterogeneous arrangement of rooms, numerous high and narrow doorways, interior windows, rectangular firepits parallel to the long axis of the room, occasional use of "firedogs," occasional vents, the rarity of storage bins, the absence of mealing bins, and the absence of highly specialized (ceremonial?) rooms such as occur at Unshagi in the Jemez area and Atsinna at El Morro. It holds this general assemblage in common with other excavated sites on the eastern frontier, Pueblo Pardo, Paa-ko, and Pecos. In the details of interior arrangement there are no outstanding differences that set one site apart from the others. The use of detached kivas was also fairly consistent. Guardhouse Kiva H at Pecos (Kidder, 1958: 221), the kiva at Dick's Ruin, a Black-on-white site (op. cit. 48), the kiva at Arrowhead Ruin, and a Glaze-A site (Holden, 1955: 105), were attached or semiattached structures. Kivas were not incorporated within a house block, but were built in corners or against a single wall; they were roughly D-shaped. They would appear to be minor exceptions to the general use of detached kivas.

As Kidder has pointed out (1958: 63–137), the Quadrangle at Pecos was the result of a preconceived plan, constructed for defense. It was laid out in short transverse sections, and his evidence supports the belief that for a long period this arrangement of transverse sections had been used as unit apartments, each section of three ground-floor rooms as a single apartment, and each unit of six ground-floor rooms as a double apartment, back to back. His survey of the Upper Rio Grande Pueblo IV and V towns demonstrates that this was an almost universal arrangement. He believes that the same unit of occupation obtained at Paa-ko. At House A at Gran Quivira, the two north rows of rooms also hint at the same arrangement; but the rest of the site does not fit this plan at all. On the other hand, the excavated part of Mound 15 does suggest an arrangement similar to that at Pecos, with ground-floor rooms constructed in tiers seven to eight rooms wide. Hewett's reference to the excavations at Gran Quivira speaks of clearing "porch rooms" which front the plaza. No further explanation is given. In view of Kidder's expert reconstruction of the galleries at Pecos, this reference to "porch rooms" offers a tantalizing hint that similar galleries may have existed at ground level at Gran Quivira.

The population of the pueblos has been the object of much study. Kidder (1958) makes some interesting comparisons between the number of six- to seven-room "apartments" at Pecos and the total population there. These estimates are further extended here as a basis for judging the number of ruined sites at Gran Quivira, occupied at or about the contact period. Kidder began with the assumption, based on Spanish estimates, that the population of Pecos must have been about 2,000 persons. He also estimated that an average family group occupying a transverse "apartment" consisted of about five people. Multiplying the number of people per family by the number of apartments, he arrived at a population figure of only 970 persons for Pecos. He felt that this was obviously too low. In order to get a population of some 2,000 into about 200 "apartments" he would have to assume that an average family group consisted of 10. This figure did not coincide with the size of the average family as shown in the Spanish census of 1750 for Pecos, nor with estimates from modern pueblos.

Kidder recoiled at the thought of an extended or "biological" family group of 10 people occupying a 6- or 7-room apartment. Nevertheless, there appeared to be no other way out than to believe that a "household" must have consisted of an average of 10 people, and that the apartment units must have been uncomfortably filled.

In reference to the figure of approximately 10 persons per "household," we have Father Fray Juan de Parda's statement of 1638 that tributes from the pueblos were not collected according to the number of persons but according to a poll ". . . and the list of houses, [Kidder's apartments?] and in each of these are three or four married Indians. Generally there lives in each house a group of relatives . . ." (Hackett, 1937: 109). If a housing unit contained 3 or 4 married Indians, the total number of individuals could well have been 10. Concerning the possible overcrowding at 1.5 persons per room, I don't know if anyone has made a recent survey of the population density of the single-room Navajo hogan, but it has often appeared to me to be somewhat more than 1.5 individuals.

Kidder's population estimates then appear to come out at about 10 people per 6- or 7-room housing unit, or at 1.5 people per room.

The population of Las Humanas in the late 1660's, not long before the abandonment, was about 1,000 persons. This figure is arrived at by adding the 500-odd survivors to the 450 who died of starvation, to an unknown number of victims of the "peste" about 1668, and to those killed or enslaved by the Apache. In 1627 Benavides estimated the population at 3,000 (Hodge, Hammond, and Rey, 1945: 65). Allowing for some exaggeration, and checking against the figure of 1,000 about the time of abandonment, the population in 1627 could well have been an actual 2,000.

There were 37 rooms excavated in House A, Mound 10. All of Mound 10 contained a maximum of 100 rooms. It would hold less than one-tenth of the 1627 population. Again making an estimate from surface indications, and considering that some of the now ruined pueblos could have been 2 and 3 stories high, it seems that anywhere from 9 to 12 of the 17 ruins here must have been occupied in Benavides' day.

This points up the impression that if there is any degree of difference between the Jumano site and roughly contemporaneous pueblos of the eastern frontier, Pecos, Paa-ko, and Pueblo Pardo, and possibly other sites in the upper Rio Grande, it is in the lack of town planning, and lack of social control which Kidder feels this implies. The question was previously raised regarding the "rrayado" element in the Jumano population and if it could result in significant, detectable differences in material culture. House architecture and household arrangements provide no evidence that the inhabitants were anything but Pueblo Indians, very much like their neighbors along this eastern frontier. Town planning suggests that perhaps they were not as cohesive a social unit as were their neighbors; this may have been the result of long tradition or simply the lack of fear that motivated Pecos and Paa-ko.

DETAIL OF FIGURE 14.

EXCAVATIONS: KIVA D

There is an estufa painted all over with large and small idols in the same manner that they paint devils here in Mexico. In the middle are sculptured idols of stone or wood to which they offer maize, small birds of various colors, reeds, lizards and other reptiles. At the time of their offerings they all gather in a big circle to dance a sort of mitote. . . . These Indians are devoted to their idols, and there is nothing they resent so much as having them knocked to the ground.

Marcelo de Espinosa, 1601

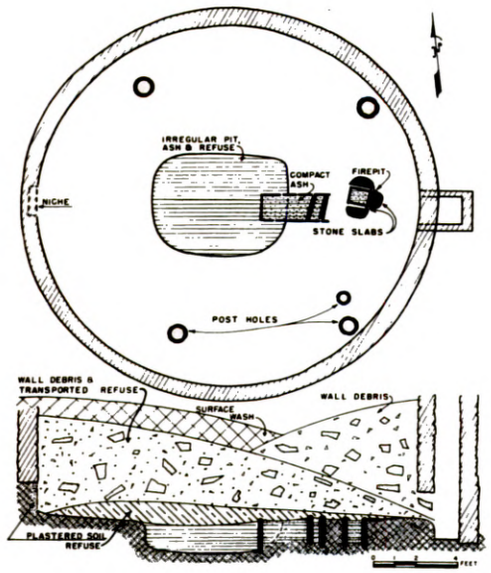


FIGURE 13 Ground plan and west-east section through Kiva D.

FIGURE 14 Kiva D after excavation, looking east. The upper levels of the wall above the ventilator opening have been rebuilt.

There is no kiva in direct association with House A, but House A is not unique in this respect. There is no set relationship between the kivas and the separate small pueblo units at Gran Quivira. There are 17 large mounds, and, from surface indications, only 9 kivas. There is a tendency for the kivas to be set along the sides of small pueblos, rather than to be attached to any specific pueblo unit (fig. 2). Kiva D is 120 feet northeast of House A; it lies at the toe of the slope from the large site, Mound 7, and it would seem to be closely associated with that site, however, it is also the kiva nearest to House A. Kiva D was chosen for excavation with considerations of interpretive use in mind, since, with the two mission churches and the excavated pueblo, it formed a compact interpretive unit all on Federal land at that time. In its position on a slope between Mound 7 and the small church of San Isidro, Kiva D was marked by a large depression, somewhat exaggerated in size due to considerable drainage into it from the north and west.

PLAN (figs. 13 and 14)

Kiva D was a simple circular structure without a bench, 17 feet in diameter, subterranean, and with a depth on excavation of 6 to 7 feet. The upper parts were badly washed and, judging from the surrounding ground surface, its depth at the time of occupation was between 8 and 9 feet.

CONSTRUCTION

The original excavation for the kiva was made into the rubble slope of a ridge. The lower wall is a mixture of construction materials. Where large boulders were encountered in a favorable position, they were left as a part of the wall. Their position probably determined to some extent the size and precise location of the kiva. In addition to the boulders, a large part of the lower 2 to 3 feet of the wall was merely the soil face of the excavation; this soil face was covered with a heavy layer of plaster. Above the soil face or above large boulders, at a varying height of 2 to 3 feet, was a masonry wall. At the bottom the wall was a single veneer of small stones, 3 to 4 inches wide. As the wall increased in height the construction widened until a definite masonry wall, 1 foot thick and faced on both sides, developed near the top. The masonry, where it becomes a wall, is similar to that exposed in House A and elsewhere in the area—limestone blocks quarried on their natural planes and laid in abundant topsoil mortar, irregular in appearance, and relatively unstable.

ROOF

The roof construction was supported by four upright poles set in the floor. A fifth post at the southeast could have been an additional support added subsequent to the original construction. The four posts were neither equidistant nor

well spaced. The two on the east were close against the curve of the kiva wall, while those on the west were some distance out in the floor. The uprights had been set in simple holes in the floor, with no masonry elaboration as Toulouse (1949: fig. 5) noted for the example at Abó. The casts indicated roof posts 8 to 10 inches in diameter.

There were no remains of roofing in the fill as there had been in the house structure and no hint as to the kind of construction. There is always the possibility in a historic site of this type that the kiva may have been destroyed or filled by the Spanish in their attempts to drive out the native religion. While this was a damp location which received runoff from a large area, it seems probable that some vestiges of the roofing would have remained had it collapsed from natural causes. The suspicion remains that it was removed through human agency.

ASHPIT

The most conspicuous feature in the floor was a rather large ashpit near the center. It measured roughly 5 by 6 feet and was 1.5 feet deep. The sides were cut from the native soil and were neither lined nor plastered. The bottom was irregular and not floored. The pit was filled with sandy ash and refuse. At the east side, between this pit and the firepit was a second, smaller, more sharply defined pit, partitioned by two vertical slabs and filled with solid white ash. This second and smaller pit extended partly into the larger example. Kidder has an interesting discussion of the storage and final disposition of ash from kiva fireplaces. His interest came from the finding at Pecos of at least five large deposits of ash from kiva fireplaces. Corroborative evidence from ethnologic sources (Parsons, 1939, Smiley, 1952, Ellis, 1952) showed that the ash from kiva fireplaces was indeed saved and had many magical properties including its use in cleansing rites and as protection against witches. Excess ash was finally buried (Kidder, 1958: 230–231). The size of the ashpit in Kiva D was far above any normal requirements for temporary disposal and could well have held sacred ash deposits accumulating over a period of years.

VENTILATOR

The above-floor ventilator shaft was at the east. It opened through the wall at floor level; both the sides and the vertical rise were lined with masonry. The opening in the face of the wall was 15 inches wide and 17 inches high. At the time of discovery it was covered with a large sandstone slab, shown at one side of the opening in figure 14. I either did not find or did not consider important the water stops at the shaft opening, so prevalent at Pecos (Kidder, 1958: 259).

FIREPIT

This feature was slightly out of line with the ventilator, a little to the north; it was rectangular, lined with slabs which extended slightly above the floor surface

and was 12 by 14 inches and 10 inches deep. On three sides of the firepit were smooth slabs set flush with the floor surface. Kidder (1958: fig. 42 and passim) often refers to these as landing slabs, though in this instance there is no ladder pit, nor is there the masonry deflector so often encountered at Pecos.

FLOOR

The above brief inventory comprises all of the floor features. Notably lacking were the numerous sets of loom holes so conspicuous at Pecos (Kidder: 1958 passim). The floor surface was poor, the result of use rather than the deliberate laying of a floor with a separate material.

NICHE

A wall niche occupied the west curve of the wall in line with the ventilator-firepit-ashpit sequence. It was 1.5 feet above the floor, 13 inches long, 5 inches high, and 4 inches deep. It contained no offerings or similar material.

FILL

Kiva D had served briefly as a refuse dump. The floor surface, near the center, was covered with typical refuse to a maximum depth of 1 foot. This material thinned out toward the sides. From the rather even distribution of the refuse it seems that it must have been deposited after the roof was removed and that it was not dumped through a hatchway. This strengthens the impression that the roof was removed and did not collapse from natural causes. I have noted before that there was no discernible difference in the pottery or other artifact material between House A and Kiva D. The refuse in Kiva D came very late in the life of the town, after Spanish missionary activity there had reached its zenith. The roof could well have been destroyed during the great purge of native religion in 1662.

The deposits above the thin level of refuse do not show deliberate filling. They are the result of natural washing from the slopes of Mound 7, rising above Kiva D to the north and west.

KIVAS EXCAVATED IN 1923

The excavations of the School of American Research in 1923 cleared two kivas, E and F (fig. 2). Kiva F is located close to the east end of the large site, Mound 7. Kiva E, northeast of this, is at one edge of a small plaza area formed by Mounds 13, 14, 18, and 16. The available data on the excavations consists

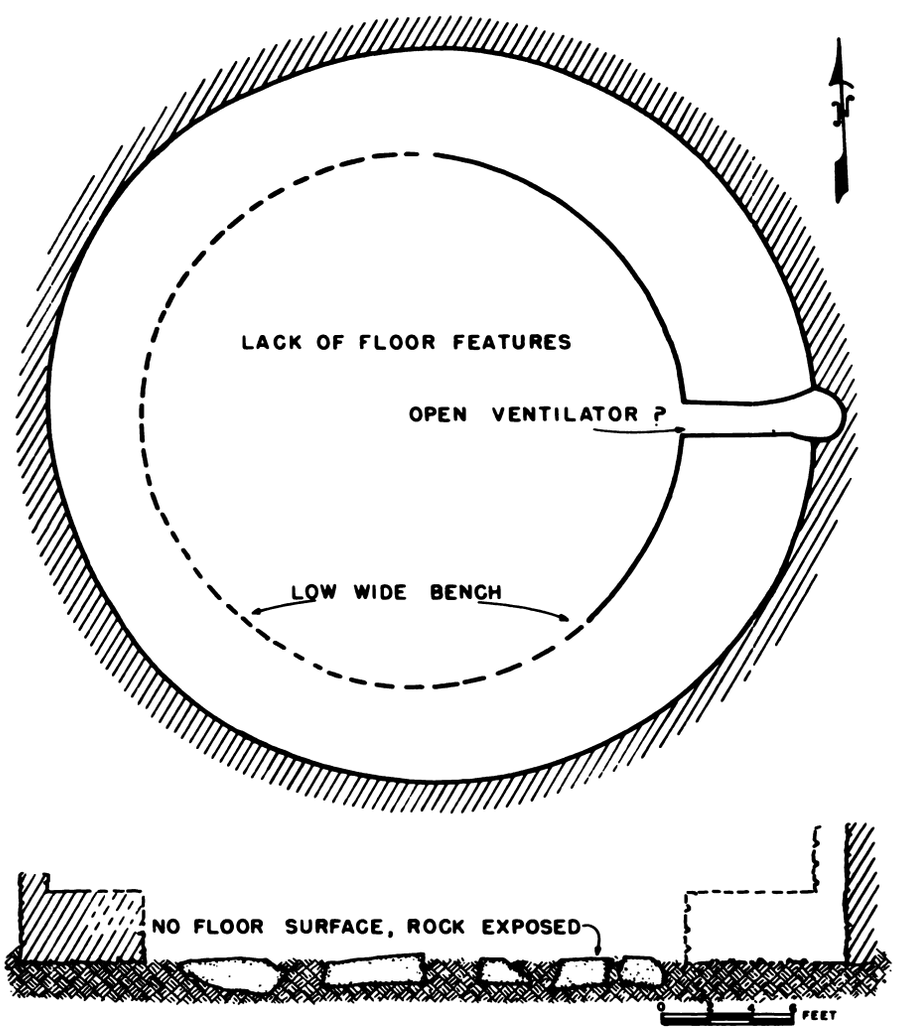
of floor plans of the kivas and several rather similar typescript reports, one attributed to E. L. Hewett.

Kiva F (fig. 15)

This was a very large kiva for the area; 35 feet 7 inches in diameter. Its most conspicuous and atypical feature was a wide bench. Total excavated depth of the kiva was approximately 6 feet 10 inches, but this was not necessarily the depth to floor level. It is certain that the floor was not all cleared; how much was exposed is in doubt. One set of notes states that the excavation was halted due to lack of tools with which to break up the enormous boulders encountered and that the floor level remained uncertain. Other notes remark that the floor was covered with enormous boulders which could not be removed. At any rate, no floor features were described.

The masonry face of the large bench in Kiva F was excavated to a depth of 3 feet 6 inches. The bench was either 4 feet 6 inches, or 6 feet 6 inches, wide.

FIGURE 15 Plan and west-east section of Kiva F, excavated in 1923; its lack of floor features, low, wide bench and possibly open ventilator shaft are atypical. (After Hewett.)



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The upper surface was described as an "adobe floor," and while the bench encircled, or almost encircled the kiva, it was intact to its full height only in the eastern third. There is one peculiar aspect of this bench. It was described as running entirely around the kiva except for an opening on the east side, 15 inches wide. This opening was the ventilator shaft. However, the various descriptions make it appear that the horizontal extent of the shaft, where it passed through the bench, was not roofed over but appeared instead as a slot cut through the bench. ". . . an opening in the bench 1 foot 3 inches wide, extending from the bottom of the bench wall to the top, lined with stone walls in good condition. The sides of this opening after running straight for 4 feet 8 inches curved out on both sides and then came together 7 feet 4 inches from the outer bench wall forming a circular end to the passage. The stones forming the circular part were all black from smoke."

If this ventilator shaft was actually unroofed in its horizontal extent, it is a most peculiar circumstance since the unroofed portion would, to some extent, nullify the operation of the ventilator. It was also noted that the upper surface of the bench was covered with at least an inch of wood and charcoal, indicating that this 35-foot structure was probably roofed.

Kiva F here is quite similar to Kidder's atypical and puzzling Kiva 12 at Pecos (1958: 215–218, fig. 61). They are similar in that Kiva 12, with a diameter of 41 to 43 feet, was also the largest kiva at Pecos, and that it also contained a bench. Benches were great rarities at this time and place. There were no other benches at Pecos, nor as far as Kidder's exhaustive search could determine were there benches in any prehistoric upper Rio Grande kivas.

Kiva 12 at Pecos was not completely excavated, but it was cleared sufficiently to determine the presence of an opening through the wall above the bench on the west side, and to prove the absence of a firepit at the east, even though the probable location of a ventilator shaft was not cleared. This latter surface was irregular, unfinished, and sloped to the east. Kidder considered that since Kiva 12 was the only one of its kind it must have been an abortive attempt to construct a "Great Kiva," and that this attempt had been abandoned before the structure was roofed. He did, however, find one timber that suggested an upright roof support.

Kiva F at Gran Quivira is now the second large kiva structure on the eastern Pueblo frontier, at about historic times, that contained that hitherto unknown feature, a bench. Kiva F also had a ventilator; the presence of one at Pecos is in doubt. In neither site were floor features reported, but in both cases the floor was not completely cleared. The locations of roof supports could well have remained buried at Pecos. The presence of wood and charcoal on the bench at Kiva F argues for a roof there.

At Paa-ko, Historic Kiva I also bears some resemblance to the structures under discussion. It was crudely constructed; diameters ranged from 33 to 34 feet, and there were no floor features. It lacked a bench but did have a ventilator on the northeast. Lambert believed the structure to be a kiva which was "either purposely destroyed, or abandoned and left open long enough for floor features to have disintegrated completely before it was filled in" (1954: 32). Her suggestion that the structure may have been destroyed, and the fact that the masonry was not even "judicious piling" may account for the lack of bench

remains. At any rate, Kiva F at Gran Quivira, Kiva 12 at Pecos, and possibly Kiva I at Paa-ko, suggest the introduction in early historic times of a new kiva style characterized by large size, by a bench, by the usual ventilator at the east, and possibly by lack of floor features.

Kiva E (fig. 16)

Kiva E was circular, slightly over 19 feet in diameter, with an average of 5 feet of standing wall. Only two roof support posts were located: these were set into the eastern curve of the wall, north and south of the ventilator shaft. The single wall feature was a niche on the west side, opposite the ventilator shaft. It was 3 feet 6 inches above the floor, 2 feet 3 inches wide, and extended back through the wall to a depth of 5 feet. It was described as stone (masonry) lined and having an adobe floor. "On the hard adobe floor at the eastern side [adjacent to the ventilator shaft] were two firepits with ashes in them, and behind them the base stones for an altar. Just under the adobe floor between the altar and the eastern side of the wall, several stones were uncovered which seem to have formed the rim to an old firepit, abandoned and covered by the new floor when the other firepits were built." The detail drawing of this assemblage suggests a firepit-ashpit combination on one side of the deflector with a ladder-pit and landing slab on the opposite side. (See Kidder, 1958; fig. 42 in particular, and passim.) The opening to the ventilator shaft was through the wall at the east side at floor level. It was 1 foot 5 inches wide, 2 feet 6 inches high.

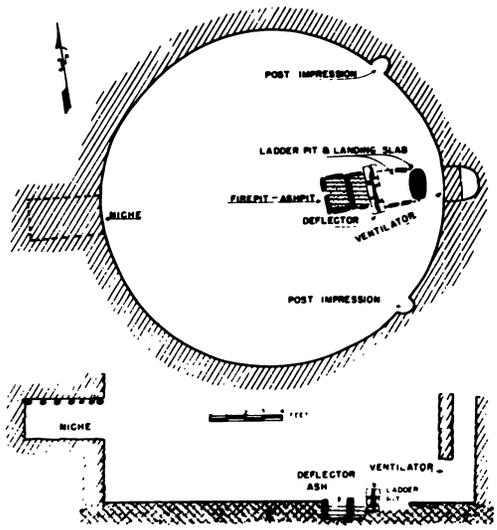


FIGURE 16 Kiva E, excavated probably in 1923. The plan and details are after Hewett (MS.); the identification of the floor features is that of the present writer.

COMPARISONS

There is now a fairly representative group of excavated kivas along the eastern side of the Pueblo area, occupied at about the beginning of historic times. The nearest of these to Gran Quivira is at Pueblo Pardo, approximately 1½ miles to the south (Toulouse, 1960: 16). The Pueblo Pardo kiva is circular, 16 feet in diameter, and crudely constructed. Approximately three-quarters of the wall construction was of vertical poles or branches, 2 to 3 inches in diameter, and spaced 2 to 3 inches apart. These poles were stood against the face of the excavation and the entire vertical surface was covered with thick applications of clay and one or more plaster coats. The remaining one-quarter of the wall area was stone masonry construction as was the ventilator shaft opening at the east side. The roof was supported by nine vertical timber supports—seven of these were arranged along the wall and the remaining two were toward the center of the room. In line with the ventilator was a firepit and two ashpits. Additional floor features at Pueblo Pardo not encountered at Gran Quivira were a sipapu, "a shallowly carved stone," a line of eight loom anchors north of the firepit, and another line of five anchors south of the firepit.

Abó and Quarai

Also similar to the two smaller Gran Quivira kivas is the example excavated by Toulouse at Abó (1940: 56–57; 1949: fig. 5). This was likewise a simple circular

structure without bench or wall recess. There were four masonry-lined postholes for the roof supports, a ventilator shaft at the east, and, in line with this, a firepit-ashpit combination. A subterranean square kiva was excavated by Ele Baker at Quarai, but no information on it has been published. Aside from the above-ground "guardhouse kivas" at Pecos, I can think of no other square kivas on the eastern side of the Pueblo area. On the west side there are square kivas in the Middle Rio Grande drainage such as the two at Kuaua and those being excavated by the University of New Mexico at Pottery Mound.

Pecos

Kidder (1958) excavated or did some work in 17 round kivas at Pecos. There is some data tabulated on the architecture of 13 of these kivas. Their ages ranged from Black-on-white times to 1700 plus. Excluding one 12-foot example, the diameters averaged about 20 feet. While stone masonry was the primary material, there were four instances where juniper slats were employed in wall construction, either alone, as in Kivas 8 and 11, or in conjunction with masonry. Where the slats were employed in conjunction with masonry, they formed a separate lining over the masonry but did not supplant it as did the wall of vertical branches at Pueblo Pardo. This use of slats as a complete or partial lining in conjunction with masonry led Kidder to consider that the slats may not have had an entirely functional use, and that they could be compared with various kiva linings and paddings occurring throughout much of the Anasazi area (Smith, 1952: 15–16; Vivian, 1959: 72–73).

The floor features in the circular Pecos kivas were rather uniform and uniformly arranged. Firepits were rectangular and stone-lined; ashpits were present and the deflectors were three-sided and rather elaborate with a hood, or shelf, protecting the ashpit. In this elaborateness they were in contrast to the kivas at Gran Quivira, Pueblo Pardo, Abó, and Paa-ko, where there were only two masonry deflectors, and these simple rectangles. The use of ladder pits and landing slabs, and the employment of grinding slabs set in the kiva floor near the firepit, was also rather uniform. Here again these features were missing at Gran Quivira, Abó, and Pueblo Pardo. Numerous sets of loom anchors were also found at Pecos; they were present elsewhere only at Pueblo Pardo.

The roofs of earlier Pecos kivas were supported by four vertical posts set in a rectangle, the arrangement which obtained at Gran Quivira, Pueblo Pardo, Abó, and, I think, at Quarai. In later kivas at Pecos this practice appears to have been superseded by the use of a single large main crossbeam, supported by two uprights. While this new practice required the use of one fairly large log, it was a much simpler procedure from the standpoint of construction than framing a rectangular area in the center of the kiva and then laying radial members from the exterior wall to the frame.

Paa-ko

Two historic circular kivas were excavated at Paa-ko (Lambert 1954: 32–37). The larger of these, Kiva I, has been discussed in connection with the possibly separate group of large kivas with benches and few or no floor features. The

other, Kiva II, 21 feet in diameter, also had few features. There was a ventilator shaft at the east, a rectangular firepit, a rectangular masonry deflector, a possible sipapu in an odd position just south of the firepit, and an unusual subfloor trench running from the deflector to the ventilator shaft. Lambert compares this trench with the subfloor ventilator shaft in various Chaco and Mesa Verde sites and with a similar shaft at Bandelier's Puaray. If this trench was a holdover from some earlier Anasazi subfloor ventilator, it was not functional since it did not have an opening at or near the firepit. There was no evidence of roof supports in the Paa-ko Kiva II; Lambert surmised that since it was only 21 feet in diameter, none were needed. It is possible that here the late Pecos style of one main crossbeam was in vogue and that the two vertical supports were not needed, or that they were not set deeply ino the floor.

Summary

Kidder's discussion of the round, subsurface kivas at Pecos (1958: 241–265) makes numerous comparisons with those of Upper Rio Grande sites, notably those at Pindi (Stubbs and Stallings, 1953). Through his extensive excavations and unrivaled knowledge of the area, it was Kidder's considered opinion that the round subsurface kiva form had persisted in the area all through Black-on-white times as well as through the Glaze period. This is a logical assumption and I prefer it, but it is also at variance with the beliefs of Wendorf and Reed (1955) who prefer to think that the round subsurface kiva was temporarily displaced by the corner kiva. However, the round subsurface kiva obviously had a long and useful life at Pecos. There it developed a very definite set of floor features—the eastward oriented firepit-ashpit combination, with a three-sided deflector enclosing the ashpit, the ladder pit and landing slabs, grinding slabs, and numerous sets of loom anchors. The ladder pit-landing slab arrangement, the three-sided deflector, the grinding slabs set in the floor, and the loom anchors either do not occur, or occur as isolated instances, in the kivas of Gran Quivira, Pueblo Pardo, the published example at Abó, or at Paa-ko.

Basically, all of these kivas under discussion at the eastern edge of the Pueblo area are similar in that they are round, subsurface, benchless, and have the firepit-ventilator shaft arrangement on an east-west axis. Those at Pecos have the most elaborate, or most highly evolved floor features, and these occur with regularity. I attribute the lack of highly developed floor features in the Jumano-Tompiro kivas to the assumption that such kiva forms did not have a long history in that area. I hope to show later that they did not go through a developmental period in the Jumano-Tompiro area, but were, instead, the continuation in a peripheral region, of a somewhat earlier Rio Grande style.

DETAIL OF FIGURE 21.

EXCAVATIONS: THE CHAPEL OF SAN ISIDRO

. . . the temples [churches] of those provinces are not objects for admiration, nor are they sumptuous, for they are very small, with walls of mud and adobes, built without skill and at no expense. He asserts that the best of all those he has seen in those provinces could, considering their location, be built for less than two hundred pesos.

Trial of Don Bernardo de Mendizabal, 1691

When the work described here began, in 1951, the chapel of San Isidro was not an untouched site. A great deal of activity had centered around its stark bones for the past century. As far back as 1853 Carleton had remarked upon the holes dug at Gran Quivira to depths of 10 feet or more by treasure seekers—in the large mission, in the chapel, in almost every mound. Of specific interest is his reference to digging in or near the chapel, ". . . Near the east end of the chapel we saw where the people who had been digging had thrown up a great many human bones which now lie scattered about. From these we have selected six skulls to send to someone who is skilled in the science of craniology. . . ." (1854: 314). This mass of human bones, out of which Carleton selected 6 skulls, may have represented victims of the famine of 1668 when 450 persons perished from hunger. (Parts of this same mass grave were encountered in Park Service repair of the campo santo wall, described in later pages.) It is certain from Carleton's statement that treasure had been sought to some depth in the chapel of San Isidro before 1853. A map made by Ida Bell Squires in 1923, before the Park Service had undertaken any repair or cleanup of the area, shows treasure shafts in the apse of San Isidro and other excavations near the southeast corner.

We were unable to determine if the 1923–25 work under Hewett also touched on San Isidro, but if so it was only testing near the entrance or on the outside. In 1951 the Yrissari mine and tailings occupied the apse and part of the sanctuary and nave; beyond this, fill washed in from the north did not appear to have been recently disturbed. From the time of the first Park Service custodian, however, there has been intermittent, and sometimes not well documented, wall repair going on. Photographs on file at the monument show that both sides of the entrance in the center of the east wall had fallen, and that a good part of the exterior facing of this east wall had also collapsed. The entranceway and the facing were rebuilt, probably about 1928, though this cannot be pinned down with certainty. Neither are the photographs detailed enough to show definitely whether the original doorway was the same size and shape as that now standing nor have excavations in this area offered any proof, one way or the other. With no indications to the contrary we must, therefore, assume that the reconstruction is correct.

The east end of the north wall of San Isidro was rebuilt and raised from 2 to 3 feet at one time. The increased height, near the juncture with the east wall, includes the bottom and sides of a partial window or other opening. We have not located notes or photographs to authenticate this reconstructed feature, but if it was a window it would have opened immediately below the north end of the choir loft, a circumstance with which I am not familiar elsewhere. The opening is included in the reconstruction, but its authenticity may be open to question. Other work done in and around San Isidro is not so conspicuous, but it must have continued from time to time. Toulouse, who was once stationed there, refers to side altars ". . . the altars in the smaller mission (San Isidro) have not been completely uncovered. They were partially excavated, however, during repairs in 1942 and each was in the corner of the nave at the sanctuary end." (1949: 10, fn 76).

BEGINNING THE CHAPEL

Benavides, in 1634, credited Fray Francisco Letrado with the construction of a convent and a very fine church at the pueblo of Las Humanas and, as we have seen, this construction would have had to have been done between 1629 and 1631; a year later Letrado was martyred at Zuñi (Hodge, Hammond, and Rey, 1945: 65–66). Letrado's short tenure at Las Humanas is the primary reason why he has not generally been associated with construction of the chapel of San Isidro (Toulouse, 1940: 56; Scholes, 1940: 282). That Fray Francisco de Acevedo has been credited with building San Isidro while he was guardian at Abó, and ministered to Las Humanas as a *visita*, is based on the testimony of Nicolas de Aguilar, noted in the chapter on "Historical Background."

On the other hand, Aguilar is not necessarily an infallible witness on the early history of churches in the Salinas area. The office of alcalde mayor which he held there was not established until the incumbency of Governor Pacheco, 1642–44 (Hackett, 1937: 80–85). Aguilar was 36 years old when he testified, in 1663, to events at Las Humanas; he had not been in New Mexico prior to 1637, where he claimed to have arrived at the age of 10. He may have arrived even later, since at one point he was accused of having fled to New Mexico only after having murdered, with a shot from an arquebus, an uncle in Parral. While portions of firsthand information in Aguilar's testimony did go back as far as 1655, this was in regard to events at Tajique, Zuñi, and other pueblos. His firsthand knowledge of happenings at Las Humanas did not predate the year 1660, and he was most active there during Lopez' term of office beginning in 1661 (ibid: 139–143). Thus the statement of Aguilar that Acevedo constructed the church at Las Humanas appears to have been based on hearsay. The record of one church, San Miguel in Santa Fe, shows that even with primitive methods, construction was fairly rapid.

The record for San Miguel can be used as a gage for the probable amount of construction time spent on San Isidro. Assuming that the facade of San Isidro was 30 feet high and that the remainder of the walls were 20 feet high, the entire structure would have contained 14,800 cubic feet of masonry. If the vigas in the roof were laid on 3-foot centers, a generous estimate, about 37 would have been required. The church of San Miguel in Santa Fe was extensively remodeled in 1710. Eleven thousand cubic feet of masonry were laid and more than 200 timbers were set in place. The laborers were all peons or freemen who had entered voluntary servitude in payment of debts. Indian building methods were employed, and all techniques were reduced to the lowest common denominator. The one difference between San Miguel and construction at a mission site was that at the former, materials were delivered to the site and not produced there as they would have been at San Isidro. To erect the 11,000 cubic feet of wall, place more than 200 timbers, and complete the remodeling of the interior of San Miguel took 12 laborers (excluding a foreman and clerk) a little more than 6 months (Kubler, 1940: 38–39). This amounts to 153 cubic feet of masonry per man-month, really a low figure even for someone working off a debt. The population figures of modern pueblos give the average family size as approximately 5½ persons. Assuming that there was only 1 worker in each

family unit, and there must have been more, there were 545 people available. Had Letrado been able to persuade only one-tenth of the available labor force to work at one time, and if it took the Indians twice as long to gather rocks and lay them as it took the peons in Santa Fe to lay adobes, San Isidro could have been built in 3½ months.

When Letrado (or Acevedo) began his labors at Las Humanas, his first days there must have been similar to those described for Fray Roque at Zuñi, or the beginnings at Awatovi—the military escort, the acquiring of native quarters to serve for shelter and as the first church, the pageantry of the caracoling with horses, and the planting of the cross with the apostle kneeling before it, crossing himself and inviting the assembled Jumanos to do the same, the unrolling of paintings representing the mysteries of the Catholic faith, and finally the singing of short Christian prayers.

But this was only the prelude, the honeymoon enforced by the presence of the armed and mounted military escort. Within a few days, at most, Letrado was alone with his problems—the conversion of as many as 3,000 Indians, and the construction of a chapel as a place of worship. It is worth a moment to take stock. The lists of supplies furnished each friar for the journey to New Mexico and his maintenance there for each 3-year period, as well as the supplies necessary to construct and maintain a church, are given by Scholes (1930). Some additional data is furnished by Montgomery (1949: 144–146). We cannot be certain that Letrado at Las Humanas received his equitable share of the materials deemed necessary for the establishment of a mission and for his own upkeep for 3 years. Nevertheless, the caravan lists provide a close approximation. Excluded are items of food which were presumably consumed on the 7 to 8 months' journey up from Zacatecas.

As a maximum, providing he was frugal on the trip, Letrado had at Las Humanas for his own use for 3 years the following: Textiles—100 yards of sackcloth, 12 yards of Rouen-cloth, 12 yards of linen, 15 yards of "coarse stuff," and 9 yards of canvas for a mattress; clothing—2 pairs of shoes, 3 pairs of sandals, 2 pairs of stockings, 2 pairs of woolen stockings, 2 blankets, 2 pairs of leggings, 1 hat and box. While there seems to have been a large supply of cloth, other items of clothing are nowhere mentioned and presumably such articles were made as needed. For mending and making clothes there were 2 pairs of scissors, 1 pound of yarn or thread, 1 dozen awls with handles, and 12 each of 3 kinds of needles.

Montgomery (1949: 238) notes the Franciscan rule against riding horses, except in cases of manifest necessity, a prohibition not stringently enforced for those serving in farflung apostolates. If Letrado retained the issue at Zacatecas he also possessed—not a horse—but one mule with saddle and bridle. There is another item of livestock worth mentioning here. When the 8 months' journey began, each friar had been issued 10 heifers and 10 sheep "in preparation for the Journey." Were these the animals that were to become the nucleus of the later herds at Las Humanas? Each friar was also equipped with other necessary items such as butcher knives, saddlebags, a wine bottle, a drinking jug, a box and key, a frying pan, a comal, two metates, a grinding bowl, six pewter plates, two pewter bowls, and a ream of paper. Letrado was bound by vows of pov-

erty and chastity, and as far as his material wants went, aside from food, he was fairly well equipped to take care of himself for the coming 3 years.

For construction of his chapel there should have been on hand: 10 axes, 3 adzes, 10 hoes, 1 medium-sized saw, 1 chisel with collar and handle, 2 augers, 1 plane, 10 pounds of steel, 600 tinned nails for the church doors, 1,820 other nails, 1,800 nails or cleats for the roof, 800 tacks, 2 small locks, 12 hinges, 12 hook-and-eye latches, 1 pair of braces for the doors, various amounts of rope, and a 200-pound bell with frame. In addition to the items listed he must also have had hammers and sledges for breaking rock, crowbars, and some sort of digging tools, shovels, or spades. He had now only to persuade 2,000 Indians to provide the necessary free labor. This was a new experience. Heretofore the Jumanos had only provided conscript labor for the building of Santa Fe, for the gangs of 40 to 100 taken by Eulate to work the colonists' farms, and for sundry tributes and levies. Labor for a structure in their home pueblo could have been a welcome relief.

EMPLACEMENT

The problem of a location for the chapel of San Isidro is best understood with reference to figure 2. The 17 pueblos were arranged around small plaza areas but none of these were quite large enough to accommodate a chapel of the size projected. The problem was also complicated because parts of the town were scattered along a ridge, and there were few level spots available. There was one large open area to the west of the pueblo, but perhaps this space was saved for a future mission church and attached convento. The only remaining space, even near to the center of activity, was the small cove formed by the juncture of two low ridges. The largest pueblo, Mound 7, occupied one of these ridges to the north; Mound 10 lay to the south and west. Smaller houses, Nos. 8 and 9 were at a little distance to the east. The site was on a slope, but it was flanked by occupied buildings and there was sufficient room toward the east for a campo santo. There was, however, no space left for the addition of a convento; to construct one would have required an inordinate amount of cutting into the hill and leveling. Evidently a convento was not planned for San Isidro; the open area at the west was presumably being saved for construction of the later San Buenaventura and its extended convento buildings. Two other early chapels, somewhat smaller than San Isidro, were excavated at Quarai and Tabirá by Stanley Stubbs for the Museum of New Mexico (Stubbs, 1959: 162). That at Quarai was surrounded by house mounds and was supplanted by the later, larger mission of La Purísima Concepción; the chapel at Tabirá occupied a central plaza location and was never superseded by a larger structure.

Toulouse, however, writing of Abó, states in reference to San Isidro that its position was purely defensive, the pueblo buildings covering the chapel entrance within easy arrow shot (1949: 7 fn). This infers that the Jumanos were expected to defend San Isidro from invaders. This could hardly have been the Apaches since Spanish slave raids against them had only begun and they were not yet aroused to serious reprisal against the pueblos and frontier settlements. Instead

of receiving protection from his charges, Letrado was already "flanked on all sides by enemies, incipient or otherwise, an unmistakable strategic disadvantage." One advantage that San Isidro did have was its setting in a small cove where it was quite a bit lower than the ridges to the north and west, and lower than the flanking pueblos. This gave some protection from the weather and the persistent west winds, certainly not an inconsiderable factor at Gran Quivira.

Superposition

There is no superposition over a native kiva at San Isidro. This is a virgin location and approximately one-third of the floor area was cut to bedrock. Montgomery (1949 passim) marshals impressive evidence to show that an effort was always made by the Franciscans to superimpose some important part of their mission establishment over a kiva, that seat of pagan rites and idolatry. This certainly seems to have been true at Church 2, Awatovi. For the excavation of San Gregorio de Abó, Toulouse shows a kiva in the garth of the convento. It was not in association with other pueblo structures and Toulouse believed that the kiva was built at some period during the construction or occupation of the church. He reasoned that the Indians built the kiva when the Religious were absent and that it had a short term of use (Toulouse, 1940: 56–57).

A subsurface square kiva was excavated in the identical position in the garth of the Immaculate Conception at Quarai. Montgomery (1949: 135–137) takes exception to Toulouse's interpretation for Abó and prefers to see both of these great churches at Abó and Quarai oriented so that the garth would overlie a filled kiva. If the altars had been superimposed over filled kivas as at Awatovi—yes; but it is doubtful if the kivas in question were in existence when the churches were begun. I prefer Toulouse's interpretation of the kiva at Abó, and by extension, a similar interpretation for the kiva at Quarai. The kivas in these locations were a bit of reverse superposition on the part of the indigenes. In each case the garth presented an open space fairly close to the center of church activities. Placing a kiva in such a location during an absence of the friars gave the natives the best of two worlds. It was an opportunity to miss no chance in the field of religion. That the descendants of the indigenes follow the same course, to pursue their own way and also take advantage of any extra grace provided by the Catholic church, is evident in all Rio Grande pueblos.

Stubb's recent publication on the early chapels at Abó and Tabirá does not mention the possibility of superposition of these structures. His work was rather stringently limited and it is presumed that excavation was not carried on below the sanctuary-apse areas.

Preparation of the site

The site chosen, at the head of a small cove, required some cutting and filling to provide sufficient level space. At the west, or sanctuary end, the excavation was carried to bedrock, a depth of 8 to 10 feet. It was also necessary to cut into the slope at the north, to a depth of from 2 to 6 feet, along most of the north side of the chapel. Portions of this cut also penetrated a layer of refuse from Mound 7. Where we trenched it beneath the chapel, it was thin and scat-

tered. The material taken from the cuts was moved eastward on the slope and used as fill below the eastern third of the floor. As a result of this filling the entrance at the east side was raised about 4 feet above the general ground level there. As it was set into the cove, approximately one-third of the floor area of San Isidro was 8 to 10 feet below the original ground surface, one-third or less was at the original ground surface, and the remainder, at the east and south, was built on fill.

The material removed was limestone, rubble slopes, and below these in spots, a coarse and poorly cemented sandstone. None of this material is too difficult to remove with modern handtools, but its removal by primitive methods must have represented a fair amount of hand labor. Church 2 at Awatovi was built over razed Pueblo dwellings. Their removal was comparatively simple. I do not recall any other mission structure in the Pueblo area, except possibly Giusewa (where portions of a steep hill were embodied in the construction) where such a proportionate amount of labor was expended in preparation of the site.

Size

Overall, interior dimensions of San Isidro were: length 109 feet, width 29 feet. With the exception of Giusewa in the Jemez area, this early and primitive chapel had the greatest interior span of any recorded mission structure in the Pueblo region. To bridge this span and bear on the full width of the walls, *vigas* at least 33 feet long were required. This is another indication that it was the newcomer, Letrado, who built San Isidro. Acevedo, who constructed churches at Abó and Tabirá, would have known better, for this great width posed serious problems in adequate support for the heavy roof.

PLAN (fig. 17)

San Isidro is a continuous nave church without transepts and the main axis lies east to west. The entrance is at the east and the building is a single structure without attached rooms or other appurtenances.

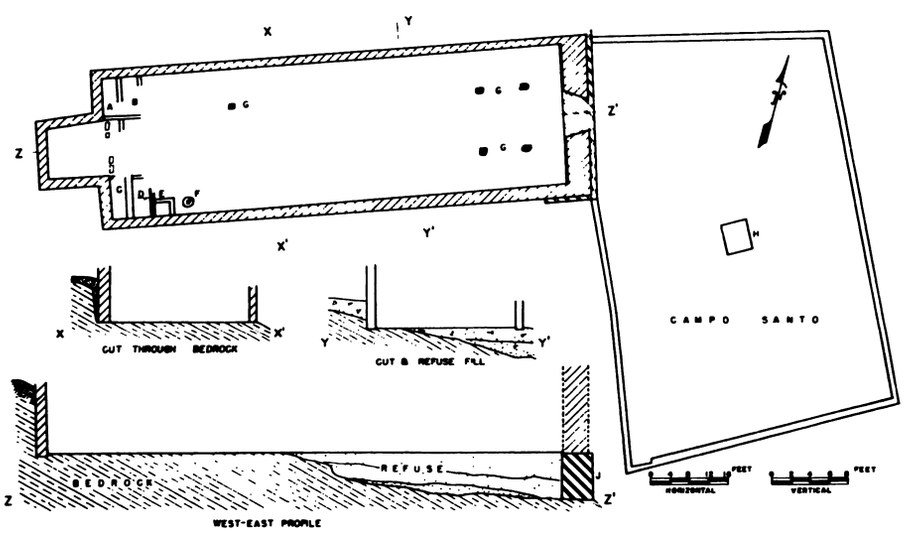


FIGURE 17 The church of San Isidro, plan and sections, and the campo santo. A, C, closetlike enclosures probably serving as sacristies; B, probable side alter; D, wall of raised sanctuary area; E, base for stand or cupboard holding baptismal supplies; F, sacrarium; G, stone bases for upright roof supports; H, masonry base for a cross in the campo santo; J, foundation—it occurs only at the east end of San Isidro.

CONSTRUCTION

The heavy east wall of the chapel was the only one for which a definite, wider foundation was laid. Here, where the construction was carried over new fill, the wall was supported by a foundation approximately 5 feet wide, or 1 foot wider than the wall it supported. Its maximum exposed depth was 4½ feet, and construction was identical with that in the wall. There were no distinctive foundation courses throughout the remainder of the structure. There was no change in the type or width of the masonry in these walls, they simply started up from bedrock or from the fill. Judging from the present floor level, not more than one or two courses were ever dug into the soil at the base of a wall.

At the east, or entrance side, the wall supported by a foundation is 3½ to 4 feet thick; the walls in the remainder of San Isidro vary from 1½ to 2 feet. The masonry, from surface appearance, can scarcely be distinguished from that of the pueblo construction in House A or Kiva D. It is of the same blue-gray limestone used in the rest of the community; the blocks were quarried on their natural bedding planes and they are laid in abundant caliche mortar. If anything, they are slightly larger than the units used in House A. Except for the thick east wall, the construction was two stones wide, often overlapping; the better surface of each stone formed its portion of the wall face. There is little or no fill, except mortar, in the center of the wall.

The east wall, more than twice as thick as the remainder of the construction, was laid with a rubble core of haphazardly gathered limestone chunks in a thick matrix of caliche; this was faced with a veneer in the usual style. Such heavy, rubble-filled walls were standard throughout all of the later church of San Buenaventura where a wall thickness of 6 feet is not unusual. The use, by the Spanish, of caliche, found in abundance over all of the ridges, was a distinct advantage over the topsoil mortar used in the pueblo structures. While caliche is much harder to both dig and work up into mortar, it is far more durable and impervious than the refuse-laden topsoil.

The entrance was in the 4-foot-thick east wall. The doorway itself (this was the one rebuilt about 1928) was trapezoid in plan, being 6 feet wide on the outside and 9 feet wide on the interior. The lintels had disappeared before Carleton's time. Montgomery shows that at Awatovi the door and window framing was erected first and the masonry then laid against these members, enclosing them on three sides. No insets for similar jambs were found in this repaired wall, nor are there other indications of the framing method. Inset timber jambs were, however, not an absolute necessity.

Toulouse reports an iron pivot hinge at the bottom of the door between the portal and the nave at Abó (1949: 9). The sill was of three hewn planks. In this type of construction the door was supported by a pivot on the sill at the bottom and held in line by a similar pivot between it and the lintel, at the top. Kubler (1940: 49) describes a similar method as the most common form in mission structure "one vertical member of the [door] frame is provided at both ends with solid round pins which fit into cuplike sockets in the lintel and sill." This form of hinge would not necessarily require jambs set solidly in the masonry; light jambs or stops fastened between the sill and lintel would serve to make the

construction weather-tight. A form such as this may well have been in use at San Isidro.

The east wall was seemingly widened for structural reasons. It held the wide door opening; undoubtedly there was a window opening through it into the choir loft (Kubler, 1940: 58), and possibly above the roofline a second opening with some accommodation for a bell (fig. 18). There were no signs of a porch or the remains of towers outside the entrance, such as were common for the period (Montgomery, 1949: 57–58). We note in this connection that, in Church 2 at Awatovi, the towers, baptistry, and parlor were all added at the entranceway after construction of the church, and apparently after it had been in use for some time; Montgomery records two floor levels for this area (op. cit.).

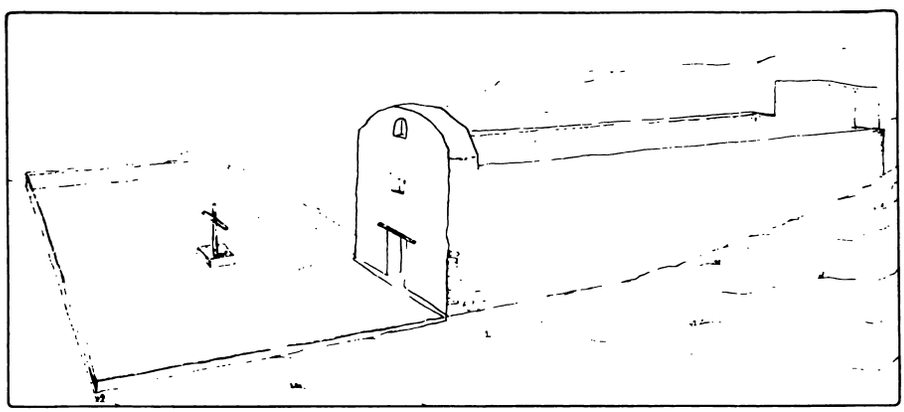


FIGURE 18 Reconstruction drawing of the church of San Isidro as it may have looked in the middle 1600's, looking southwest. The problematical window opening to the choir loft through the north wall has been omitted.

CHOIR LOFT

Evidence of a choir loft was scanty. There was not sufficient wall height remaining to carry the sockets for beams that may have supported it. We assume that one was present, however, because it was a constant feature of mission structures, and there were bases for the upright supports. The plan, figure 17, shows two sets of slab bases placed just below floor level in the nave. They are at distances of 8 and 16 feet out from the east wall. As I hope to show further along, it was quite likely that the roof of San Isidro was supported by two rows of posts down the center. I suggest here that the first two supports, 8 feet inside the nave, extended to the roof and that the choir loft was attached to and supported by these. The choir loft then would be about 8 feet wide, possibly a little less, and some 29 feet long. There is no evidence as to the mode of entrance, but it was undoubtedly by means of stairs beginning under the loft and rising against either the front or side wall to an opening in the floor of the choir loft.

NAVE

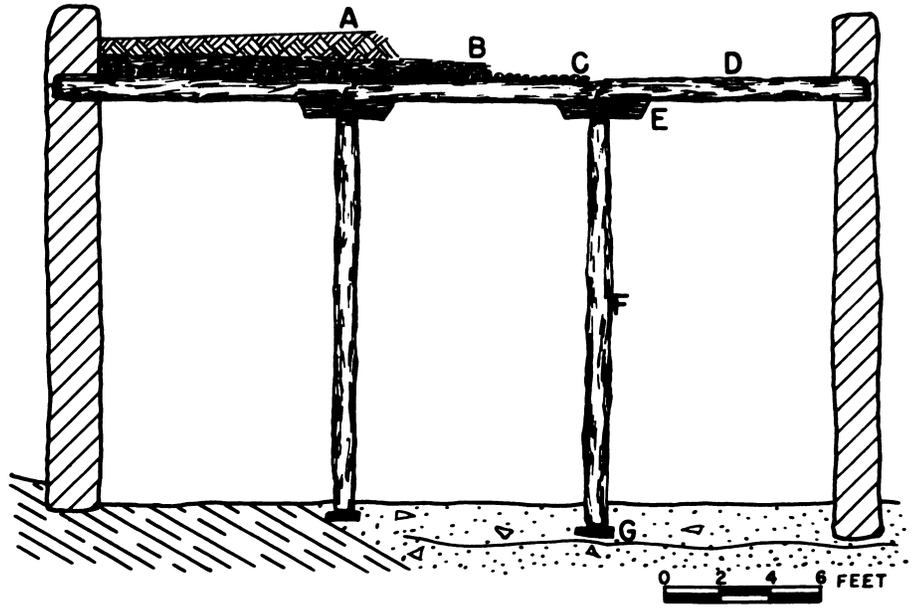
Under this term we include the major part of the enclosed space within the chapel—that portion which was for the accommodation of the congregation. The nave is traditionally separated from the sanctuary by the sanctuary rail or by a low screen. In San Isidro, this division may have been by a low masonry

wall, and the area of the sanctuary raised slightly behind this wall. At any rate, I have considered that the fragments of low masonry wall at the sanctuary end of the church may have formed the base for walls or railings which delimited the sanctuary area. I have made somewhat of a point of this here, that the sanctuary was a raised central area, because there are fragmentary remains at this end of San Isidro which are not customarily considered to be a part of the nave, but which are usually separate rooms. These are outside of the enclosed sanctuary area and will be described as other construction in the nave.

Vigas and Supports (fig. 19)

The interior of the nave was 29 feet wide; vigas would have had to be at least 33 feet long to bear on the full width of the walls. We have already said that this is an extreme width, exceeded only by Giusewa at Jemez. The width of Church 2 at Awatovi was said by Brew to have been 16 feet, and by Montgomery, 19 feet (Montgomery and Brew, 1949: 54–241). The walls of San Buenaventura, within a few yards of San Isidro, are massive—5 to 6 feet thick—and the whole structure with its attached convento demonstrates a taller, more elaborate, and better planned edifice than the pioneer San Isidro; yet, here the span of the nave was less, varying from 26 to 27 feet. Maximum widths of other mission churches are given by Kubler as: Abó, 26 feet; Cordova, 17 feet 5 inches; Patokwa, 25 feet; Ranchos de Taos, 25 feet 3 inches; Quarai, 27 feet; Chimayo, 22 feet 5 inches. (1940: 68).

FIGURE 19 Conjectural roof reconstruction at San Isidro, shown in north-south section. A, soil cover up to 1 foot thick; B, layers of grass and brush; C, closely spaced savinos or small poles; D, viga; E, bolster; F, upright roof support; G, stone slab as a base for roof support. The reconstruction is based on the extreme width of the structure and on the finding of five stone slabs, so placed as to suggest a series of interior supports. The vigas (D) may have each been one continuous timber, and the uprights (F) added only when it was found that the vigas were unable to support the roof load. In that event, the bolsters (E) were probably not employed; they are shown here to cover the possiblity that each viga was a short timber extending one-third of the way across the space. Corbels were probably omitted at the juncture of viga and exterior wall.



I believe that the roof of San Isidro was supported by two rows of posts through the interior, cutting this space into three long strips. This is an unorthodox view, but it is supported by considerable evidence and another occurrence of interior supports, at San José de Giusewa in the Jemez, the only mission church with a span greater than that of San Isidro. At Giusewa, the excavations of 1922 exposed a line of baselike supports running through the center of the church. While there was no great amount of published data regarding them, Kubler believed that these supports did represent the bases for a line of medial support posts or pillars through the length of the church (1940: 43).

At San Isidro, there remained five flat stone slabs set from floor level to 1½ feet below the floor. Four of these were set in pairs near the east end, and centered 8 feet in from the north and south walls, respectively; the space between them is 13 feet. The first pair, 8 feet out from the east wall, probably were bases for posts which supported the choir loft and extended up to the roof. The second pair of bases is slightly more than 16 feet out from the east wall, too far to be considered in connection with the choir loft. The fifth base, 68½ feet out from the east wall and in line with the north row of bases, was laid on bedrock and would have been flush with any floor surface. No other basal supports were found, but it will be recalled that there had been some searching for treasure here and that one of the first Yrisarris had found in San Isidro a large white stone bearing a "map" of the treasure location. It could well have been one of the large slab bases.

The five slab bases then, of themselves, suggest that the roof was supported by two rows of upright wooden posts. Their spacing is regular; the posts supported vigas which were 3 varas apart; each row was 3 varas from the sidewalls, and the space between them was 5 varas wide.

The probable size of the timbers used in the roof is of some interest. Timber for a 29-foot span was not easily available. This is not at present a pine country and the nearest stands which could produce pine vigas of a size to span the nave are reported to be in the Gallina Mountains some 20 to 25 miles to the east. Pine did not appear to have been easily available to the builders of House A either; all of the wood recovered there was small pieces of pinyon or juniper.

For Church 2 at Awatovi, Montgomery (1949: 241) assumed that the vigas must have been spaced on approximate 3-foot centers; there was no internal evidence of this spacing and Montgomery must have assumed, from his encyclopedic knowledge of architecture, that a 3-foot spacing was structurally the most economical. This could well have been the case. At Abó, however, the spacing of the vigas was accurately determined at 7½ feet (Toulouse, 1949: 9), identical with the spacing on 3-vara centers at San Isidro. At Abó, Toulouse found the vigas to have been compound, built up of, "six one foot square timbers set in pairs, three sets high" (ibid.). In calculating the probable size of the timbers at Awatovi, Montgomery assumed that a single timber was employed. Considering the early and primitive state of San Isidro the following estimates of the roof timbers are also based on the use of a single round timber. Probable roof loads and stress factors are taken from Montgomery (op. cit.). And, because of the poor quality of the masonry and the thin walls, stresses are calculated from center to center of the side walls.

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With a roof load of 162 pounds per square foot and a spacing on 3-vara centers, the load on each viga, including the weight of the viga itself, was 43,183 pounds. Using a near-maximum fiber stress for pine of 3,000 pounds per square inch, vigas at least 18.9 inches in diameter in the center of the span would have been required to support the roof. These vigas would have had an excessive deflection, or sag, near the center of about 4.6 inches. A ponderosa pine log with an even diameter of 18.9 inches from end to end, and long enough to have extended through the walls, would have weighed 2,385 pounds. Even with primitive hoisting equipment to augment hand power, a log weighing more than a ton would have been almost impossible to handle on the top of the thin, poorly bonded walls of San Isidro.

In the light of all these factors, I think it is apparent that it would have been just about impossible to roof San Isidro with single, unsupported log vigas, and that the bases in the floor do represent a double line of interior post supports.

Whether these supports were added after the roof was started and excessive sag or other weaknesses had developed, or whether the supports were planned from the first, is impossible to demonstrate. I suspect the former. Interior supports were not an item of church architecture and—as happened to the builders of San José at Giusewa—Letrado must have envisioned a great spacious nave and found when the time came to roof it that timber of the required size was difficult or impossible to obtain, that it could not be handled, and that the walls were too thin to support such tremendous and concentrated weight. Church 1 at Awatovi, with a span of 26 feet, was never finished and Church 2, only 16 feet wide, was built in its stead (Brew, 1949: 54). Letrado expediently used what was at hand, added interior supports, and finished the second widest of the mission churches.

Corbels, Bolsters

I assume that corbels were not employed below the vigas where they issued from the wall, and that bolsters were not used to cap the interior roof supports. There is no evidence for this assumption, except that such omissions would be in keeping with the general architectural feeling of San Isidro. Both of these architectural embellishments would have been far more ornamental than useful in the short spans between the interior supports. Toulouse (1949, fig. 4) illustrates an elaborate corbel and longitudinal supports below it for Abó, and Montgomery says that they were presumed to have been employed at Awatovi where their paramount value was esthetic (1949: 158). However, there was no actual evidence for them.

Roofing

There was a wealth of juniper at hand at Las Humanas and it is assumed that this material formed the *savinos* laid above the vigas. The simplest construction probably would have been to lay them as closely together as possible between the vigas. This construction would have left some voids, which could then have been covered with small branches, grass, and bark strips, and the whole topped with a foot or more of clay. More than likely, the parapet wall was raised only enough to retain the clay cover and was pierced so that several wooden canals could be installed to carry off the rainwater which did not soak into the roof.

Fenestration

There were two possible methods of providing light for the interior of the nave—(1) a clerestory window above the sanctuary, or (2) windows in the walls of the nave. Comparatively, there is little choice, even though the clerestory is apparently a New Mexican development (Kubler, 1940: 67). Toulouse records a clerestory at Abó (1940: 10), but Montgomery argues against it at Awatovi on the grounds that its construction would have required additional work (1949: 61–67). With no other basis than this, and on the strength of Kubler's statement that no great amount of light was required (one window often being considered sufficient, and three the exception), it seems safe to assume, in view of the other construction difficulties present, that San Isidro was dimly lighted by one or two small windows in the nave wall. Windows were always confined to a single side of a church, and at San Isidro the south wall would have provided the most light. Both Montgomery and Kubler describe window framing and construction in some detail. Of two types of window construction, the gridiron frame of upright spindles was the earliest and was probably employed at San Isidro. There were various materials that could have been used for glazing, but oiled sheepskin parchment would have been much easier to apply than irregular shapes of selenite which would have had to be fitted into the gridiron frame.

OTHER CONSTRUCTION IN THE NAVE (fig. 20)

All of the requirements for a frontier mission were contained within a single enclosed area—the nave-sanctuary at San Isidro. There were no attached rooms for the baptistry or sacristy. There were, however, the remains of low walls and closetlike enclosures among other masonry at the sides of the sanctuary end of the nave; all of these were identified from the point of view that they represent the absolute minimal architectural and ritual requirements. The treasure-hunting operations had destroyed all remains in the center of the sanctuary area and in the apse. Low-wall remains on the fringe of the operations suggested that the sanctuary was a raised portion in the center, and it has been reconstructed as such. A few heavy stones found at the opening of the apse indicate that a second or third level may have risen there, elevating the altar somewhat above the general level of the sanctuary.

Space was strictly limited in San Isidro. I think that if the raised central portion was considered the sanctuary (divided from the nave at the front by the communion rail and from the features at the sides by an increase in height) it would then have been proper to have such items as a space for baptism, and small closets to serve as sacristies, at this end of the church.

Baptistry (figs. 20 A, B, 21)

In the larger and more formalized mission structures, a separate room was provided for baptism, and in the ideal situation this room was located near the church entrance so that the convert could be baptized before his admission to the church. In this location it was entered either from outside the church or from just within the nave. At Church 2 at Awatovi, the baptistry was outside at the left, entered from outside the church (Montgomery, 1949: 58–59). It occupied a similar position in the large mission structure at Quarai (Toulouse, 1949: 9 fn). At San Buenaventura, the baptistry off the nave to the right at the front, and at Abó off to the left, were entered from just inside the nave.

The requirements for baptizing are outlined in an undated letter from Fray Angélico Chavez quoted by Toulouse. In addition to his identification of the font and sacrarium, I note with interest his practice of baptizing not in the baptistry, even when one was present, but in the sacristy, while at the same time employing one feature of the baptistry in this rite.

> The Font is the actual bowl, usually supported by a low pillar, that catches the baptismal water. The Sacrarium is a small underground cistern in which the water is ultimately disposed of. Two possible arrangements are: 1) The Font built over the Sacrarium; 2) the two separate, the font in the center of the Baptistry and the Sacrarium to one side. (If I recall correctly, the Sacrarium in the old baptistry of San Felipe Pueblo is to one side, but there is no trace left of the Font. I used to baptize in the sacristy, using a glass dish to catch the water under the infant's head; then the Indian sacristan took this water all the way to the front of the church and poured it into the old Sacrarium). Any other fixture, or remains of one, against one of the baptistry walls could have been a small altar in which the Baptismal water and Holy Oils were kept. (ibid.)

The requirements then are a support for the font and a means of disposal for the liquids used, with possibly an altar or stand for storage of materials.

At Abó these requirements were met with a stand for the font built over the sacrarium in the center of the baptistry floor and, at the side against the wall, an altar with the top level with the base of a wall niche (ibid.). At Church 2, Awatovi, there was a conical stand for the font in the center of the baptistry and a corner sink for disposal of the holy liquids. In Church 3, the stand and sacrarium were combined; the stand was hollow and emptied into a subfloor drain (Montgomery, 1949: 57, 89). We have no data on features uncovered during 1923–25 in the baptistry of San Buenaventura, or in the baptistry at Quarai.

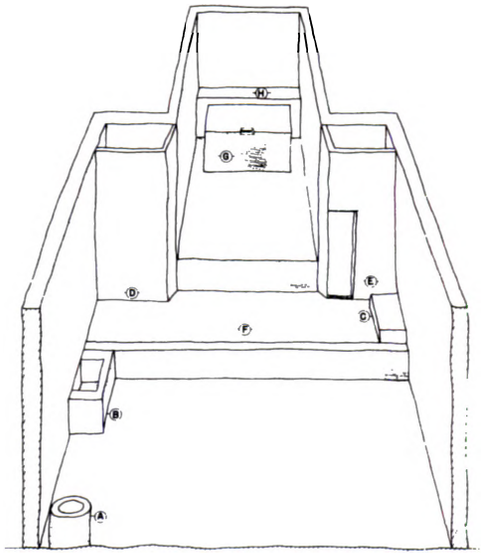


FIGURE 20 (Right) San Isidro, conjectural reconstruction of features in the nave/sanctuary area. A, sacrarium; B, side altar or receptacle for baptismal materials. A and B make up the baptismal area in the nave. C, possible side altar; D and E, sacristies; F, raised sanctuary area; it was possibly further delimited by the wooden railing; G, altar; H, retable.

FIGURE 21 The south side of the nave and sanctuary area in San Isidro.

All of this involved review is simply to show that the minimal features required for baptism are to be found on the south side of the sanctuary area at San Isidro, and that this area undoubtedly served as a baptistry. There were the remains of a hollow, cylindrical masonry stand, 2 feet in outside diameter, 9 inches in inside diameter, which served as the combined rest for the font and as the sacrarium. Adjoining this, against the wall, was a rectangular block of masonry which would have served well as an altar or for the storage of the necessary holy liquids. It was 5 feet long, 2 feet 3 inches wide, and 2 feet high.

This inclusion of the baptismal paraphernalia within the sanctuary or nave was not an isolated instance. The sacrarium at San Felipe was in the nave near the front of the church. In the recent excavation of the small chapel at Quarai, not to be confused with the well known large church there—La Purísima Concepción, Stubbs uncovered the base of a large post 12 inches in diameter set 2 feet into the floor at approximately the dividing line between sanctuary and nave. It was in the center and would have faced the communion rail and, beyond this, the altar. Stubbs suggested that this short, upright log possibly served as a pedestal to hold the baptismal bowl (1959: 163). The excavation of a somewhat similar

early chapel at Tabirá produced a stand and sacrarium almost identical to the example here at Gran Quivira. It also was on the left side of the church, in the nave, but close to the front entrance and was of cylindrical masonry construction, hollow, and plastered red. In the hollow interior were found the remains of a heavy clay rim, decorated in red and white, and so shaped as to suggest a support for a large bowl (op. cit.).

Possible side altar [1] (fig. 21, C–22)

This is a tentative identification; I first thought this low masonry structure to be a base for a pulpit. It is against the north wall at the right side of the sanctuary area. One side is formed by a small, closetlike enclosure, the other by a low wall which at the time of excavation was barely more than a foot high and quite fragmentary. Within this confined space there was a raised area, 4 feet long and 2 feet wide, filled with soil and floored with adobe. This small spot was the only definitely established floor surface found anywhere in San Isidro. Depending upon the exact level of the nave floor, this small area was raised from 6 inches to 1 foot above the general floor level.

When I identified this area as a raised base for a pulpit, I referred to Montgomery, ". . . [pulpit] probably attached to or placed against a convenient wall space near the communion rail but outside the sanctuary." (1949: 195). The suggested location seemed acceptable.

However, pulpit bases have not been identified in other excavated mission churches, while side altars appear to be an invariable feature. Construction at about this same point at Abó, in Church 2 at Awatovi, in the chapel at Tabirá, and in the earliest construction at San Miguel in Santa Fe has been identified as side altars. At Abó, Toulouse says of this construction, "In either arm of the transept were adobe altars placed on platforms raised ten inches above the floor . . . each platform was edged with a hewn beam having sockets five feet from either end, suggesting the use of a balustrade" (1949: 10). The raised and surfaced area at San Isidro is similar to the "platform" at Abó and may represent the base of a side altar. The only painted plaster in the site came from this area; some of it bore a floral design, and I note that at Awatovi, painted decoration in running floral designs was limited to the fronts of altars (Smith, 1949: 301). Some of this plaster appeared to have been molded over small poles, suggesting a wood, or wattlework facing for the implied altar.

Sacristies (figs. 20 D, 20 E, 21, 22)

There remains the question of the small enclosures at the extreme west end of the sanctuary area and flanking the apse. Since there was no other room or enclosure for a sacristy, it is assumed that these closetlike areas served the primary function of sacristies—the storage of vestments and supplies. Noting the long list of materials which were furnished to the New Mexico missions, it would appear that the storage problem was considerable, and even at San Isidro would have required some accommodation to safely keep the numerous articles used, among them: vestments, a large supply of textiles, vessels, books, oil, candle wax, and ornaments.

APSE (fig. 20)

This portion of the sanctuary is trapezoidal, 13 feet at its greatest width, and 13 feet deep. While the treasure shaft sunk in this area destroyed all of the floor, large stones remained at either side suggesting that the floor area here had been raised a foot or two above the remainder of the sanctuary. The main altar was presumably in its traditional location at the back of the apse. The

FIGURE 22 The closetlike sacristy area and the probable side altar on the north side of the sanctuary area, San Isidro.

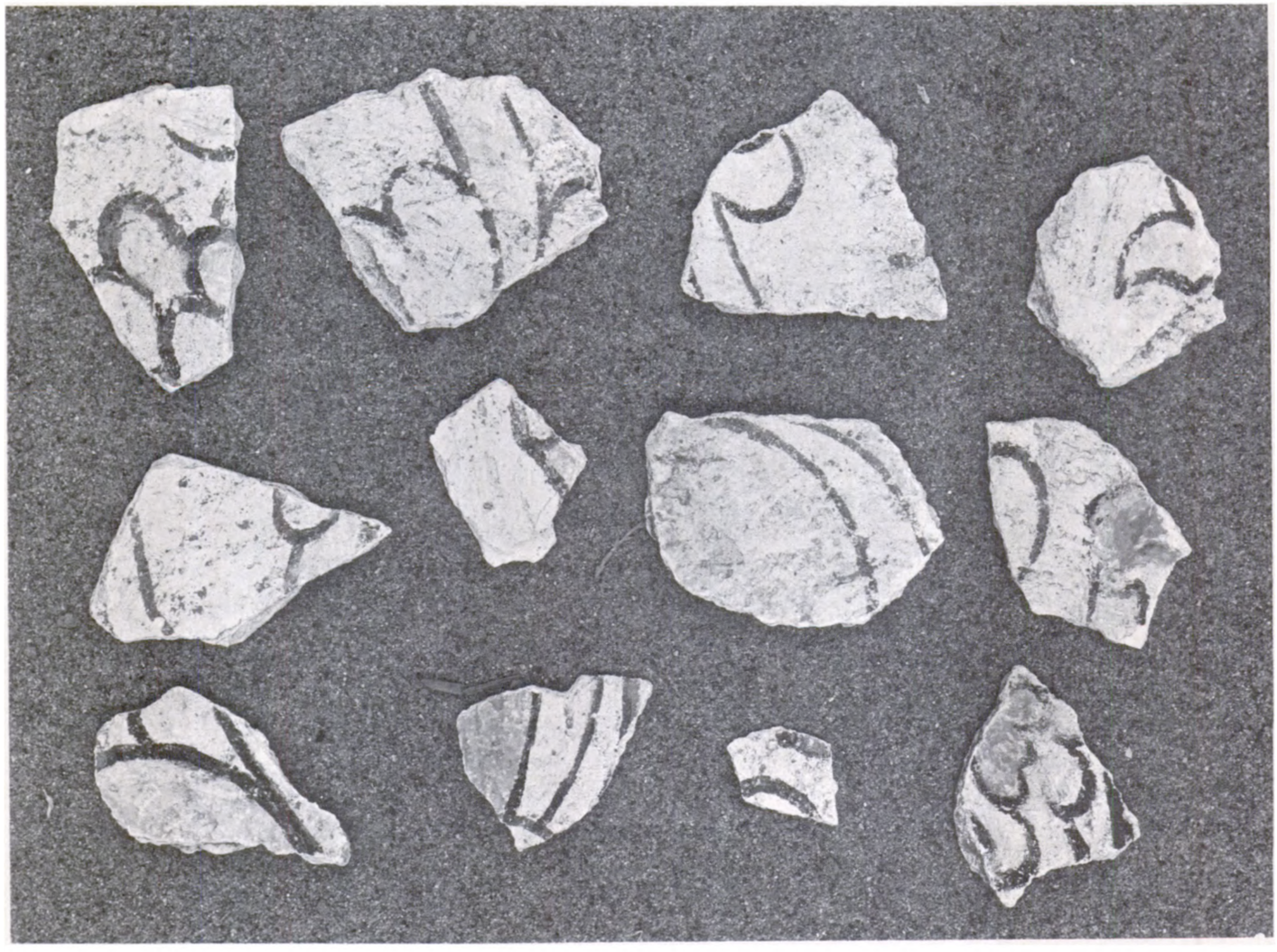
altar could have been backed by a retable—stone shelves or steps rising slightly above the altar at each side to hold candlesticks or ornaments. These flanked the tabernacle at the rear center of the altar. If it conformed to tradition, the altar contained a recess at the front for the altar stone, and the front was covered with an embroidered cloth, the antependium. Undoubtedly there was some form of reredos on the wall behind the altar. Possibly, at first, this ornamental background for the altar was made up of some of the numerous textile hangings

with which the churches were equipped; later a painted wooden reredos may have been made; it could also have been decorated with hangings and, perhaps, contained a niche for a statue.

PAINTED DECORATION IN SAN ISIDRO

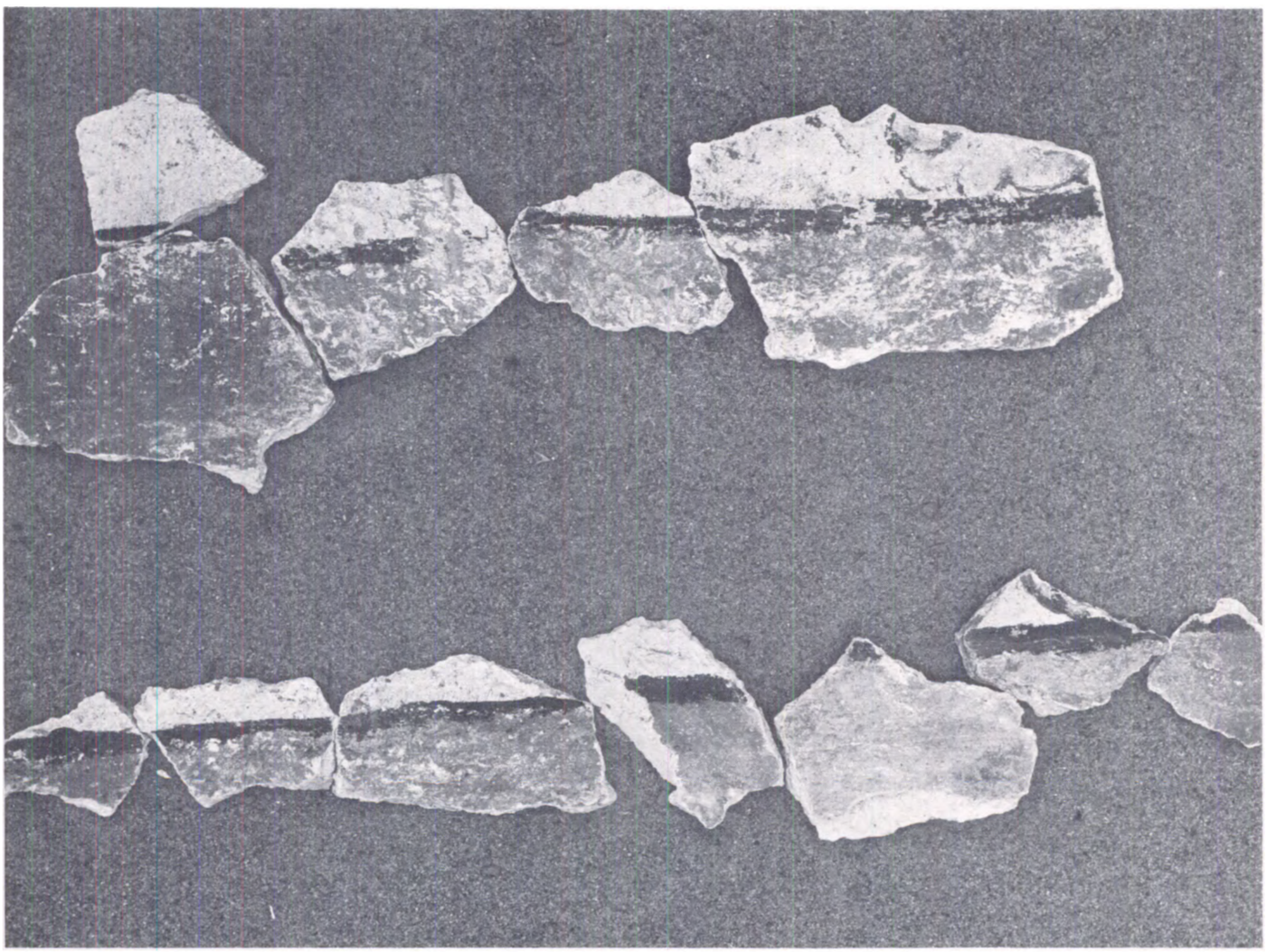
At least a part of the nave of San Isidro bore painted wall decoration. A few scraps of decorated plaster were recovered from the floor area near the possible side altar on the epistle side. The plaster was white and sandy-textured, possibly a natural gypsum tempered with sand. The few pieces recovered varied in thickness from 1/16 to 1 inch, and some of the thicker pieces, as noted, were formed over small poles. The base of the decoration was a solid dado in dull red, bordered at the top by a black line, ¼ to ⅜ inch wide. Above this were designs in thin black paint directly on the white background. They appear to

FIGURE 23, a, b The total recovered fragments of decorated plaster from the probable side altar.



have been some sort of a conventionalized floral design. The pieces recovered are shown in figure 23.

This application of designs above a solid-colored dado, or wainscoting, seems to have been typical of early mission decoration. At the chapel of Tabirá, Stubbs found a solid red dado, at least 5 feet high in some parts, which evidently encircled the entire nave. He did not find designs above the dado, but this may have been an accident of preservation. In contrast to the wall decoration, the altar there was an unrelieved white (Stubbs, 1959: 167). In Church 2 at Awatovi, there were wide, solid-color dados, usually of maroon or orange, bordered at the top by a black stripe, in the sanctuary, nave, sacristy, baptistry, and in other rooms of Spanish occupation. Above these, or in other areas, were designs in imitation of Spanish tiles; altars were decorated with running floral designs, and there was one design above a solid dado in imitation of wrought-iron grill work (Smith, 1949: 301–304).



BURIALS WITHIN SAN ISIDRO

There were two subfloor burials just inside the entrance, one at each side. Both were extended, and undoubtedly date from the occupancy of the building. These two were backfilled and no search was made for further interments, although it is quite likely that more were present. Both Toulouse and Montgomery record a large series from both Abó and Awatovi, and Montgomery devotes an interesting section to the practice of interments within church structures. Kidder (1924: 20) reports 150 burials from Nusbaum's repair work in the Pecos church.

CAMPO SANTO

The campo santo, or church yard, was cleared of brush and its enclosing wall repaired in 1956. This area was in the customary location at the front of the chapel; it extended 53 feet to the east and, beginning at the northeast corner of San Isidro, was 83 feet from north to south. This area had become heavily overgrown with brush; debris had washed down from the slope of Mound 7, and very little of the enclosing wall was exposed at the surface. Approximately 1 foot of wall remained below ground at the east, while it extended to 2½ feet below the surface on the west side. The wall was of limestone masonry, undifferentiated from that in the church, and was 18 inches wide. It had been laid on the uneven contour with no attempt to obtain a level grade. Its greater depth at the west, where it joined the southeast corner of San Isidro, was due to filling in that area for the chapel foundations. The wall had been partly destroyed at this juncture by two treasure shafts. There must have been a gate, or some form of entrance through the wall, although none could be definitely established. If there was a gate it was not framed by posts or by heavier masonry. In the southwest corner of the campo santo, however, there was a peculiar jog in the wall which suggested that there might have been steps, or a stile, there.

Surface

The sloping surface of the campo santo was irregular, with numerous abrupt piles of mixed rock and pueblo debris near the church entrance. These apparently came from leveling the site for the chapel. It was not possible to accurately define the occupational surface of the campo santo and we came to the conclusion that this area had never been graded, but had remained uneven during use. This conclusion was borne out by the locations of several burials encountered.

Masonry platform, or base

This construction was a low, masonry-walled enclosure, 6 feet square on the exterior. The wall was 20 inches high and had stood to almost this height above undisturbed soil. The space enclosed, about 4 feet by 4 feet, was filled with large rock and rubble; the rock increased toward the top, and the upper surface was to all intent paved with slabs.

This construction was in front of San Isidro, about halfway across the campo santo, and I believe that it was the masonry base for a large wooden cross. It was not directly in front of the door, but off to the south. Crosses shown in illustrations of historic chapels are always off to one side. While I was trying to identify this structure, I am sure that I did find some reference to the fact that the cross must not view the altar through the open door, but I cannot locate this reference now.

Burials

When we began work on the campo santo area, I presumed that it had once been leveled, and we dug several trenches in an attempt to locate the occupational surface. We could not identify one. There were remnants of a prehistoric room in the approximate center of the area. Aside from this, our exploratory trenches disclosed only the location of several burials.

There were random and fragmentary human bones throughout most of the fill in the campo santo. These represented interments disturbed during the construction of the chapel and the campo santo wall, and probably other pre-Spanish burials disturbed while the campo santo was in use. In the north center of the area, at a depth of less than a foot, was a group of three complete and three fragmentary human skulls which probably represented a reburial made during the construction period. There was one pre-Spanish burial beneath the remains of the small aboriginal room; it was an adult, flexed on its back, and without grave offerings.

Along the west wall of the campo santo was a mass of human bone. It appeared to be a mass burial made in a trench lengthwise of the wall. Some individuals were in the position of articulation and others were represented by random bones, particularly skulls. This group was within a foot of the surface and was exposed during trenching to clear the wall for stabilization. It was necessary to remove some of the bones, but no attempt was made to establish the extent of the mass grave. It was estimated that from 12 to 15 individuals were exposed. If the grave extended any distance from the wall it could easily have held three or four times that number. They may have represented people who died in the famine of 1666–68.

SUMMARY OF THE TYPE

There are now some data on five early Spanish chapels east of the Rio Grande in a line extending from Gran Quivira to Santa Fe—constructed not later than 1630. These are: (1) San Isidro, reported herein; (2) the chapel at Tabirá dated at approximately 1629 (Stubbs, 1959); (3) the chapel at Quarai whose date is estimated at 1614–20 (Stubbs, 1959); (4) the early church at San Miguel in Santa Fe with a probable date of 1620 (Stubbs and Ellis, 1955); (5) the "lost" church at Pecos from "the first two decades of the 1600's" (Stubbs, Ellis, and Dittert, 1957).

Form, Situation

Four of the structures are of the extended nave form; definite data are lacking for the fifth, the early San Miguel. The plan there suggests that shallow cruciform extensions could now be obscured by walls of the present church (Stubbs and Ellis, 1955: fig. 1), but this seems unlikely in view of its otherwise close resemblance in size and arrangement to the other four examples. While Kubler remarked that the New Mexican church in the first generation of colonization was commonly cruciform, these early chapels do not bear out this assumption. In this region at least, the cruciform church did not come into vogue until the flourishing period beginning about 1630, and after mission establishments had already been founded. These larger and elaborate later structures were always complete with convento and the conception was that of a permanent, large scale mission establishment. None of these early missionary chapels had attached conventos nor, as in the case of San Isidro, does an attached convento seem to have been planned. In at least four of these instances, nearby aboriginal quarters were probably taken over to function as storage and living quarters, offices, and the like.

Kubler gave a good deal of weight to the defensive and fortified aspects of New Mexican churches (1940: 132 and passim), but none of these five seem to have been placed with defense—against either outsiders or the inhabitants themselves—in mind. We have already covered the situation with regard to San Isidro. The structure at Tabirá was "surrounded by house mounds"; the Pecos example was far removed from the village; that at Tabirá was located "in the main plaza." Early San Miguel was somewhere in Santa Fe; we do not know its relation to the rest of the town. The locations were probably matters of personal preference for terrain, available space and, except for Pecos, the desire to be close to the center of activities.

Size

None of the publications by Stubbs and associates give dimensions of the four chapels which they reported; with the exception of San Isidro the following figures were scaled from published plans. San Isidro, 29 by 109 feet; Tabirá, 13 by 51 feet; Quarai, 19 by 48 feet; Pecos, 24 by 78 feet; at San Miguel, only the width is available, 22 feet.

Exterior rooms, sacristy

San Isidro and Quarai were simple rectangular structures, following the outline of the extended nave interior. The Pecos chapel and Tabirá each had an additional room opening off the sanctuary, to the right at Pecos, and to the left at Tabirá. These rooms have been considered sacristies. The situation at San Miguel is obscure, but it seems certain that there was at least no sacristy at the right of the church. Evidently a sacristy was considered more important than a baptistry, since baptistry functions were included in the nave or sanctuary, but as we see here, a sacristy was the first appendage to be added. If a separate room was not built as a sacristy, this function was taken over by masonry clos-

ets in the sanctuary area at San Isidro, and possibly by movable wooden chests or cupboards at Quarai and San Miguel.

Apse or sanctuary area

Stubbs and collaborators who have described the other four structures have avoided the term apse, and have included this area in the sanctuary. All except early San Miguel had a trapezoidal, or "tapered," apse-sanctuary area. The apse at San Miguel was approximately 17 feet square. There is a good deal of difference in the proportions of the trapezoidal, or tapered, form. At San Isidro it approached a rectangle, while at Tabirá the opening to this area was not restricted but was the full width of the church, and the entire area was rather shallow.

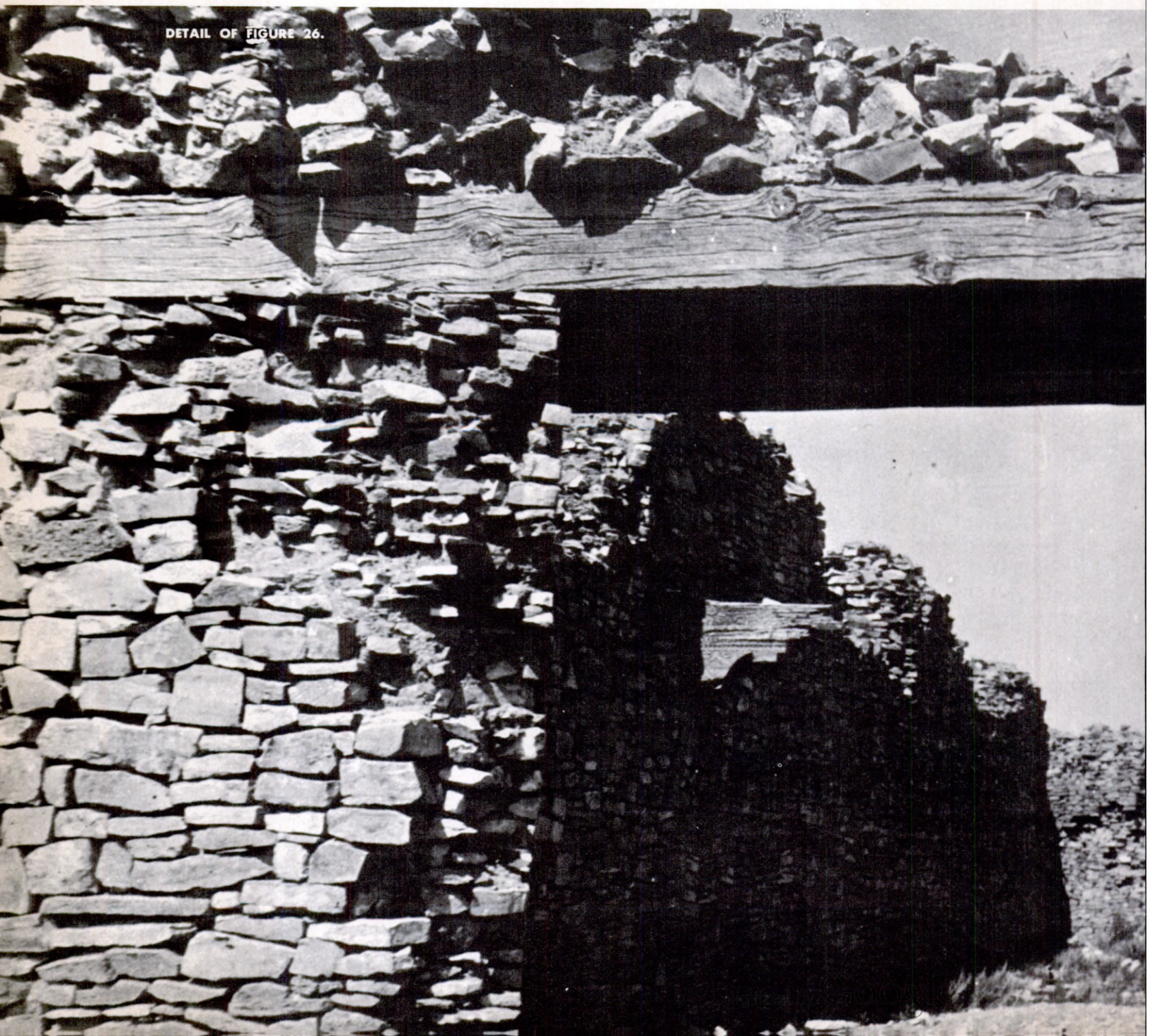
A definite effort was made to elevate this area above the general floor level of the nave. At San Isidro, Pecos, and Tabirá, the sanctuary and apse levels were raised behind masonry retaining walls. The greatest elevation was apparently at Pecos where the first retaining wall was 3 feet high; a curious ramp in the center gave access between nave and raised sanctuary. Steps to the raised area were in use at Tabirá, and the situation at San Isidro is unknown. There was no wall separating sanctuary from nave at Quarai, but here the floor sloped upward toward the apse so that this area was some 2 feet higher than the entrance of the church. Steps led up to the sanctuary at San Miguel, but their height is not given.

Remains of a main altar at the back of the apse were found only at Tabirá, but we assume that such altars were an invariable feature of these chapels. At San Miguel there were two side altars of adobe and in front of each a platform. These are reminiscent of the platforms at Abó. There was a possible side altar at San Isidro. The floor area at Tabirá was well preserved, but there were no indications of side altars there nor at Quarai. They may not have been an invariable accompaniment of the early chapel.

Other construction

The most frequent of other interior construction features was the provision for baptism in the nave. Hollow, circular masonry structures as support for the baptismal bowl and as sacrariums were found at Tabirá and San Isidro. At Quarai a wooden post may have been used as a pedestal for the bowl. There are no data for Pecos or early San Miguel. At Tabirá there were two adobe disks on the floor of the nave, one on either side of the steps to the sanctuary; they may have been socket holders for candlesticks or standards.

We assume that the chapel interiors were plastered. Remains of plaster were found at Pecos, Tabirá, and San Isidro. That at Pecos was unpainted adobe, while traces of red dados were recovered at San Isidro and Tabirá. Painting above the dado was probably confined to floral or tile designs. As Montgomery has pointed out, ornamentation was limited to hangings in the sanctuary area. Stations of the cross were not allowed the Franciscans prior to 1686, and seats and pews were forbidden. These were cold, dim, and austere structures.



DETAIL OF FIGURE 26.

THE MISSION OF SAN BUENAVENTURA

. . . he replied that churches with decorations and costly ornaments were not necessary. . . . The fact is however, that these things are what we have the most care for, and procure at our expense and labor, for if precept and virtue teach these natives, they are all influenced as well by the decency, ornamentation and ritual of the churches.

Andres Hurtado, 1661

Very little information has been preserved on the excavation of the large church of San Buenaventura and its attached convento. What is available is summarized here in order to bring the scattered data together in one place.

EXCAVATION (Plan, fig. 24, general view, fig. 25)

The School of American Research/Museum of New Mexico group under Director E. L. Hewett began the excavation of San Buenaventura in July 1923. This group included among other notables: Odd S. Halseth, Lansing Bloom, Anna O. Shepard, and Fred Kabotie. They were joined a week later by Douglas Loree and J. C. Harrington of the School of Architecture, University of Michigan, to whom Hewett assigned the study of Gran Quivira and other New Mexico missions. Also in the party was Sam Huddelson, superintendent of buildings and grounds for the State Museum. Work did not begin on San Buenaventura until the end of the third week of July when most of the original group had been sent off on other tasks. About this same time Superintendent Frank Pinkley arrived from Casa Grande. A brief 1923 report attributed to Hewett said, "It is decided that the clearing out of the debris from the mission [San Buenaventura] will begin next week under Sam's direction [Huddelson], assisted by Mr. Pinkley." Hewett then left for a brief trip to San Diego.

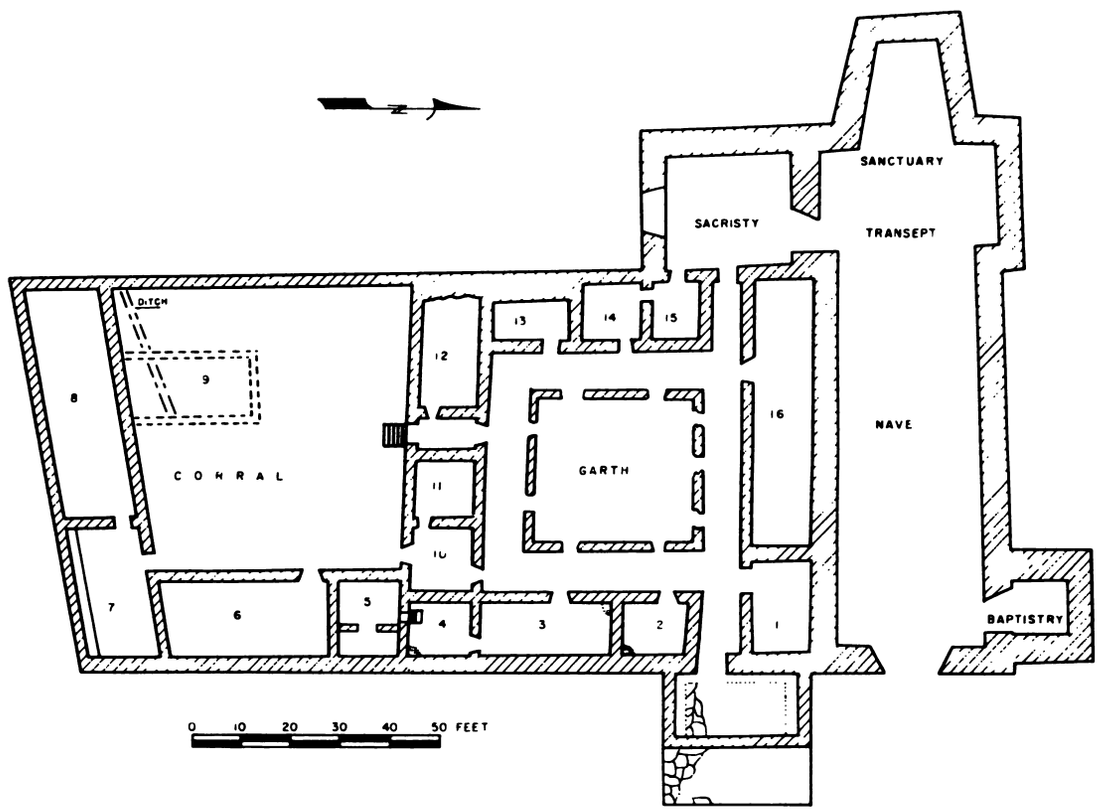


FIGURE 24 Plan of the church and convento of San Buenaventura at Gran Quivira.

On Hewett's return he noted that Sam and Superintendent Pinkley had cleared away loose rock "from about the mission," excavated the vestry room and the baptistry, opened up the front doorway, and repaired such walls as had appeared to be in particularly bad condition. The nave was not mentioned. Superintendent Pinkley's letter of August 1, 1923, to Director Stephen T. Mather of the National Park Service reports the excavation in a little more detail.

> The work of clearing the debris out of the mission began on the morning of the 16th and continued until the night of the 21st. It was a straight job of moving dirt and rock, it was not necessary to sift it or examine it closely for artifacts. This being the case as many men and teams as could work without interruption were put on the job and it was rushed through, so far as the money would carry it, in a few days. It was by no means enough money to complete the cleaning of the mission and the complex of rooms adjoining the mission had to be left practically untouched. . . .
>
> Part of the money was still unexpended when removal of debris was stopped and this was to be expended in restoring some of the weak spots in the walls and rebuilding broken doorways and corners and some to go toward filling the gaps made by the ever present vandal and treasure hunter. . . .
>
> Leaving this minor work to be carried out by a gang of four men and a team, I departed on the 23rd. . . .

In September 1924 Wesley Bradfield, of the museum, was reported only to have cleared another 50 yards along the front of the mission. There are several inconclusive reports for 1925; among them that of the Park Service, "we were doing some cleaning up of the rooms of the convento." *El Palacio* for September 15, 1925, reported that "Director Hewett has had a large force of men at Gran Quivira." Summaries for this year attributed to Hewett say, "Commenced work on the mission with [sic] men and teams. Clearing of rock from the convent and taking debris away from the outside of the church foundations. . . ." and, "The plot of the Pueblo is finished, the church proves to have in it considerably more debris than expected. There is nothing to confirm the conjecture that this church was never finished."

Altogether, the brief notices of work there never mention any floor features or other construction in the nave. Ground plans of the church and convento were made in 1923 by Pinkley and by Loree and Harrington. None of these, notably that by Pinkley who participated in the excavation, indicate any features in the nave or sanctuary, or suggest that this latter area was raised above the general level. There is some probability that there had been digging for treasure in the sanctuary-apse area and that features here may have been destroyed. A photograph taken by Pinkley at the start of the 1923 work shows what may be fragments of a low wall across the front of the apse, and behind this, a rectangular excavation of some depth. We do not know if this digging was preliminary work on the part of Hewett's group or if it represents earlier digging for treasure. I am inclined toward the latter, since altars were always a favorite location for treasure seekers, and because of Pinkley's remark that some money had to be saved toward filling gaps (holes?) made by treasure seekers. There apparently was other digging in the structure.

In 1941, Custodian Joe Toulouse, using an extensive set of photographs taken

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by Superintendent Pinkley in 1923, documented repairs made in the period of 1923–25. There were no references to filling holes left by treasure hunters. However, a recent check of monument records shows that in June 1933 "there was another little cave-in in the vestry of San Buenaventura that gave way and the ground sunk about 3 feet."

PERIOD OF CONSTRUCTION

We have seen that Fray Diego de Santander is generally credited with the construction of the mission of San Buenaventura, even though the testimony of Frietas suggests that Santander first reported he was completing a church and convento, and later amended this to say that he built the church and convento from their foundations. If it was not Santander who laid the foundations, it was Acevedo who administered to Las Humanas as a visita. At any rate, Santander was installed as father guardian and minister by 1659 or 1660. Santander was at Las Humanas from 1660 to 1668, and it is certain that he directed the major part of the construction.

HISTORIC REFERENCES

Although Gregg described Gran Quivira, it is doubtful that he personally visited the ruins; he reported the construction to be of hewn stone "a material

FIGURE 25 The church and convento of San Buenaventura at Gran Quivira, looking east (Channing Howell).

wholly unused in New Mexico" and he thought that the town had probably been a wealthy Spanish city, destroyed in 1680 (1954: 117). When Carleton visited Gran Quivira in December 1853 (1854: 307–310), he was aware of Gregg's description, and comparing it with the ruins, Carleton also came to the conclusion that "Mr. Gregg must have described the appearance of this place from what he heard about it; for on all those subjects of which he wrote from personal observation he is most excellent authority." Carleton gave many dimensions and his description was accurate firsthand reporting.

When Carleton saw San Buenaventura in 1853 the mission walls were about 30 feet high. From the amount of fallen building stone he estimated the original height as all of 50 feet. "The altar was in the western end." Did Carleton see a masonry altar at the western [apse] end or did he simply realize that that was the correct location? Parts of the choir loft remained; it was 24 feet deep and supported by two upright pine members. He described some of the remaining beams and "entabulares." Carlton and party cut one of the larger beams into thirds in order to take it with them. At present, one large beam remains on the floor inside the nave at San Buenaventura and four smaller carved beams, apparently from lintels over the large window in the sacristy, are in the custody of the Park Service.

Although Carleton does not mention other woodwork, photographs taken in the 1890's show that lintels were still in place: over the front entrance to the church; over the opening between the transept and the sacristy; over the large windowlike opening in he south wall of the sacristy; over openings in the west wall of room 14, and the south wall of room 10. All apparently were squared and carved timbers. By the time the excavations were undertaken, all were gone.

THE CHURCH (fig. 26)

The church of San Buenaventura with its attached convento and stable area was a large and massive structure. Its eastward face was 204 feet long, the convento and stable area 85 feet wide, and the church itself was 140 feet long outside. The enclosed space was 18,355 square feet, or slightly more than 0.4 acre. All construction was in the native blue-gray limestone, laid in caliche mortar, and much more massive than that in San Isidro. Walls of the church were 5 to 6 feet thick.

Plan, Dimensions

While San Buenaventura was a cruciform church, the arms of the cross forming the transept were rather short, only 4 to 8 feet beyond the width of the nave, so that the effect was that of a continuous nave style. The baptistry was a separate room at the right or epistle side at the front of the church and was entered from just within the nave. The sacristy was entered from a doorway in the left side of the transept. Overall interior length of the church was 128 feet: the nave, 84 feet; the transept, 21 feet; and the sanctuary area, including the apse, 23 feet.

The eastern facade

San Buenaventura faces east; the public entrance to the nave was trapezoidal, 10 feet wide on the exterior and 20 feet wide on the interior. Early photographs show lintels in place over the opening. There are now no indications of jambs or a sill, and none has been reported. The front of San Buenaventura apparently presented a single plane surface with little or no elaboration. There are no indications of bases for towers, or pillars for the support of a balcony or porch, a well developed feature at both Abó and Awatovi. The facade possibly presented an appearance similar to those of the churches at: Laguna in 1881, Nambé in 1909, San Juan in 1900, Santa Clara in 1910, or Pojoaque (Kubler, 1940, figs. 114, 198, 201, 203, 205). There were no porches or bell towers on these churches. Bells, single in most cases, but sometimes double, were hung from an opening in the center of the front wall which was raised some distance above the roofline. Here they were directly above the front door and the window in the choir loft. None of these expedients are as attractive as the corner bell towers, and the example at Laguna in 1881 was a nightmare.

There was a small porch on the east side of San Buenaventura, just south of the church entrance. It opened into the corridor through the convento. This porch consisted of an outer half whose floor was flagstoned, but which may have been roofed only as a portal; the inner part of the porch was at least partly walled and had a masonry bench around three sides.

Nave

Length, 84 feet; width, 27 feet. The only reference to a floor surface is in Kubler, quoted from Toulouse who was stationed at Las Humanas for 5 years, to the effect that traces of flagstoned floors had been found at Las Humanas and Abó. Other architectural details were either not present or have not been recorded. No traces of the roof have been reported. While Kubler, the most thorough student of mission architecture, states that the problem of fenestration is difficult at Las Humanas, he seems to favor the idea that the interior of the church was lighted, as was usual for churches of this size, by a window in the facade opening into the choir loft, another small and high window or two in one side of the nave, and a transverse clerestory window in the roof above the sanctuary. This clerestory window at the juncture of the transept and nave was as wide as the nave, with its height limited to the difference in roof level between nave and transept (1940 passim).

The nave was undoubtedly a cold, drab section of the church. Montgomery quotes Fray Ruiz at some length on the amusing and peculiar separation made of the native populace when attending church. Small children were placed in front, separated from each other by a half vara; older girls were placed behind them, their faces uncovered to detect the chewing of *exquite* or other bad habits; then came the young men. At Mass, married couples were placed together so that the women could not talk to each other; widowers and widows were placed on the sides. Attendance was compulsory. If a married woman failed to attend, her husband was sent to bring her. *Fiscales* rounded up the absent men (1949: 177).

Choir loft

Our information comes entirely from Carleton. The loft was 12 feet above the floor, extended the width of the nave, and was 24 feet deep. Presumably, there was a window in the center, opening out through the facade.

> Some of the beams which sustained it [the choir loft], and the remains of two of the pillars that stood along under the end of it which was nearest to the altar are still here; the beams in a tolerable good state of preservation—the pillars very much decayed; they are of pine wood, and are very elaborately carved. There is also what, perhaps might be termed an entablature supporting each side of the gallery, and deeply embedded in the main wall of the church; this is twenty-four feet long by, say, eighteen inches or two feet in width; it is carved very beautifully, indeed, and exhibits not only great skill in the use of various kinds of tools, but exquisite taste on the part of the workmen in the construction of the figures. . . . The entabulatures are so deeply set in the walls that we are unable to procure a piece of them. The beams are square, and are carved on three sides; the floor of the gallery [choir loft] rested on the fourth side (1854: 307).

I take it that Carleton was referring to the line of corbels on each side, under the beams supporting the choir loft, with his reference to entablatures. How the loft was entered is not known. At Abó and Quarai, entrance was by stairway from the convento (Toulouse, 1949: 8). At Church 2, Awatovi, entrance was by a straight flight of stairs from the nave below. The stairwell may have been entirely closed with masonry with a door at one end (Brew, 1949: 59).

Transept

The transept was 21 feet long on the main axis through the center of the church, and 35 feet wide. The shallow depth of the arms of the cross, an average of only 6 feet greater than the width of the nave, gave the interior more or less the effect of being a continuous nave. The space at the ends of the transept was available for side altars, but not much else.

Sanctuary

Length of the sanctuary, including the trapezoidal apse, was 23 feet; the apse narrowed from 18 feet at the front to 12 feet at the back. While the sanctuary was the focal point of the church, illuminated by the clerestory window above the transept, we have no documentation on the altar or side altars, the base for the sanctuary rail or other items—nothing except Carleton's statement that the altar was at this end. When subsurface drainage lines were laid under this area in 1951, there were no substructures or evidence of superposition.

Baptistry, Sacristy

We have no data on either of these rooms. The baptistry, 11 by 12 feet, was at the front at the right side and entered from just within the nave. It would normally have contained a font for the bowl and, either in conjunction

with this or at a separate location, a sink and drain reserved for the disposal of holy liquids. The sacristy was at the other end of the church, on the gospel side, entered from the arm of the transept. Montgomery (1949) discusses the sacristies at some length and, from his description of those at Awatovi which were remodeled and enlarged several times, and from the list of items stored and the requirements for washing garments, cleaning vessels, and robing of the friars and acolytes, it is probable that some adjoining rooms in this corner of San Buenaventura were also used as sacristies.

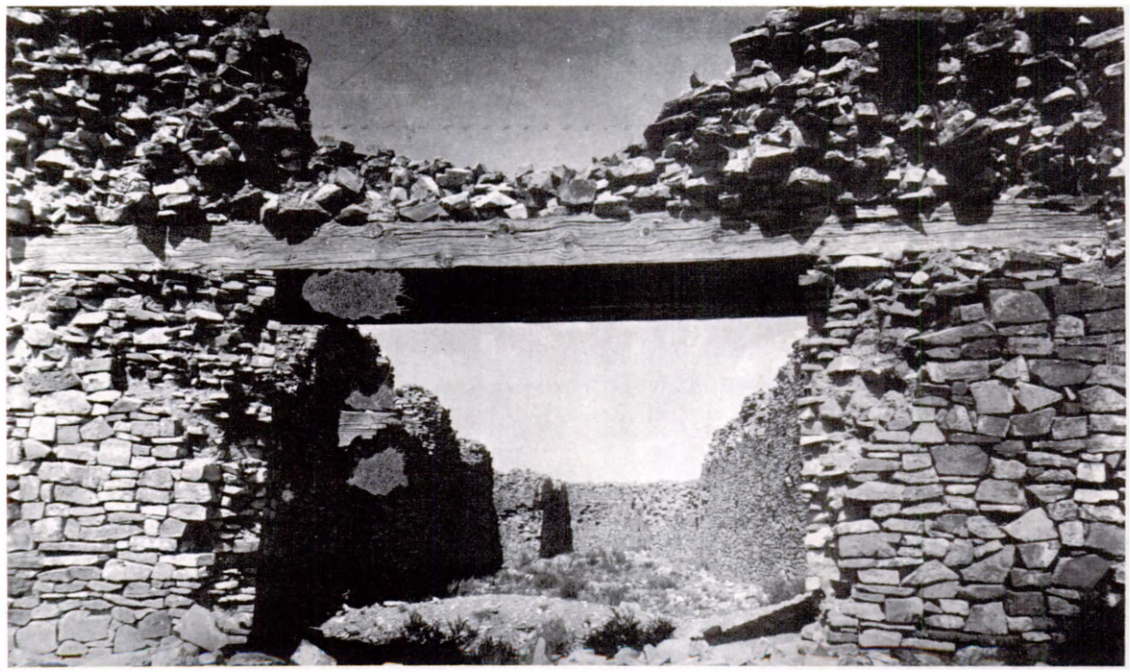


FIGURE 26 San Buenaventura in 1890 when the lintels remained over the entrance at the east, and one of the corbels under the choir loft was in place in the south wall. (Southwest Museum.)

CONVENTO

Absolute identification of the various rooms within the convento is not possible. Rooms 2, 3, and 4 on the east side were equipped with fireplaces; these were filled with ash and had seen considerable use (fig. 27). Montgomery suggests that rooms with fireplaces were not friars' quarters but were rooms where the friars' business with the Indians was transacted, and where children and other neophytes were schooled (1949:.75). Room 4, in addition to a fireplace, contained two steps built below a window opening into room 5. This construction is identical with that described by Brew for a window cut in the friars' chapel at Awatovi, ". . . a window was cut through the wall of the apse, a communion rail was built into the sill of the window, and two steps were

placed on the floor below the window at a convenient height for kneeling" (1949: 69). Other necessary but unidentified rooms would have been: a kitchen and refectory, friars' quarters, and storerooms.

The stable area, including the structures on the boundaries, was 84 by 73 feet, attached to and slightly lower than the convento. The convento formed one side and additional rooms enclosed it on the east and south. The corral area remaining was 60 by 53 feet. A ramp from this led up to a corridor in the convento. There is not now any semblance of a gate or other opening into

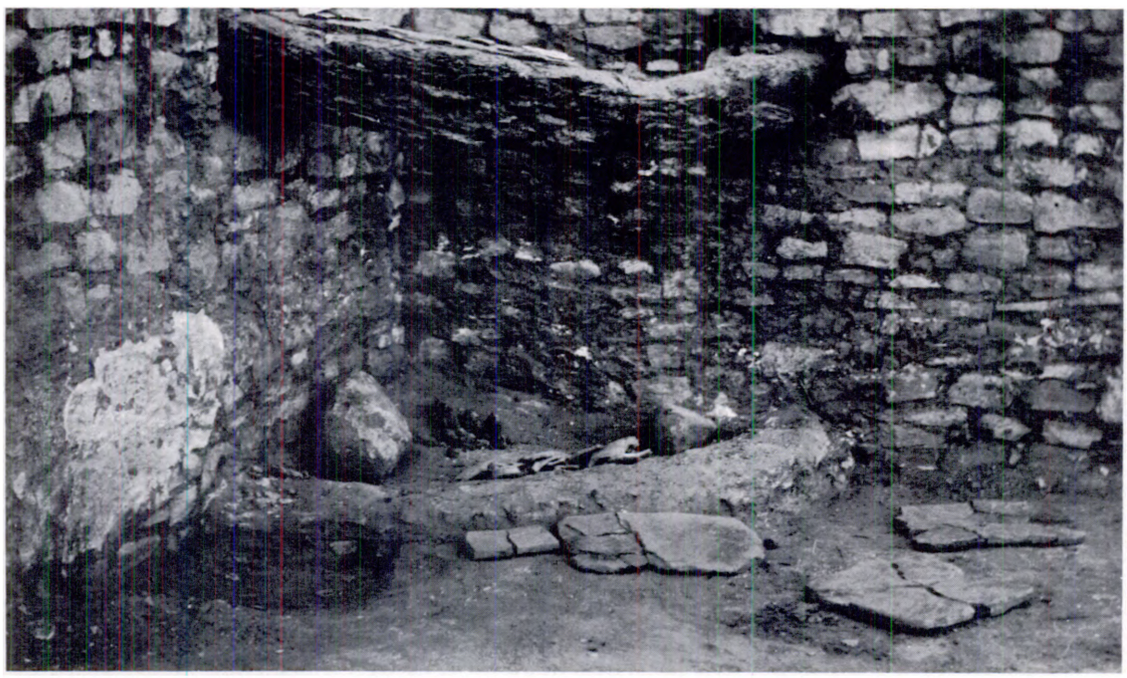
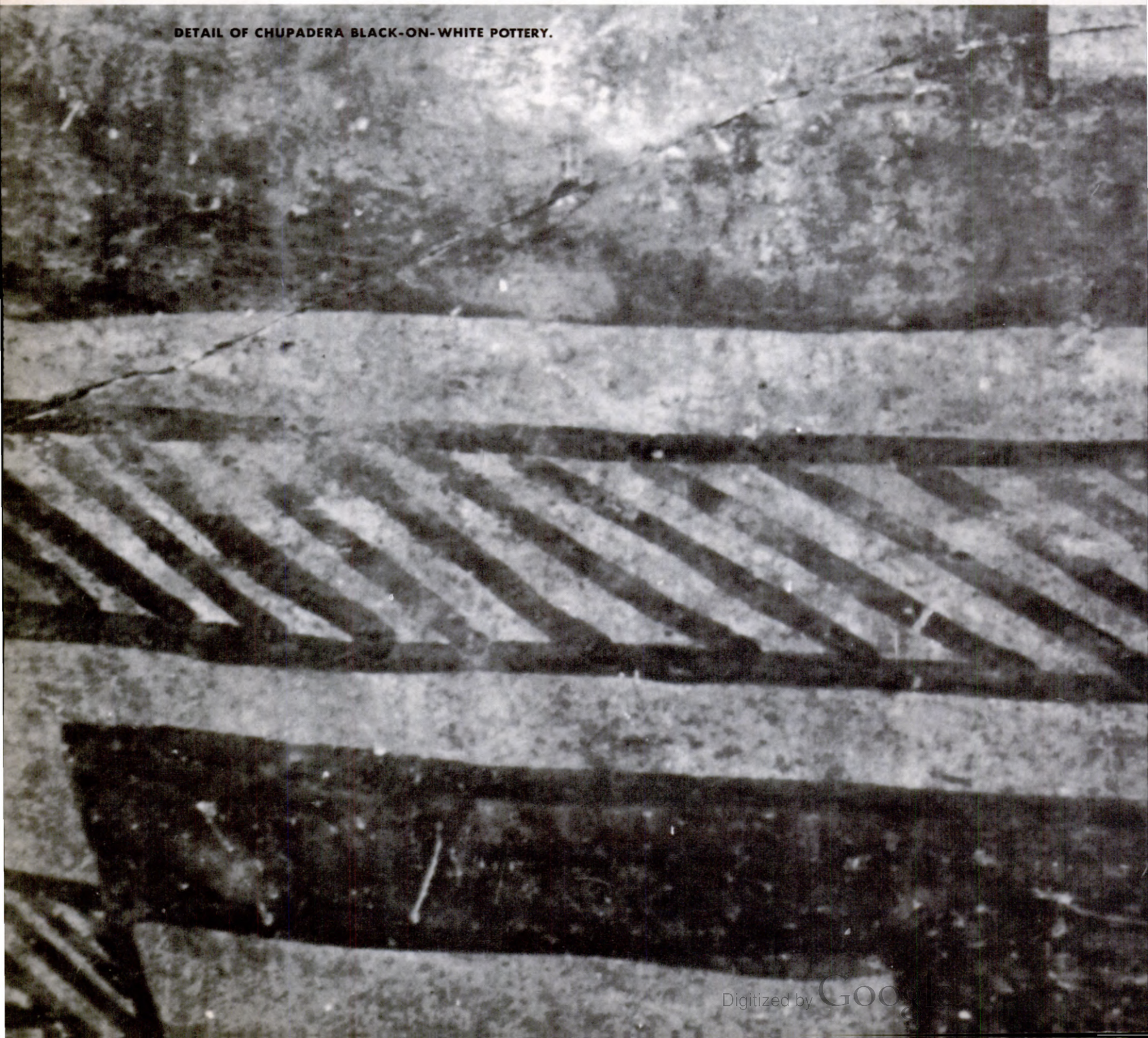


FIGURE 27 Corner fireplace in Room 3 of the convento, San Buenaventura. (Frank Pinkley, 1923.)

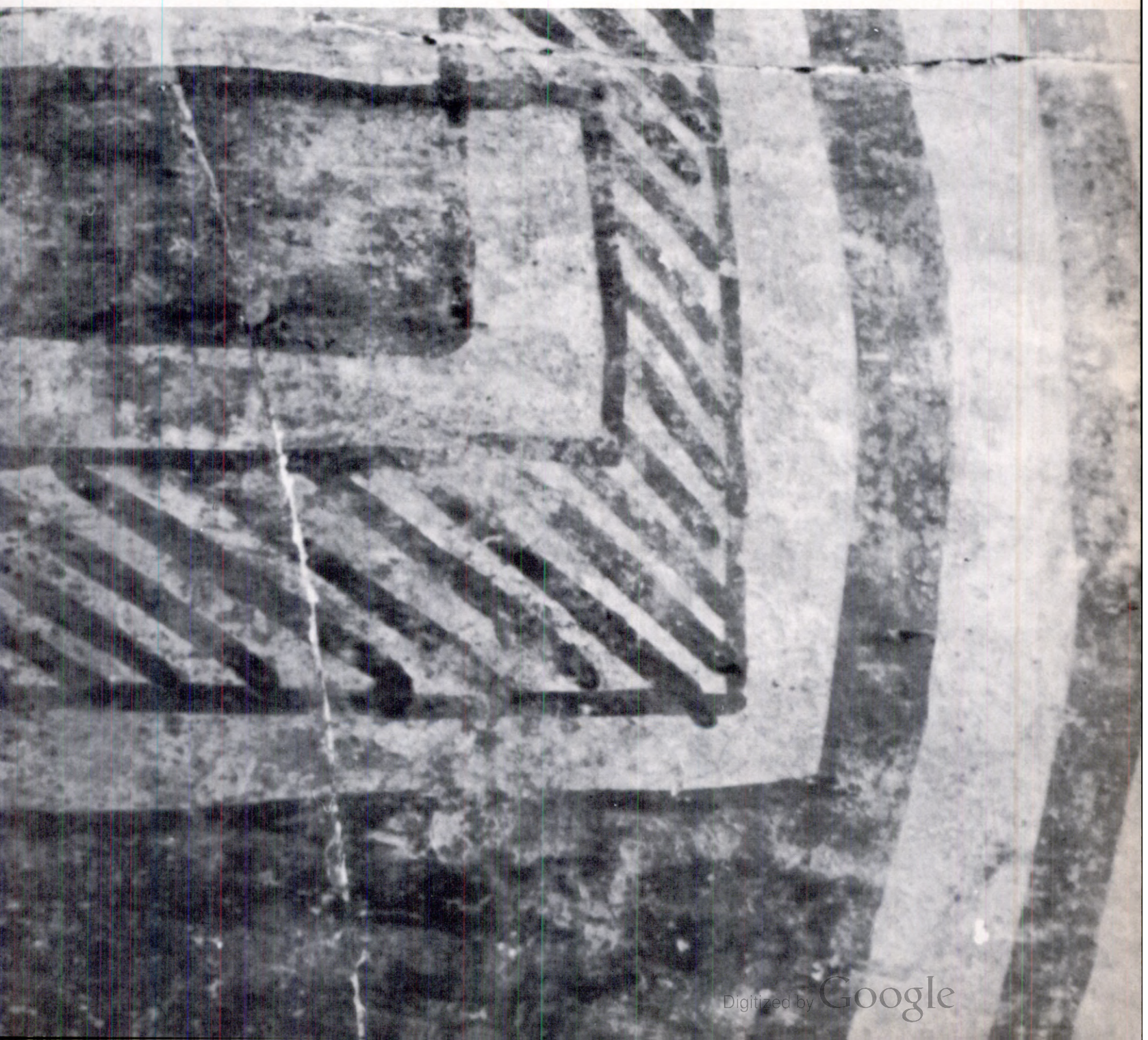
this stable area and I suspect it was obliterated through numerous erosion and repair cycles. At the east side, Room 5 was probably two-storied and more properly belongs to the convento. Rooms 6, 7, and 8 were on the east and south sides. They were large rooms or areas, 14 feet wide and 24 to 48 feet long. I have seen a suggestion that they were not roofed, but I think that they probably served as stables and were also storerooms for hay and supplies, possibly blacksmith and repair shops, perhaps for tanneries or other activities connected with transport and the mission's trade. Within the corral was another and much smaller enclosure shown as Area 9. This was a small pen of poor masonry, perhaps used to separate part of the herds. A small stone-lined drain starting in this pen crossed the stable area and emptied under the west wall.



DETAIL OF CHUPADERA BLACK-ON-WHITE POTTERY.

CERAMICS

It is well to recall at the start that the task of sherd classification, like the schoolboy's mathematics, affords valuable training and discipline. Shepard.



The pottery from an outlying group, such as the Jumano of Gran Quivira, should present many varied aspects. The Jumano were a peripheral people and possibly of mixed lineage. They were on the edge of the northern Pueblo tradition of black-on-white pottery. They had in the recent past been in close contact with, or had received accretions from, a group to the south, called by Lehmer, the Jornado Mogollon. Then, in the period covered by our excavations, this marginal group and their products had come under the domination of a vastly different alien force, the Spaniards.

With regard to the Jornada Mogollon, we are aware that the term "Mogollon" and the concept of the Mogollon as a separate basic culture are in disrepute in some quarters. Some students, seeing more likenesses than differences between them and the Anasazi Pueblos of the north, would prefer the terms "Northern Pueblo" for the former and substitute "Southern Pueblo" for Mogollon (see particularly Daifuku, 1961). With these reservations in mind, the term Jornada Mogollon is used here in accordance with Lehmer's published description and terminology (1948).

The pottery complex of the general Jumano area has been outlined in surface surveys conducted by Mera. In 1931 he named and illustrated the basic Chupadero Black-on-white ware which is dealt with here. Chupadero Black-on-white and the accompanying brown utility pottery were reviewed in part in 1935 (Mera, 1935: 26, pl. XIV, diagram I). One of two publications in 1940, treated what Mera believed to be an underlying brownware complex, and the other carried reference to the glaze paint wares at Gran Quivira. Further refinements in the study of the pottery were made in 1942 by Shepard, who examined the technology of the glaze paint wares, and by Toulouse, who in his 1949 report on the excavations at Abó described and named new types: Salinas Redware, Tabirá Black-on-white, Plain, and Polychrome (1949: 14–20).

MATERIALS

Sherd percentages for the entire site are shown in table I. These are the total sherds recovered and represent the proportions throughout the site. The following discussion is based upon a later reexamination of 656 sherds representative of portions of the site and in which a large proportion of the culinary sherds (37 percent of the total) have been discarded.

Rather than begin with a description of pottery types as they appear from certain gross characteristics, a brief excursion is first made into the kinds of materials present. Shape and decoration will be treated under what appear to be specific kinds or types of pottery. One reason for this attempt to deal with general characteristics first will become apparent when the possible multiplicity of kinds of pottery present is surveyed. Based upon exterior color and the presence or absence of decoration, there appear to be at least six different kinds of pottery in the material from House A, Kiva D, and San Isidro. These kinds would be: (1) a gray pottery with decoration in black paint on a white

background; (2) a gray pottery similar to that above but undecorated (since this latter includes many unusual shapes, it does not seem to be merely undecorated pieces of the Black-on-white), (3) a brown to black culinary ware; (4) a red, undecorated utility pottery, primarily in large olla forms; (5) glaze-paint decorated pottery—the glaze paint applied over a gray or red slip; (6) a rare polychrome in which fugitive red and yellow paints were applied, after firing, to the black-on-white kind.

CLAY

For the purpose of broad comparisons, an attempt was made to determine if distinctly different kinds of clay were employed in the apparent different kinds of pottery. Chips from 200 sherds previously identified as to temper were refired in an electric resistance furnace for one-half hour at 750° C. All of the sherds contained identical temper so that temper was not a factor in any variations in firing color.

Gray Paste

Decorated with black paint, 90 sherds. Color of the paste was light to dark gray, Munsell 2.5Y 7/0 to 2.5Y 6/0, and was uniform throughout the vessel wall. To the unaided eye, the temper appeared as light-colored angular fragments. This paste refired a light cream to buff, Munsell White (a cream white) 10YR 9/2 to a darker buff, Munsell Very Pale Brown 10YR 8/4.

Undecorated, 56 sherds. Appearance and temper were the same as that above; the gross differences were that this undecorated kind contained many Spanish shapes—candlesticks, chalice, soup-plate forms, etc. This paste also refired a light cream to buff of the same Munsell symbols; there was no discernible difference between the two.

Culinary

Fifty-four sherds. The paste was brown to black. In most cross sections of sherds, the exterior was light brown and the interior half was black. This is a range of Munsell colors, Light Grayish-Brown, 10YR 6/2 to Black, 10 YR 2/1. The temper appeared as light-colored, angular fragments and was the same as the temper above.

This culinary paste refired to what is commonly called a brick-red, Munsell colors Pink, 5YR 7/4 to Red, 5YR 5/6. The refired colors were darker and redder than the colors reached by the gray pastes and closely approach the brick-red pastes of glaze-paint vessels. On the basis of broad comparisons, it appeared that two different kinds of clay were selected for local vessels, (1) a buff-firing clay for both decorated and undecorated gray ware, and (2) a red-firing clay for culinary vessels.

Glaze-paint vessels (not included in the above count of 200)

Paste of the glaze-paint sherds recovered ranged in color from brick-red through brown to black. A great majority of the glaze-paint sherds were poorly oxidized; some cross sections showed a brick-red color at the rim while 2 inches below this the interior of the sherd was black, only the slip remaining red or gray. In order to check the refired culinary sherds against well oxidized glaze ware, 16 of the latter were refired. There was a considerable range of red in the refired sherds. An additional 20 were refired—two groups of 10 each divided by temper. Those with the light-colored Class I temper described below contained a lighter-burning clay, Munsell Pale Red, 10R 6/3 or 7/3 to Light Reddish Brown 6/4. Sherds with an abundance of dark temper, the Class II below, seemed to have a darker-burning clay, Munsell Weak Red, 10R 4/3 to 4/4. I am not convinced that there are real differences in the colors of the completely oxidized clay; I think that my judging of the clay against the Munsell Soil Color Charts was probably influenced by the abundance of either light- or dark-colored inclusions. I would judge that all of the glaze pastes were red-burning—a light brick-red.

TEMPER

In examining the temper in the various kinds of sherds, those of the culinary, black-on-white, and undecorated gray were studied first on the assumption that the materials in these would establish the local tradition and that this temper could then be compared with that in the glaze-paint types since the glaze-paint types were reputed to have considerable variation and to represent an inordinate amount of trade. The glaze paint pottery from the Salinas area is reported to have contained as crushed-rock temper: (1) andesite; (2) soda diorite; and (3) hornblende gneiss (Shepard, 1942: passim). Of these, Shepard refers to the hornblende gneiss as the "local" tempering material. The other crushed-rock temper, occurring in large percentages, she regarded as constituents of trade pottery. It is these, or quite similar materials, that are described here under one or the other classes of crushed-rock temper. These rocks are all igneous or metamorphic products; andesite and diorite are quite similar; they are generally light-colored with the feldspars equaling or exceeding the dark ferromagnesian minerals. The differences between them, as rocks, are judged primarily by grain size. The diorites are coarse-grained rocks in which the minerals are recognizable by eye or with a hand lens; the andesites are dense- or fine-grained rocks with few minerals recognizable to the unaided eye. Diorites can and do contain quartz, as opposed to andesite. Both contain plagioclase feldspar (of which there are several varieties) as major constituents, and the dark ferromagnesian minerals biotite, hornblende, and pyroxene either singly or in combination. Hornblende gneiss is a granular rock composed principally of hornblende with plagioclase feldspar. Magnetite and biotite are also present.

Variations between various kinds of feldspar cannot be determined with the

binocular microscope, at least not by this operator. However, the characteristics of the various kinds of crushed rock examined at x 45 diameters can be determined and I feel that if each of the various kinds of crushed rock are not precisely named here, they are at least accurately separated, one from another.

CRUSHED ROCK

Class I (Andesite?)

This temper was identified under the binocular microscope at up to x 45 diameters. References, known samples of andesite temper identified by Stanley Stubbs from both the black-on-white and culinary samples, and known hand-specimens of various rocks, some of which were crushed and examined under the same magnification, provided the background. In spite of this array of aids, the identification did not proceed with dispatch. And, as will be noted, there was some variation in the material, some mixing with sand, and most important, firing temperatures or greater oxidation in glaze-paint sherds altered the appearance of at least one mineral.

The temper described under Class I appeared as irregular, light-colored, cubic fragments; each of these fragments was a mixture of light-colored, porcelaneous material, probably feldspar, and small black prisms of hornblende or magnetite. The light-colored feldspar was predominant. There were occasional flakes of biotite. All of the temper with this appearance was confined to the black-on-white, the culinary, and the undecorated gray pottery. It was accompanied by varying amounts of sand, and Stubbs characterized some of the sherds he examined as "tempered with andesite and sand."

Some of the glaze-paint pottery appeared to have quite similar temper except that the small cubes of crushed rock also included sheets or long crystals of a brown resinous material. It was noted that this kind of crushed rock with brown minerals occurred in incompletely oxided glaze-paint sherds only near the well oxidized edges and that black-and-white temper particles occurred in the gray-to-black interior. Refiring some glaze sherds and 200 of the nonglaze sherds demonstrated that when the crushed rock first described was refired in air at 750° C for a sufficient time to determine the completely oxidized color of the clay, some light-colored, porcelaneous material in the temper turned a light but distinctive brown with a vitreous luster. By this test I reduced two classes of temper to one. In other words, the same temper had two different appearances, depending upon the degree of oxidation in the paste.

Variations. (1) The variation in color from firing has been noted. (2) There was also some variation in size of the grains. In 19 of the 167 black-on-white sherds examined, or 11 percent, the rock had been crushed sufficiently to separate the mineral constituents; they did not occur together in the normal manner, but were small, scattered grains of shiny black and dull white. Some fragments showing the combination of minerals could always be found through examination of an extensive surface. (3) In a few sherds, sand was the preponderant material and the andesite was sparse and scattered.

Use. This crushed rock (andesite) was the tempering material in 504, or 77 percent of 656 sherds examined. It was the only temper in all of 160 black-on-white, 76 undecorated gray, and 114 culinary sherds. It was also the temper of 154 late glaze-paint sherds, 23 percent of the total sherds examined, but 55 percent of the glaze-paint sherds.

Considering that no other temper was found in the nonglaze sherds, and that this temper was also found in 55 percent of the glaze-paint sherds, I believe it to be a local product used in all pottery made at Gran Quivira.

Class II (Hornblende Gneiss?)

The general appearance of this temper was dark-brown to black, with some lighter fragments and grains. Where it occurred in larger fragments, the dark minerals were preponderant and were in association with small quartz grains and some feldspar, although this was largely altered. Where the temper was finer, the dark ferromagnesian crystals were separate and the quartz and rare feldspar were scattered throughout the paste. The dark ferromagnesian mineral in the centers of incompletely oxidized, gray-to-black sherds, was steel gray to black by reflected light. It had a platy, laminated structure. Depending on the angle of view it appeared to be made up either of thin plates or masses of needlelike crystals. Fresh surfaces had a glassy lustre. Some separated plates had an olive-green color.

The most conspicuous feature of this darker mineral was that while it appeared black in the interior of incompletely oxidized sherds (paste dark gray to black), it showed a range of color to brown with a resinous lustre near the edge of the sherd. It was considered that this color change, as in the previous example, was due to further oxidation in firing. Ten sherds containing this temper were refired for one-half hour at 750° C, or until all carbonaceous material was removed. The steel-gray to black mineral samples with the laminated structure all changed to brown.

Shepard (1942: 248) describes as hornblende gneiss, a crushed rock which is identical except that the color changes are not noted. Hornblende, an amphibole, alters to various minerals in the chlorite group upon exposure. While they are generally green, some of these secondary minerals, depending upon the amount of iron present, are black to brown and occur in various forms: scaly, fibrous, and as thin leaves or laminae. It is suggested that the crushed rock described here is an altered hornblende gneiss in which most of the hornblende has been altered to a chlorite. Hand specimens of hornblende gneiss and fragments ground to the approximate grain size compare, except for color, fairly well with the temper described. However, fresh hand specimens of hornblende gneiss are uncommonly hard and difficult to break and I suspect that the Indian potter used weathered and altered rock surfaces in order to obtain tempering material with a minimum of labor.

Use. This temper was found in 124, or 18 percent, of the 656 sherds examined. It was confined entirely to a late glaze-paint type, and when compared with the total of glaze sherds, it made up 44 percent of these.

OTHER TEMPERING MATERIAL

Of the additional 28 sherds considered, 16 were left undetermined. There were eight more sherds whose temper was small grains of basalt, one in which basalt was combined with sherd temper containing small grains of hornblende, and three in which the temper was quartz sand. All of these represented trade sherds, the last probably from Pecos.

Comparisons

At the time this section was revised, far from the Saline area, I had only a small box of 88 sherds from a late section of Quarai for comparison. Thinking that these might illuminate the problem of local tempers versus trade, I examined the temper in these with the following results:

1. Culinary, considered to be a local Quarai product, 46 sherds. The temper was primarily large grains of quartz sand mixed with occasional dull-white fragments and even more rarely with a few grains of a dark ferromagnesian mineral. Considering that the black carbonaceous material might mask darker minerals, the 46 sherds were refired with no change seen in the constituents. This temper definitely is not duplicated in the Gran Quivira culinary, nor in other nonglaze paint sherds.

2. Glaze, andesite temper, 28 sherds. This appeared to be the same as, or very similar to, temper identified as andesite in the Gran Quivira sherds.

3. Glaze, Class II Gran Quivira (hornblende gneiss?), 10 sherds. This was similar to, if not identical with, the Class II temper at Gran Quivira.

4. Glaze, basalt, four sherds. Similar to the few basalt tempered sherds from Gran Quivira.

Summary

To return to Gran Quivira, I consider that the Class I temper there, the probable andesite, was a local material employed for production of all nonglaze ware and 55 percent of the glaze-paint pottery. At Gran Quivira then, whatever was available for tempering material was used for all local pottery: culinary, decorated, glaze paint, undecorated in Spanish and native forms, and red utility vessels. The data also suggest that at this late date most of the pottery imported in trade came from one source. On the other hand the few sherds from Quarai suggest, but no more than suggest, that different kinds of temper were used at Quarai for (1) nonglaze-paint local wares and (2) the local glaze-paint vessels. Further, pottery imported in trade (the probable hornblende gneiss) apparently came from the same source that furnished trade pottery to Gran Quivira.

These would seem like reasonable assumptions were it not necessary to reconcile them with Shepard's published data on the glaze-paint wares from the Salinas area in her overall study of Rio Grande glaze paint ware. Shepard (1942) did not identify the sites from which her samples of the glaze-paint sherds were taken, or give the number of sherds per sample except that there were 25 or more sherds from each site. Her figure 1 places Gran Quivira in the Salinas

district. All of the glaze-paint sherds discussed here are the late forms with rim shapes similar to or identical with Mera's Group 5, Kotyiti Glaze (1933: 8–9) or the Jornada Late Variant (Shepard, 1942: 250). These are the types which Shepard refers to as the "Late Group."

It is unfortunate that Shepard did not have an opportunity to examine nonglaze-paint sherds from the Salinas area or our problem might have been greatly simplified. She showed (1942: 154) that soda diorite was a common tempering material in the "late group" sherds from the Salines, particularly the southern group, and these sites would include Gran Quivira. Referring again to this late group she states that "temper in the Galisteo is andesite . . . and in the Salines hornblende gneiss." And, "In the Late Group [Salines] andesite tempered pottery dropped to 18 percent but soda diorite from the south appears in high percentage (39) exceeding the local hornblende gneiss" (ibid.: 196). In other words, although hornblende gneiss was thought to be a local tempering material in the Salines, it was not necessarily preponderant there. The local hornblende gneiss was accompanied by an approximate equal amount of trade pottery containing andesite temper and overshadowed by a greater proportion of trade pottery from the Jornada with soda diorite temper.

I believe the reason we failed to find soda diorite tempered trade pottery at House A was that by this late date in the historic occupation, the Jornada was either no longer occupied by makers of glaze-paint pottery, or was so reduced in strength and numbers that no pottery was exported for trade.

Shepard's failure to identify the sites from which her sherds were taken, particularly by L.A. site numbers, and the rather indefinite location of the Jornada area in her figure 1, without reference to towns or named drainages, makes identification of the area and the probable end-period of her Jornada sites difficult to determine. Her Jornada district would seem to be within, and compose a very small part of, the Jornada area outlined by Lehmer (1948: fig. 1). The area shown by Shepard as the late period Jornada is on the north edge of that shown by Lehmer as his San Andres Phase with a terminal date, for both the phase and Jornado Branch, of about A.D. 1400. Since Lehmer shows all glaze-paint pottery to be intrusive in this region, it is evident that he and Shepard are discussing two different Jornada areas. I also feel that if Shepard had been able to study the local nonglaze wares she would have modified her view that andesite tempered pottery was always an indication of trade from the Galisteo and that the Salines were particularly dependent upon the Galisteo for glaze-paint pottery (ibid.: 195).

CULINARY WARE

The culinary ware recovered at Gran Quivira is evidently the end product of a long-lived brownware indigenous to the area whose history has been outlined by Mera (1940a, 1943), and Lehmer (1948). Briefly, these surveys document the distribution of a local brownware, Alma Plain, or "affinis" Alma Plain, first encountered in Jornado sites of the ninth century. The areal extent of the brown-

ware was shown by Mera to have been bounded on the east and west by the Pecos and Grande Rivers and on the north and south by the Salt Lakes and El Paso. The distribution shown by Lehmer, his Jornado Branch, had a somewhat greater southward extension, including the region as far south as Villa Ahumada, Mexico. Later work by other investigators has extended the northward range of early brownware influence, particularly in the Rio Grande (see, for example, Allen and McNutt, 1955).

Mera (1940a, 1943) showed that the indigenous brownware passed through several phases and that in the northern part of the area, that under discussion, it came increasingly under the influence of Anasazi gray-paste utility wares; outwardly the local brownware resembled these in corrugated, clapboard, and other surface treatments; at the same time it retained its brownware character in a brown, sandy, and friable paste. By Pueblo III times, this utility pottery became the type known as Corona Rubbed-Indented and Corona Rubbed-Ribbed (Mera, 1935: 30). I suggest that the culinary pottery described here is the culmination of Mera's Corona Rubbed-Indented.

The paste of the culinary ware is heavy, 0.3- to 0.4-inch thick and, as noted, of a red-burning clay, incompletely oxidized so that the exterior half of the vessel wall is often a light brown and the interior half a dense black (fig. 28a). The heavily tempered paste is friable, and sherds often split along the line of color change. The temper of all sherds examined was andesite mixed with varying amounts of sand. The exterior surface of vessels varies from brown to black, depending upon usage. It is gritty. The surface was smoothed, but not polished, and it carries striations and scratches in some degree. It is also irregular with low, shallow indentations. In a very few cases it is possible to follow the outlines of wide coils.

The interiors of culinary vessels were well smoothed and were polished to some degree. Polishing marks are present and the surface is smoother and more compacted than the exterior; it appears burnished, and there are occasional flakes of biotite. The typical form was a large globular olla with a short neck and flaring rim. Toulouse (1949: figs. 6, 7) recovered a wider variety of vessel forms as did Kidder at Pecos, where the occupation continued for approximately two centuries beyond that at Gran Quivira. While no unusual forms were found at Gran Quivira, a duck-pot of culinary ware was found at nearby Pueblo Pardo. Thirteen of these forms were recovered at Pecos, and Kidder discusses their derivation and probable use in detail (Kidder and Shepard, 1936: 338–339).

TABIRÁ BLACK-ON-WHITE

This is a late variety of Chupadero Black-on-white. Chupadero Black-on-white was first named and described by Mera who gave its range as centered in southern Torrance and eastern Socorro Counties, N. Mex. The type site was an unidentified ruin on Chupadera Mesa (1931). Mera later extended its range to include "certain eastern drainages of the Pecos River in Guadalupe County" (1935: 29–30). He gave its ancestry as Chaco 1 and Chaco 2 types, these developing in the Rio Grande, in Pueblo II times, into Socorro Black-on-white. The type

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FIGURE 28a Cross sections of culinary vessel walls. The clay is heavily carbonaceous. Repeated use over cooking fires has burned out carbonaceous material, leaving a darker band on the interior.

FIGURE 28b Cross sections of Tabirá Black-on-white sherds. Absence of a carbon streak is due to the porosity of the paste rather than to well-controlled firing conditions.

later became much coarsened and evolved in Pueblo III into the typical "brushed finish" Chupadero Black-on-white (ibid.). Chupadero was a long-lived type and Mera remarked that some sherds from late sites bore decidedly modern designs. The late sherds which he illustrates show designs typical of the material from Gran Quivira (1931: fig. 7). In addition to emphasizing "the indubitably modern features of design," Mera was the first to demonstrate that the late forms of Chupadero included a polychrome subtype (1935: 31).

From his excavations at Abó, Toulouse published, in 1949, Mera's late varieties of Chupadero Black-on-white as three new types: Tabirá Black-on-white, Tabirá Plain, and Tabirá Polychrome. Toulouse says of these, "Outside of the smoothed interiors of ollas, decoration (when present) and shapes, the Tabirá series paste, slip and method of manufacture do not differ from Chupadero Black-on-white" (1949: 18, 19). Vessel forms and design elements are illustrated in his recent work on Pueblo Pardo (Toulouse, 1960: 21, figs. 21–23). The Tabirá Black-on-white from Gran Quivira is described below.

Paste (fig. 28b)

This is exceptionally thick for a black-on-white pottery; vessel walls range from 0.4- to 0.6-inch thick. It is a uniform gray throughout the width of the wall; there are no darker bands of poorly oxidized material. The paste is rather porous with a grainy appearance and feel. Perhaps the porosity of the paste, and not firing conditions, are responsible for the uniform firing shown. This gray paste fired a light cream to buff when completely oxidized, in contrast to the red-burning clay of the culinary vessels. Munsell colors are given in the section on "Clay."

Temper

The first temper determination was made by Stanley Stubbs on a small lot of sherds; he found it to be crushed andesite with some sand. Later examination under the binocular microscope confirmed this identification for a much larger sample. This is the Class I temper, andesite, discussed above and is the same material used for tempering the culinary ware.

Exterior Surfaces

The exterior is covered with a white slip easily distinguishable from the gray body. It is frequently crazed or pitted; it shows polishing marks that are particularly noticeable on undecorated portions of ollas. In sherds which were refired to determine the oxidized colors of the clay there was no difference between the refired color of the paste and slip. This suggests that the same or very similar clays were employed for both paste and slip.

Interior

The interior surface of closed forms often shows the marks of a smoothing tool but lacks the typical "brushed finish" of Chupadero. The surface is rough and gritty.

Paint

The black paint is an iron oxide which refired in all the samples tested, for one reason or another, to a deep red-brown typical of this material.

Forms

Closed forms predominate. Only one bowl (fig. 29), 5 inches in diameter and 2½ inches deep, plus a few sherds of what may be other bowls, were recovered. The bowl sherds were not sufficiently large or numerous to determine a range of size or shape. As noted, Toulouse, who named the type, does not record forms from Abó except for a chalice, a Spanish form. Forms from Pueblo Pardo were vases, ollas, and rarely bowls or seed bowls (Toulouse, 1960: 21). It is assumed that the bowl form was also rare at Abó, and that olla forms there follow his illustration for Tabirá-polychrome. A fragmentary, decorated chalice was also recovered from House A; it indicates a larger form than the Abó specimen and it is decorated on the exterior of the cup while that from Abó bears decoration only on the interior. Beginning about A.D. 1500, a tall, almost straight-sided olla form appeared in the Pajarito Plateau to the northwest; in the next 150 years this form spread south and had traversed almost the entire Pueblo region. While it was reported in Glaze ollas from Abó, there is no evidence that it affected the shape of black-on-white ollas, either there or at Gran Quivira.

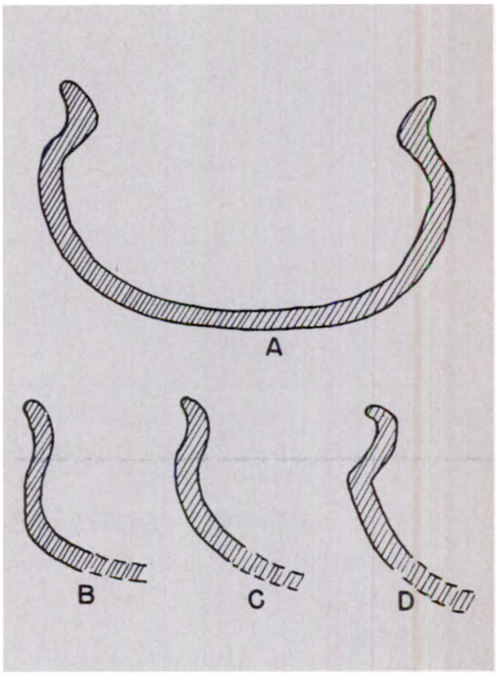


FIGURE 29 Bowl and rim form of Tabirá Black-on-white. A is 15 inches in diameter.

Ollas

These were the predominant form (fig. 30a). The few whole and fragmentary examples are rather squat, with the diameter somewhat greater than the height, some 12 inches against 8 inches. There is a sharp angle at the point of greatest diameter; necks are short with straight to outflaring rims. Decoration is confined to the top of olla bodies in the area between the point of greatest diameter and the neck. Handles are not always present on ollas but when present are horizontal and placed at the point of greatest diameter. They are always two ropes of clay, placed side by side, and not worked sufficiently to obliterate the double roll form. All of those examined were attached by piercing the vessel wall and smoothing the juncture on the interior rather than by merely "welding" them to the outside. These transversely placed handles are rare in late Pueblo pottery, and were confined to Tabirá and Jemez Black-on-white (Reiter, 1938: pl. XIX, Mera, 1939: 44, pl. VII).

Jars (figs. 30b, c)

We have only incomplete examples. The form appears to be rather tall in relation to diameter, with short necks and slightly flaring rims. Figure 30b, with the two loop handles near the rim, suggests a copy of a Spanish form. Decoration on our limited examples of jars was limited to wide framing lines and simple rectangular patterns.

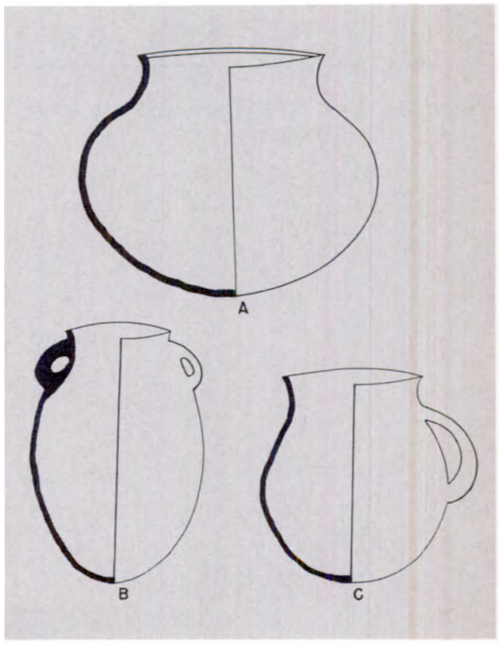


FIGURE 30 Tabirá Black-on-white closed forms. Olla A, is 12 inches in diameter. Jar and pitcher shapes, B and C, suggest copies of Spanish forms.

Designs (figs. 31, 32, 33, 34, 35, 36)

Although the balanced areas of solid and hatched elements characteristic of Chupadero Black-on-white are preserved in a few instances, the decorative style of Tabirá is a distinct break from the older tradition. Almost all of our information comes from ollas, and here the design on the upper body was confined in horizontal panels, bordered both horizontally and vertically by wide lines framed by one or more rows of narrow lines and occasionally by rows of dots (fig. 31). Exceptions to wide lines are rare borders of solid figures (fig. 32).

The panel areas were filled with a variety of elements; the decorative effect is one of confusion and some elements such as the heavy crosses appear to have been added here and there, to fill unused space. Older designs from Chupa-

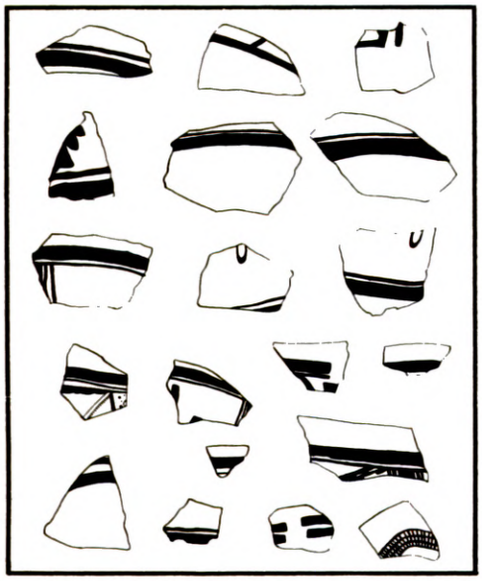


FIGURE 31 Borders and framing lines of Tabirá Black-on-white.

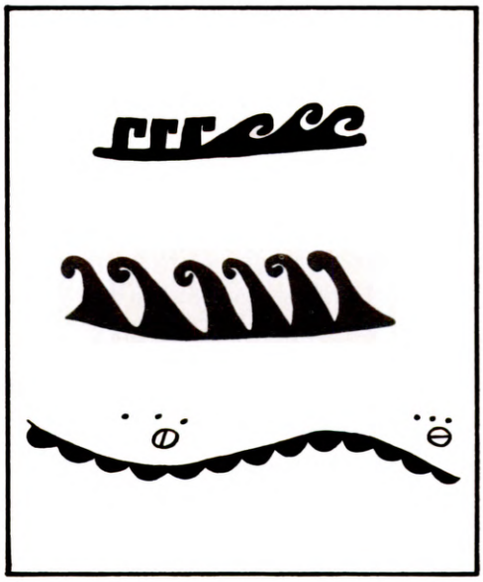


FIGURE 32 Borders of repeated elements from Tabirá Black-on-white.

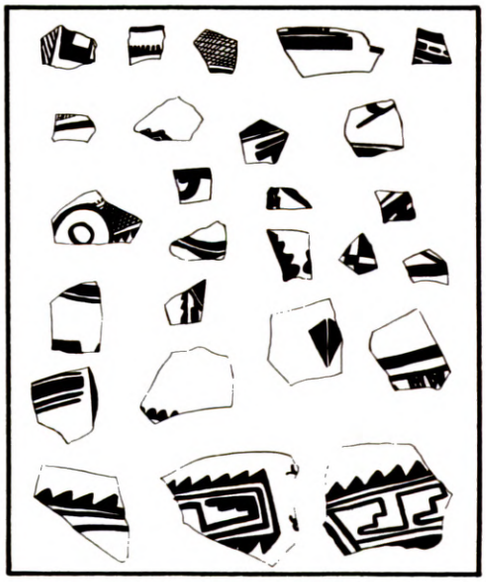


FIGURE 33 Designs on Tabirá Black-on-white sherds.

dero are seen in the occasional cross-hatched or solid triangles. Solid or open frets were rare (figs. 33, 34). What Mera termed the "indubitably modern features of design" are a little difficult of description: crosses, solid scalloped circles, a possible wing with feathers, an apparent copy of a Spanish tile design, arrows, feathers, and, possibly, highly conventionalized bird forms (figs. 35, 36). Note that Toulouse, 1960, in discussing Tabirá design has illustrated some material from Gran Quivira shown herein.

The derivation of these elements and their distribution is open to speculation. At Abó the designs were said to have been made up of "feather symbols, volutes, flowers, etc." (Toulouse, 1949: 19). At Pueblo Pardo the designs on Tabirá Black-on-white included animal, human, and insect figures as well (Toulouse, 1960: 21). The possible feather symbols and the highly conventionalized bird forms were possibly derived from earlier Little Colorado bird and feather symbols. If so, they were greatly coarsened (compare figures 35 and 36 herein with the same symbols shown in Fewkes, 1898, and Mera, 1939, 164

and pl. LXVII). The shape of the Tabirá ollas and the layout of the design, bordered by heavy bands and divided into horizontal panels, does, however, closely follow both the Little Colorado pattern and the shape and design layout of early Rio Grande Glaze forms (Mera, 1939: 38, 48, pls. IV, V, IX).

If indeed there are feather motifs correctly identified in the Tabirá designs, they are probably based on elements which became highly developed in the Hopi area in the early 1500's, moving eastward from there, modified along the way by inclusion of local elements or local treatments, and arriving in the Rio Grande where they were employed on Tewa Polychrome in the early to middle 18th century. The really flamboyant use of feather symbols interspersed with "modern" sunbursts and star-shaped assemblages of diamonds did not come into vogue in the Rio Grande until the advent of Ogapoge Polychrome about

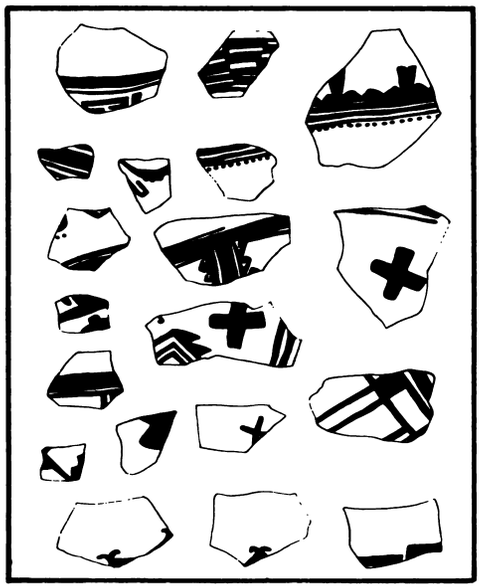


FIGURE 34 Designs on Tabirá Black-on-white sherds.

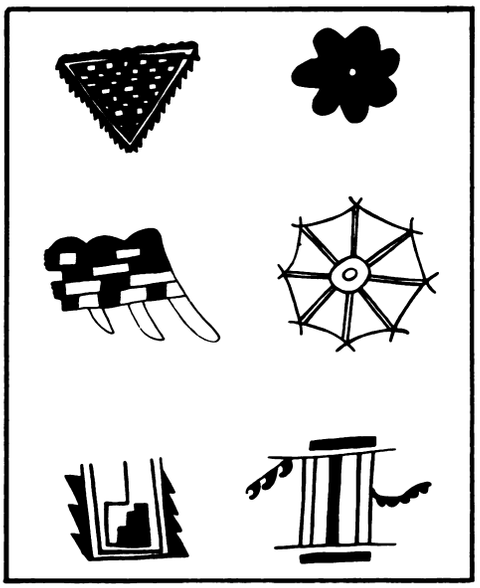


FIGURE 35 Design elements from Tabirá Black-on-white.

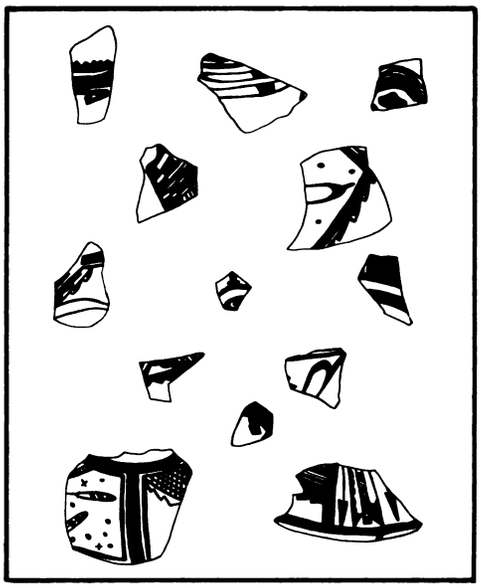


FIGURE 36 Designs employing single and multiple feathers, repeated elements, and arrows, from Tabirá Black-on-white.

A.D. 1750 (Mera 1939). This rather abandoned use of feather symbols, highly conventionalized bird forms, rosettes, crosses, arrows and other aberrant elements appeared on Tabirá pottery at Gran Quivira at least as early, if not earlier, than in the Rio Grande. By the time Ogapoge Polychrome was in flower, Gran Quivira had been abandoned for some 80 years.

The genesis of the "modern" elements in these and in Rio Grande matte-paint wares is likewise in some doubt. Mera had suggested that the striking changes in decorative effects came about as a result of forced mingling of Pueblo groups under Spanish labor levies. Ellis (1953: 465) has pointed out that the sudden efflorescence of pottery design came at about the time of the abandonment of glaze paints, and that three of the late styles of pottery decoration, employing elements which are found on Tabirá Black-on-white, could have resulted from the acceptance of Spanish art forms following the Reconquest. To be applicable to the Gran Quivira material this acceptance by the Pueblo potters would have had to be moved ahead in time by 50 to 100 years, since this

FIGURE 37 Designs partly in fugitive red and yellow paints from Tabirá Polychrome.

group did not survive until the Pueblo Revolt, much less the Reconquest. A comparison of figures 35 and 36 herein with Spanish tile designs at Awatovi (Smith, 1949: figs. 59–62) suggests that if Spanish elements were borrowed they were used piecemeal in and among greatly coarsened motifs of Pueblo derivation. At Gran Quivira we cannot see the long-term result of Spanish influence on design. In the Spanish structures at Awatovi, decoration in imitation of Spanish tiles was profuse and there it seems to have made no lasting impression on the native decorative tradition.

TABIRÁ POLYCHROME (fig. 37)

Only four sherds were recovered. Paste, temper, slip, and black paint are identical with Tabirá Black-on-white. The ware was made a polychrome by the addition of fugitive red and yellow paints to fill in areas in the black-on-white. Since the red and yellow were particularly unstable and were used to fill in designs outlined in black, their loss from a design would be unnoticed. It is quite likely that this polychrome enjoyed far wider use than these four sherds would indicate. Toulouse illustrates one restored olla from Abó, but does not indicate the frequency of sherd material.

I am not aware of other Pueblo use of fugitive paints at this late date. Recalling the red painted dado and the designs on the walls at San Isidro, I suggest that here possibly is an item of Spanish influence—painted decorations with local earth colors—which was transferred to pottery.

TABIRÁ PLAIN (fig. 38)

This was also named by Toulouse in 1949. Forms which he recovered from Abó were: the soup plate, the olla, and tall, flat-bottomed jugs with handles. Forms reported from Pueblo Pardo were: vases, ollas, soup plates, bowls, and seed bowls (Toulouse, 1960: 21). At Gran Quivira the soup plate, olla, bowl, and jug forms were recovered, together with candlesticks, one nearly complete and several in fragments.

The paste of this undecorated form cannot be distinguished from that of Tabirá Black-on-white type. The vessel walls are 0.4- to 0.6-inch thick; the paste, porous, grainy, and gray throughout with no carbonaceous bands, is tempered with crushed andesite, the Class I temper employed in the culinary, black-on-white, and polychrome types. The exterior color is gray to white, somewhat mottled with darker streaks, the result of polishing a thin slip or wash until the darker underbody showed through. On the jugs the well defined polishing marks were vertical and the slip was carried over the rim and well down the interior surface.

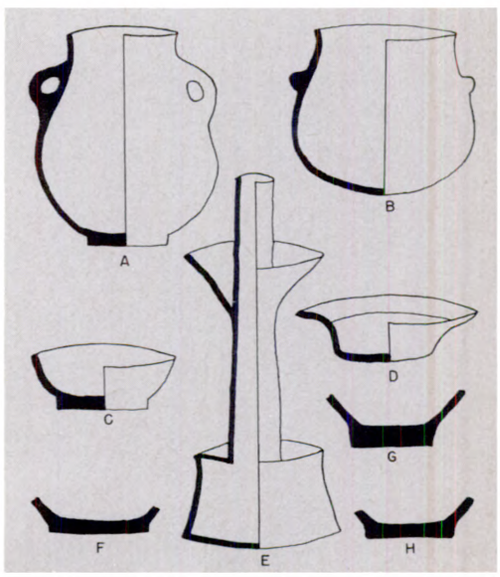
The soup plate is represented in rather extreme form; the bowl portions are relatively shallow, 1- to 1½-inches deep, and from 4 to 6 inches in diameter. The rims are flat to slightly up-curving and from 1- to 1½-inches wide. The

fragmentary jug-shaped vessels recovered ran from 8 to 11 inches in height and from 5 to 7 inches in diameter. Vertical, two-roll handles were attached just below the rims of jugs. A characteristic feature of the jug form was the flat disk base (fig. 38). The disk averaged 1-inch thick and was always of lesser diameter than the bottom of the jug portion. The jugs somehow give the impression of a conical-bottomed vessel having been set down in a soft disk of clay. Disks ran from 2½ to 4 inches in diameter; they produced a vessel of awkward form and unstable appearance.

Several of the forms in Tabirá Plain, particularly the candlestick, chalice, and soup plate, are obvious copies of Spanish vessels. These, as well as other Spanish forms, were recovered in glaze ware and in plain red at Pecos and Abó, and altogether there is a fairly good representation of Spanish and perhaps Mexican Indian forms at this period. The disk-base forms, however, were probably derived from another source. They did not appear at Pecos, Abó, or Paa-ko. However, they were reported in Tabirá Plain from Pueblo Pardo, a site existing into the beginning of the historic period, and also as being present in Chupadero Black-on-white (Toulouse, 1960: 39). Toulouse also summarized the occurrence of similar disk bases in Jalisco and Guatemala, and of flat-bottomed vessels in the Mesa Verde and Kayenta branches of the Anasazi (ibid.). Disk bases were not reported in Lister's summary of vessel forms from Western Mexico (1955: 17–24). The occurrence of disk bases in Chupadero Black-on-white, as reported by Toulouse, does not necessarily argue for their pre-Hispanic appearance, since late forms of Chupadero grade into Tabirá Black-on-white and both were components of the Pueblo Pardo focus with a terminal date of about A.D. 1630. The use of legs, rings, bases, and other forms of attached vessel support was foreign to Pueblo ceramics, and if the disk base was a development from pre-Hispanic levels of Chupadero Black-on-white, its development, use, and abandonment almost exactly paralleled the introduction, use, and abandonment of obvious Spanish forms.

Does the pottery carry decoration? This may seem an odd question with regard to a so-called plain ware. However, one bowl was recovered which carried traces of a dark-red stain similar in appearance to the worn areas of red in Tabirá Polychrome. While there are no other indications of their use on the plain type, we see no reason why the easily applied, post-firing, gaudy reds and yellows employed on the black-and-white should not also have been used on this otherwise drab pottery.

FIGURE 38 Forms from Tabirá Plain. A, jug with disk base; B, jar form with lug handles; C, small bowl form with disk base, probably reworked from the base of a jug form; D, soup plate; E, candlestick; F–H, sections through disk base.



SALINAS REDWARE

The situation at Gran Quivira was almost entirely reversed from that at Abó, where Salinas Redware was almost equal in amount to the culinary types and, in fact, surpassed them in some areas; Tabirá Black-on-white was in the minority (Toulouse, 1949: fig. 27). At Gran Quivira the Salinas Redware made up only 0.048 of the total pottery recovered or 0.085 of types other than culinary. The only sherds recovered at Gran Quivira were from tall-necked olla forms and bowls. The paste was a red-burning clay similar to that employed in the glaze

paint forms. A gray carbon streak was noticeable in some sherds. The temper, in the few sherds available, was comparatively large fragments of crushed andesite—the now familiar Class I crushed rock of culinary and Tabirá usage. Both the interior and exterior surfaces were well compacted, and polishing streaks were conspicuous. Surfaces were smooth, but not highly burnished.

Toulouse has suggested for Abó that the Salinas Redware there was derived from late glaze types (ibid.: 14–16). Kidder (1936: 287–290) reported about 30 fragmentary pieces from Pecos, including bowls, soup plates, rectangular forms, and a canteen shape. The material at Gran Quivira appeared to have been identical with that described for Abó and probably Pecos, but it was in such small quantity that further discussion here does not seem warranted. The sherds recovered were entirely from ollas or bowls, and the large variety—soup plates, cups, and candlesticks—found at Abó and Pecos were missing. It is probable that the plain redware was an extremely late development which reached a peak at Abó and Pecos after Gran Quivira was abandoned.

GLAZE-PAINT VESSELS

While glaze-paint rim sherds made up slightly more than 20 percent of the total sherd count, there was wide variation in the percentage of glaze sherds among the three structures (table I). Although table I includes the very few glaze-polychromes and random intrusive sherds, the discussion here is confined to late rim forms of local ware and the large group of intrusive pottery with horneblende gneiss temper. This was all late pottery in the general class of Pecos Glaze VI or Group F forms.

Olla fragments were very rare; they suggested vessels similar to those indicated at Abó and Pecos: a small base, possibly inverted, a protruding shoulder, and a high, slanting neck with sharply flaring rim (Kidder, 1936: 256, figs. 250,

Table I. Sherd Percentages From Gran Quivira

T: Trace

	Kiva D	San Isidro	House A	Total
Culinary	.30	.41	.41	.373
Tabirá Black-on-white (closed)	.22	.11	.40	.243
Glaze, late (two-color)	.22	.25	.075	.181
Tabirá Plain (pitcher shapes)	.20	.16	.049	.136
Salinas Redware			.048	.016
Chupadero Black-on-white	.03			.010
Tabirá Plain, bowl forms			.004	.001
Glaze, Mera's Group A, on red	.01			T
Tabirá Black-on-white (bowl)			.007	.002
Glaze, Mera's Group A, on yellow	T			T
Glaze, Mera's Group D		.04		.010
Glaze, late, polychrome	T	.02	T	T
Tabirá Plain, soup bowl			.005	.001
Tabirá Polychrome	T		T	T
Tabirá Plain, candlesticks			T	T
Tabirá Plain, chalice forms			T	T
TOTALS	.98	.99	.998	.973

252; Toulouse, 1949: fig. 21). Glaze ollas were rare in all sites of this period; their scarcity was noted by Kidder and Toulouse, and for Paa-ko, Lambert remarked that the few sherds found were so small that little information could be derived from them (1954: 93). Functions of glaze ollas were being taken over by Tabirá Plain and by the undecorated redware ollas.

Bowls were the most prevalent form; the few restorable pieces and large sherds indicated wide, rather shallow shapes, 10 to 14 inches in diameter and 4 to 6 inches deep. There were rare fragments suggesting a small, straight-sided and flat-bottomed form 4 to 5 inches in diameter and 2 inches deep. Of the 278 rim sherds reexamined, there was little, if any, correlation between class of temper, color of slip, and rim form:

	Local andesite temper	Intrusive hornblende gneiss	Total
White slip	66	85	151
Red slip	88	39	127
	154	124	278

Clay

Red-burning, often incompletely oxidized except near the rim and along margins. The carbon streak took up one-third to one-fourth of the vessel wall.

White. Cream to dirty-white; applied to interiors and carried over the rim and down the exterior to the juncture of rim and body, rarely if ever below this point. The white slip was thin, particularly on the exterior where the darker underbody showed through. On the interior the slip weathered badly; it had cracked and flaked so that there were areas where only traces remained. There was some question whether the exterior, below the line of white slip, was slipped or was painted red. An exterior red slip is not always discernible in cross section in this area, and if a coating was applied, it was more in the nature of a thin wash or coat of dark-red paint.

Red. As with the white, the red slip was applied to the interiors of bowls and carried over the rim to the juncture of rim and body or slightly below this point. The body below the slip line varies from a red, closely approaching the slip, to a brown or red-brown. The red slip is quite thin and can only be seen in cross section in some sherds; it is detected primarily on the exteriors where it contrasts slightly with the unslipped body.

Rim Form

Rim forms (fig. 39) closely approximate those of Kidder's Glaze VI (1936: fig. 223) and the Jornada Late Variant of Shepard (1942: fig. 26).

Glaze and decoration (figs. 39, 40)

Decoration was in glaze paint alone; it was not bordered by a matte-red paint to form a polychrome. The glaze was dark green to green-black. There was a slight difference noted between the slip color and the consistency of the glaze; that applied over the red slip seemed slightly less runny and sloppy than that applied over the white slip. Interior decoration was confined largely to two wide

parallel bands around the circumference at the base of the rim. Below the rims were occasional chevrons, groups of dots, and pairs of short parallel lines. Decoration on the exterior also consisted of wide parallel lines and while the space between them was largely left open, here too, there were occasional stepped elements, chevrons, and triangles.

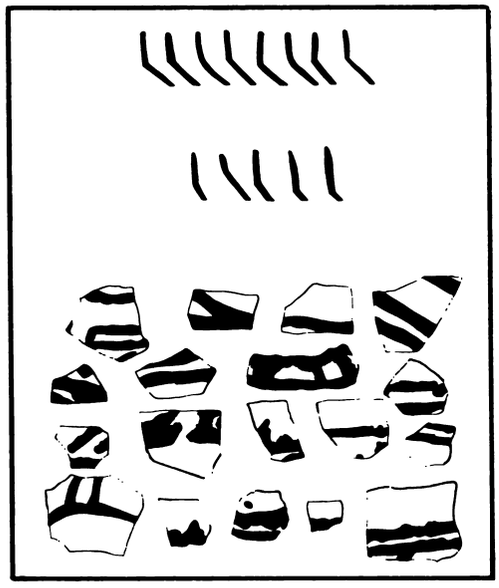


FIGURE 39 Glaze-paint rim forms and designs occurring with a red slip.

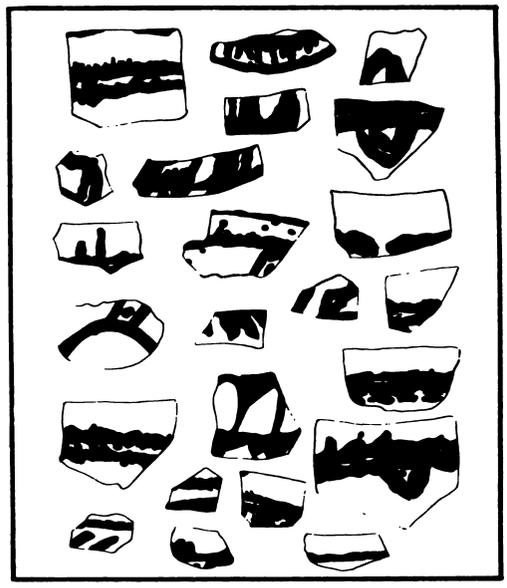


FIGURE 40 Glaze-paint designs on a white slip.

Summary

We did not have a large number of glaze sherds from Gran Quivira to begin with, and the subsequent reexamination for further temper determinations was based on only a portion of those originally studied. Nevertheless, what we do have seems to fit the general pattern, if not all the identical rim forms, of Group F and/or Kidder's Glaze VI from Pecos. While it is common to refer to Pecos Glaze VI, it must be remembered that Kidder and Shepard considered it an intrusive there in late Glaze V times—the latter part of the 17th century. These late forms have unfortunately not been recovered or studied in anywhere near the quantity or with the intensity that earlier glaze varieties have received, even at Pecos. Nelson obtained the largest variety of late forms from his early work at the Tano ruins: oddly shaped platters, cups with loop handles, melon-shaped and rectangular forms (1916: 175). From Paa-ko, Lambert reported an almost equally large assemblage in the Glaze VI horizon: spouted shouldered bowls, cups, soup plates, canteen, and rectangular shapes (1954: 93). A far smaller variety came from Abó: bowls, ollas, and one soup-plate sherd (Toulouse, 1949: 18). The material at Pecos was limited entirely to bowls and rare ollas (Kidder, 1936: 254).

In addition to the variety of shapes present there was considerable variation in the color and quality of slip during this decadent period. Further, most of the decoration had retrogressed from polychrome to two-color ware. Toulouse reported that some of the glaze at Abó was not slipped, but there is no reference

to slip presence, absence, or color for his late Glaze VI or F series. Decoration there was likewise two-color (1949: 17, 18). In the Jornada Late Variant, Shepard found a light red interior and exterior slip; in the Socorro Late Variant the slip was dirty-white on the interior and the exterior was covered with either a dark-red paint or slip; this is the same pattern followed in the white slipped vessels from Gran Quivira. Fewer than half of the Jornada sherds were polychromes, in that they had a band of matte-red paint below the glaze. The band of red paint was standard on the Socorro Variant (1942: 250, 251). Lambert (1954: 93, 94) found that the Glaze VI forms at Paa-ko ran to dark grays, buffs, tans, and reds. Individual pieces were described as being slipped and the decoration as "tending" toward two-color vessels. At Pecos these late slips were poor, "washy," and variable; red and white were combined, or variations of dirty white to cream, or shades of red were used alone. Slips varied from 0.05mm.-thick to films so thin as to be indistinguishable—reminiscent of the Gran Quivira and Socorro Variant exterior slips. Glaze paints at Pecos were sloppy, as they were in all of these, the last of the glaze forms; paints ran and the elements of design were distorted or obliterated. Some bowl interiors at Pecos remained undecorated and the standard design, where it was discernible, appears to have been a zigzag. As at Gran Quivira, oxidized margins in the paste were the rule (Kidder and Shepard, 1936, passim). The Pecos zigzag was an intricate piece of work compared to some of the Gran Quivira bands.

The deficiencies of the Pecos Glaze VI should not, however, be laid at the doorstep of the Pecos potters, since Kidder and Shepard believe that it was all intrusive there. Who made it has not been determined. It was tempered with crushed rock, a porphyry. In a later study of Rio Grande Glaze Paint Ware, Shepard (1942) did not report any porphyry-tempered trade wares; the only instance of such temper was a granite porphyry from the Lower Rio Grande, well below Socorro, and this in very small quantity.

Subsequent to Shepard's 1942 publication, Stanley Stubbs made temper determinations on several lots of sherds from Paa-ko, including 88 pieces which were classed as Glaze V–VI or as Glaze VI. Half of these were tempered with andesite; the determinations on 28 were questionable and were not given; other tempering material in order was: basalt 10, granite 4, schist 2, sand 1 (Lambert, 1954: 94). The porphyry-tempered vessels which supplied all of Pecos Glaze VI are missing. From excavated sites then, there are local andesite tempered vessels from Paa-ko, Gran Quivira, and, probably, Quarai. Intrusive sherds at these excavated sites came from as yet unknown sources: porphyry at Pecos, hornblende gneiss at Gran Quivira and Quarai, basalt at Paa-ko.

SUMMARY, CERAMICS

The potters of Gran Quivira in historic times used two general types of clay from which they made a large variety of forms. Some were left plain, others were decorated with black paint, black paint and fugitive red and yellow, or glaze paint. A light cream- to buff-burning clay was employed for the gray paste types: black-on-white, polychrome, and plain undecorated gray. A red-burning

clay was employed for culinary ware and the same or a similar clay was used for glaze-paint vessels and plain redware.

In making culinary ware the potters were apparently following a brownware tradition in using the red-burning clay to produce vessels with an incompletely oxidized, brown, and friable paste. Black-on-white, polychrome, and plain-gray vessels seemed to follow an Anasazi tradition of gray paste. Our Tabirá Black-on-white comes from a period when the old traditions of Chupadero design had been abandoned and new "modern" motifs taken up, albeit promiscuously, with little thought given to arrangement. The source of these elements is not fully understood; in part they may be greatly coarsened feather motifs originating as far west as the Hopi country, or they may have been based in part on Spanish art forms—particularly those elements depicted in painted imitations of Spanish tiles. Together with Jemez Black-on-white and the Biscuit ware series through Sankawi to Tewa Polycrome, Tabirá was one of three black-on-whites surviving the glaze period. It is also the only black-on-white converted to a polychrome through the addition of fugitive red and yellow paints. This is a genuine departure in the Pueblo decorative arts.

The plain gray, undecorated pottery at Gran Quivira was another late development and the one which shows the most Spanish influence. Olla forms continued traditional shapes, but the soup plates, candlesticks, chalice, probably the pitcher and mug forms, and possibly the disk bases were the results of Spanish occupation.

Prior to this study, no temper identifications had been made on the above nonglaze wares. It had been assumed, following Shepard, that andesite tempered pottery meant an intrusive from the Galisteo region. This seems untenable in the light of total andesite temper for nonglaze wares as well as for a proportion of glaze vessels. With local potters then accounting for the nonglaze and more than half of the glaze sherds examined, we have only the problem of the presumed intrusive hornblende gneiss tempered glaze vessels. The source of these is unknown. Until it can be definitely established, I see no reason to assume that potters as troubled and harassed as these were would not use one type of crushed igneous or metamorphic rock as another, if both were reasonably available.

The ceramics at Gran Quivira were of a period exhibiting the end products of certain long-lived traditions in black-on-white and glaze paints. Gran Quivira was not entirely unique in this respect; black-on-whites had generally been abandoned throughout the Pueblo area. Excavations at Abó, Quarai, Paa-ko, and Pecos demonstrated that a similar degenerate phase of glaze tradition—tall, exaggerated rim forms, the abandonment of polychrome glaze decoration, the use of uncontrollable glaze paint—was a widespread phenomena. Among the surviving Pueblos this general breakdown of old forms was followed by the development of the attractive and finely executed "modern" matte-paint polychromes, a resurgence in which the potters of Gran Quivira were not to share.

ZUÑI WAR GODS PILED AT A SHRINE.

ANTHROPOMORPHIC REPRESENTATIONS

In front of each one [Kiva], before going in, is a black stone four fingers in thickness, three spans wide, and one estado above the ground, and on each one is a badly painted figure of an Indian with a flaming crown. These idols everyone has in his house.

Luxán, 1581

Evidently the pueblo populations of the Rio Grande and the Jumano area were plentifully supplied with "idols," masks, and other ceremonial or religious paraphernalia at the time of the Spanish entradas, and, just as evidently during these early years, they made no particular effort to hide this material from the Spaniards. The accounts contain numerous references to idols of both stone and clay. I have made no effort to run them all down but there are enough to indicate that seeing "idols" was not an exceptional occurrence. In addition to Luxán, above, there was Espinosa's remark that in the estufas there were always sculptured idols of stone and wood (which the Indians resented being knocked over), and there is the Oñate reference to San Juan Bautista above Sevilleta where, ". . . we found a large quantity of maize, and so many painted idols that in two rooms alone I counted sixty." As late as the 1660's, when the clergy under Governor Peñalosa made a renewed effort to stamp out native religion, such paraphernalia was so common that at one time the clergy reported burning 1,600 masks, prayer sticks, and idols. Unfortunately, very little of this type of material, even in stone, has been recovered from archeological sites in the Rio Grande area. While the missionary Spaniards may be accused of having destroyed a great deal of ceremonial material, stone images are also apparently rare in sites which were abandoned in late pre-Spanish times; this lack, however, may be due to their relatively late introduction.

The Luxán reference, from the Jumano area, was to a black stone bearing the portrait of an Indian with a flaming crown (Hammond and Rey, 1929: 77). There are two anthropomorphic representations from the excavations at Humanas. One was a sculptured stone with a black face; the other a painted figure, on the interior of a bowl, of what may be an Indian with a flaming crown.

Stone face (fig. 41)

The stone was a natural, irregular cobble, unmodified except for carving of the features. The diameter of the cobble varied from 3 to 3½ inches. The face, carved on a portion of one side, has a diameter of 1⅝ inches. This is perhaps a unique specimen in that the natural black cobble was covered with a heavy lime deposit, and the features were produced by cutting away unwanted portions of the deposit—white eyes, nose, and mouth—in low relief on a black face. The lime deposit is from one-sixteenth- to one-eighth-inch thick; aside from the features the only other place that it can be approximated is on the back, where there are a few shallow cuts just deep enough to expose the black surface of the underlying rock. The cobble, under the lime deposit, is black, fine-grained and dense; where it is exposed on the face, it has a uniform dull appearance. It was examined at Gran Quivira during the excavations, but was not compared with known materials; it could be a fine-grained basalt or a black limestone.

There are a few other reported anthropomorphic carvings from the Rio Grande area. Nelson found one slab with an incised figure near Pueblo Largo, and faces carved on portions of stone splinters at Pueblo Blanco and at San Lázaro. A third example, reputedly from San Lázaro, was examined by Nelson. The Pueblo Blanco specimen was a face only, with all the features carved in low relief. In the San Lázaro splinter both the facial features and the hands were

shown in low relief; in the specimen examined by Nelson the facial features had been destroyed but the hands were in relief. All of Nelson's specimens were on the upper ends of stone splinters, from 15 to 21 inches long, as though they had been made to stand up in a floor or perhaps outside. The face of the Pueblo Blanco specimen was painted red and traces of green paint remained below the facial portion. The face of the San Lázaro example had been painted a reddish brown (Nelson, 1914: 71, 91, 102).

Five stone idols have come from Pecos; four of these were reported by Kidder (1932: 86–91, figs. 62–65) and one, from subsequent investigations, by Lambert (1957: 93). Three of those reported by Kidder were mutilated and the fourth was possibly an unfinished example. All of the Pecos examples were full figure with knees drawn up and all indicate the hands crossed over the breast. Of the four excavated by Kidder, the probable unfinished piece retains the facial features; one was a broken and restored figure 11¼ inches high; the features on the other two were missing or incomplete. There is some difference in style between these and the Gran Quivira face. Where it could be determined, the Pecos idols had the nose left in relief and the eyes, the mouth, and in one, the ears, incised. On the Gran Quivira piece all facial features are left in relief.

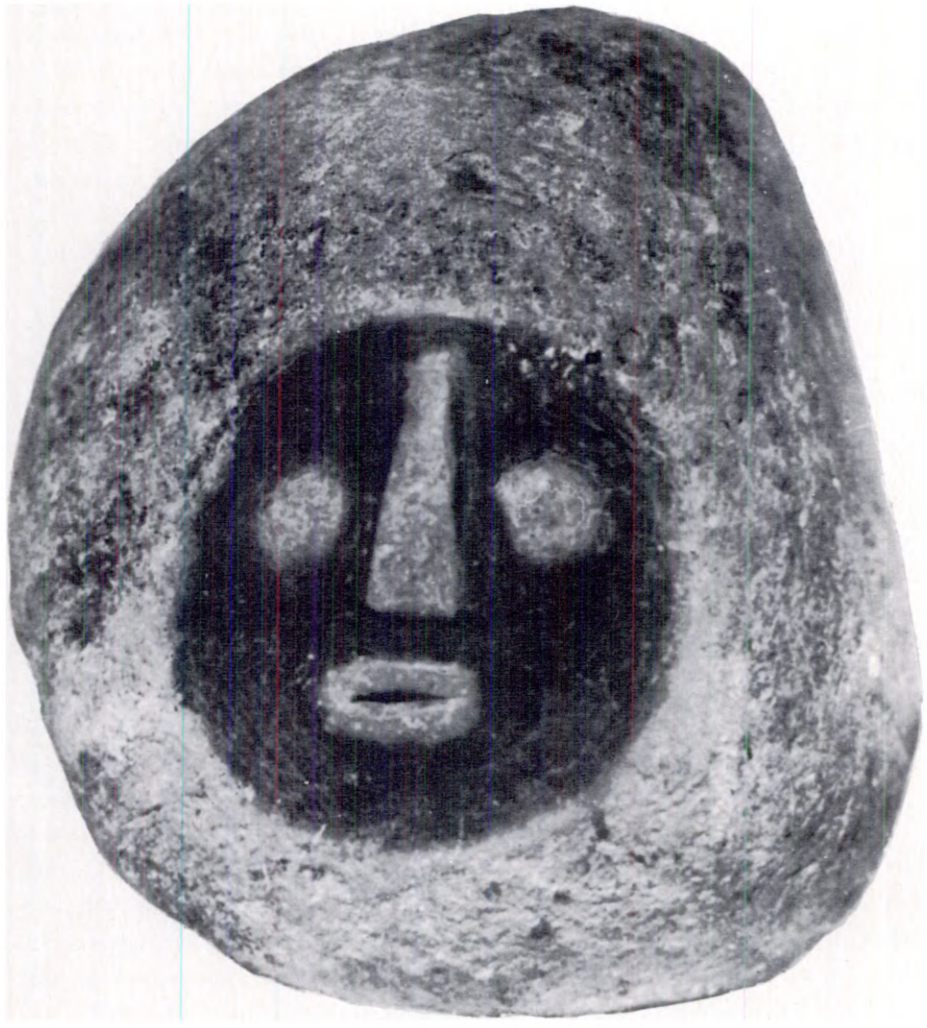


FIGURE 41 The carved stone face from Kiva D. Greatest diameter of stone is 3½ inches.

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The fifth Pecos idol was that recovered by Witkind and reported by Lambert. It also is full figure, 8¼ inches high, with knees drawn up. It is complete and has suffered no mutilation. The eyes were circular drilled holes, the nose was left in relief, and the lips were in relief with the mouth incised. The figure is notable in that it is a probable hunchback; a low ridge or crest runs from the forehead across the top of the figure and down the back of the head. This has been variously interpreted as a braid of hair or a tumpline. There was red pigment in the mouth and this, with Nelson's examples, suggests that it was general practice to paint stone idols.

L. L. Wilson reported in 1916 the recovery from Otowi of a carved clay image fashioned in the same technique as that used for stone. ". . . the arms, neck, face and features were produced first by incision and then by rubbing away contiguous areas" (Wilson, 1916: 549). The figure was carved from an apparently solid cylinder of baked clay 5½ inches high and 1¾ inches in diameter. The face was outlined and eyes, nose, and mouth were shown in low relief. Arms and hands were depicted, the hands resting on the front of the figure but not crossed on the breast as in the Pecos examples. The figure ended at about the waist and the legs were not indicated. The base clay was gray; over this was light red paint, and the surface was sooted. Most notable were the turquoise insets for the eyes and a turquoise inset for the heart. Witkind's Pecos specimen had drilled holes for the eyes which may have also held turquoise or other insets. Remarking on the paucity of such clay or stone figures in 1916, Wilson noted that there were several in the museum at Santa Fe, and that Ex-Governor Bradford Prince had the largest single collection of idols. The collecting of idols may have been an outdoor sport about the turn of the century, and it is regrettable that none of these collections seem to be available today.

The Gran Quivira face came from refuse on the floor of Kiva D in association with a partial candlestick and other pottery forms of Spanish influence; its deposition there was certainly historic. This parallels the situation at Pecos, where Kidder's figures were from post-Columbian deposits, but where the age of the figures themselves could not be determined. Gran Quivira, Pecos, Otowi, and the Galisteo sites all suggest that the carving of "idols" in stone (and probably in clay and wood also) was a comparatively late prehistoric development.

Of some interest in dating these carved human representations is the apparent late appearance at Pecos of baked-clay human figurines; Kidder recovered some 263. He suggested that their use may have been introduced by Mexican Indians with Coronado's army (1932: 133). Morss (1954: 44) partially admits this view of the Pecos specimens and suggests two possible Mexican sources, at the same time pointing out that the Pecos finds may reflect a brief local florescence of an endemic trait. We have very little material to go on, and this is not a treatise on anthropomorphic cults, but I am inclined to lump together all human representations by the Anasazi Pueblo, and see a more or less constant use, from clay figurines of Basketmaker horizons through the occasional use in the Kayenta branch, through occurrences in some Pueblo III stages (at least six molded pottery figures from Aztec—Morris, 1919: 83), to the rooms with more than 60 idols seen by Oñate in historic times. If the making of figurines and "idols" flourished in the early historic period it may have been more the result of a fresh impetus than it was the introduction of a new idea.

Painted figure (fig. 42)

The "portrait" on a sherd from a bowl interior can be viewed in several ways, but it appears most nearly to be a figure wearing a mask or helmet with a short visor. At the top of this helmet is a roach of hair, feathers, or other material; whatever it is it seems stiff and sticks up like a bunch of feathers or a potted plant. At the back of the head and apparently tied to the mask or helmet is either a bird or bird skin. Knowing nothing about Jumano dress and little about their appearance except that some were "gente rayada," it is difficult to tell whether this is a Jumano, a visitor from the plains, or a figment of the imagination. This may not have been an isolated instance since for Pueblo Pardo, shortly to the south, Toulouse notes that designs on Tabirá Black-on-white included, ". . . occasional outlined insects and animal and human figures" (1960: 21). The painted figure "with a flaming crown" would seem to be one more item in the epidemic production of anthropomorphic representations beginning at or slightly before the contact period.

FIGURE 42 Human representation on a sherd of Tabirá Black-on-white.

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DETAIL OF FIGURE 43.

OTHER ARTIFACTS

by Sallie P. Van Valkenburgh

The artifacts recovered from all three areas, House A, Kiva 1, and San Isidro, were cataloged in the field and left either on display or in storage at Gran Quivira. With the opportunity to work up the material, the total classes of small specimens and samples of larger objects, like manos and metates, were taken to Santa Fe. The preliminary study there was followed by examination of some of the remaining material at Gran Quivira and of comparative collections in Santa Fe.

STONE

Axes (fig. 43)

Eight fine specimens, all of the "specialized" groove type described by Kidder (1932: 51), were recovered from House A (Rooms 2, 3, 6, 21, 22, 28) and San Isidro mission church. Stanley Stubbs of the Laboratory of Anthropology identified the material of the axes as fibrolite (sillimanite); the restricted occurrence of this variety of gneiss is discussed by Montgomery (1953).

Five of the axes are between 4 and 5 inches long; the smaller ones measure 3½ and 3¼ inches. Their color variation runs from a mottled rose and cream, through two shades of green, to a gunmetal with green and red flecks.

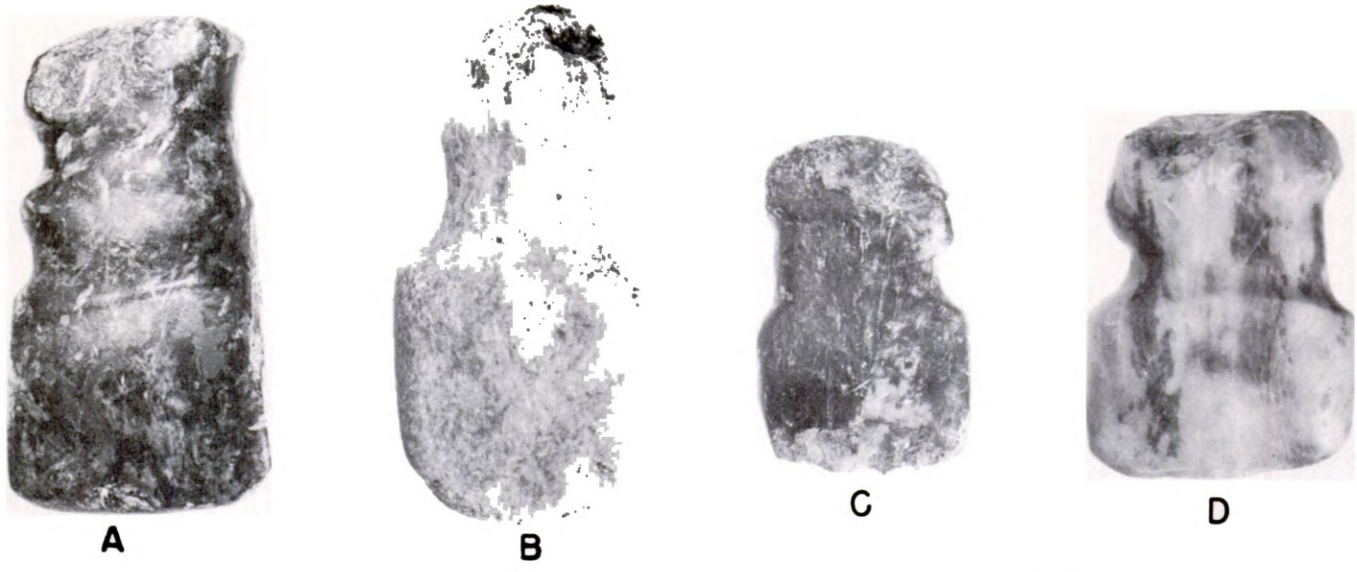


FIGURE 43 Specialized groove axes of fibrolite. The oblique "spiral" groove shown on A also occurs on the reverse face of the other axes. A and H show re-hafting grooves, as well as original grooves. Length of F, 3¼ inches.

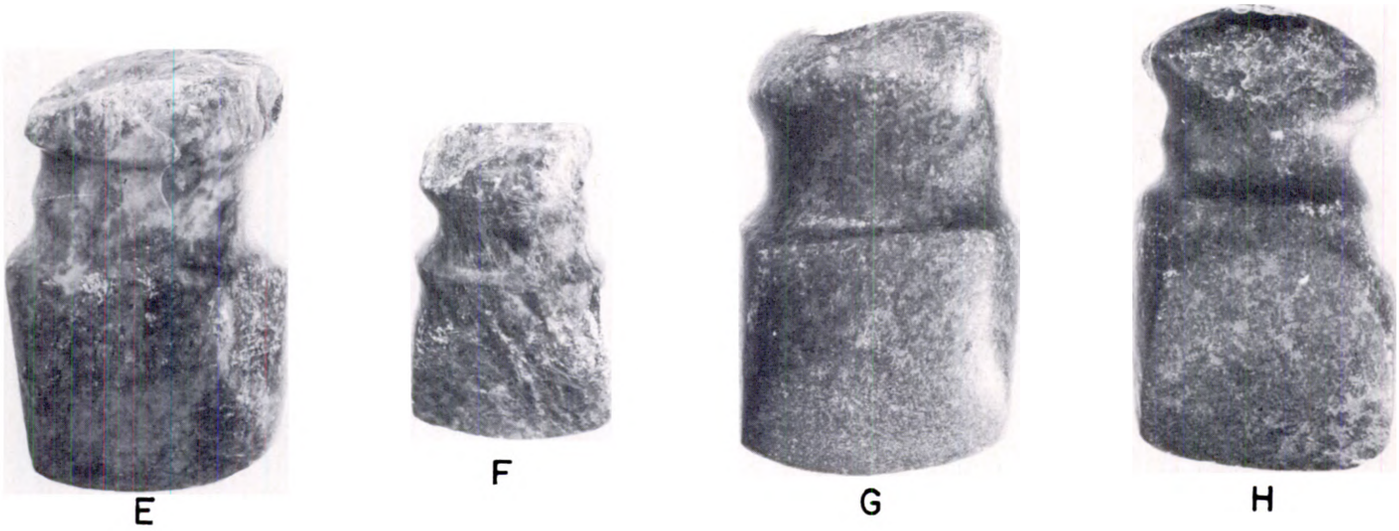
The cutting edges on F and H are unmarred; the other axes show cutting edges in various stages of dulling and of conversion to a pounding surface. (On A the cutting edge has been smoothed to a pounding face ⅜-inch wide.)

The polls of all axes show some pounding scars; the smaller suffered most from this secondary heavy use, the poll of F being much scarred and the cutting end of C having been thoroughly fractured. Putnam commented on "cutting edges now so blunted that they appear to have been used more for giving blows than for cutting purposes" in connection with fibrolite axes collected at San Ildefonso, Santa Clara, and Taos in 1874 (1978: 376–379).

Among these, as among other specialized groove axes, there are noticeable differences in the angle, and even in the number, of grooves, and in the comparative width of the grooves at top and bottom. However, these variations seem to be only the natural result of individual workmanship, on stones of varying size and shape, to obtain the one-and-three-quarter-turn wrapping method

of hafting, as postulated for ax heads found at Pecos (Kidder, 1932: fig. 23), and as illustrated for a Mesa Verde specimen (O'Bryan, 1950: pl. XXV).

The specialized, or spiral, groove axes from Pecos were described by Kidder as having the groove "set obliquely, rather than at right angles, to the long axis of the tool" (Kidder, 1932: 51). On the Gran Quivira axes, grooves on one face are oblique but on the reverse face are at right angles to the long axis; this would be the expected course of a wrapping which began straight, but angled on the reverse face in order to avoid interference at the starting point. It appears that, at least in the case of the fibrolite axes recovered from Gran Quivira, the head was joined to the handle at the same right angle as postulated for full and ¾-groove axes.



E F G H

Two of the axes had either been rehafted (after use and resharpening of the cutting edge had shortened the bit and altered the balance of the tool), or reinforced with an extra wrapping; the outer grooves on A were pecked, but never smoothed. The ax shown as B appears to have been hafted with a wrapping which made 2¾ turns (perhaps necessary because of the tapering poll which did not afford a good grip for the usual wrapping).

The specialized groove ax is typical of late prehistoric Upper Rio Grande sites. Reed summarized their occurrence at Pecos, Riana on the Chama, and Pindi on the Santa Fe as "along with the introduction of glaze-paint redware . . . shortly before 1350 A.D." (1951). Their use and value (as mauls, if not as axes) in the pueblos continued until recent times. Dr. Yarrow (Putnam, 1879: 376–379), who collected axes in 1874, reported that "he did not see any of the axes and hammers in use, and, so far as he could learn, they are not now made. Those which he obtained from San Ildefonso, Santa Clara, and Taos had been handed

A

B

C

D

down for a long period, and the Indians were loath to part with them. None were mounted on handles, but he was informed that they were formerly attached to handles made of plaited skin and hair, like the Indian whip, or were fastened by withes of wood, thongs of leather, hide, or buckskin."

Other hafted tools (fig. 44)

Only two hafting-groove implements, other than the fibrolite axes, were recovered; both are ovoid, have full grooves at the center of the long axis, and were found in Room 3.

The smaller (3 inches long) is of fine-grained quartzite, with shaping confined to the shallow groove and the flattened ends. It resembles Pecos implements which Kidder classed as "club heads" (1932: 55).

The larger (3¾ inches long) is of vesicular basalt, with a ¼-inch deep groove, and might have been used as a maul; similar implements from the Swartz Ruin were illustrated as "club heads" (Cosgrove, 1932: pl. 42, e, f).

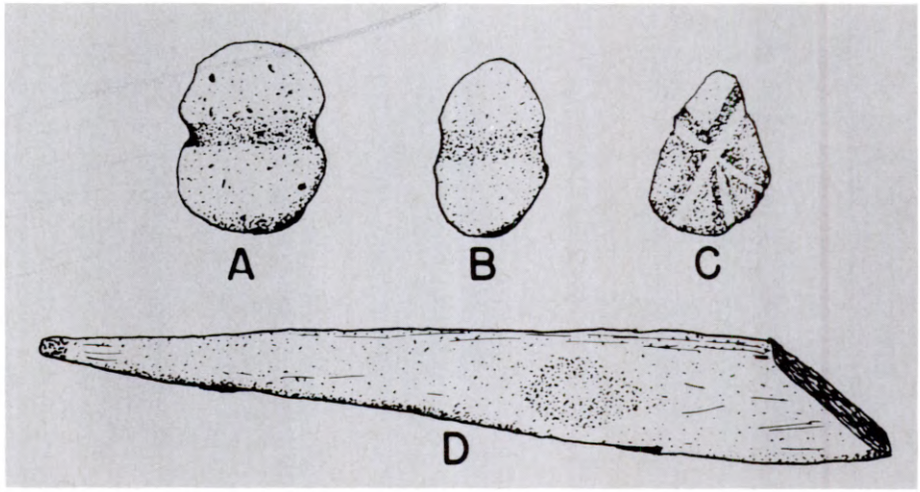


FIGURE 44 Mauls or club-heads (A, B); V-grooved abrader (C); the "ringing" stone (D). Length of D, 16 inches.

Arrowshaft straighteners and smoothers (fig. 45)

Eight shaft tools were found in the refuse fills of Rooms 1, 2, 4, 6, and of the kiva. Stubbs classified the materials used as andesite, sandstone, and micaceous schist. All except the one sandstone tool show evidence of heating.

Distinguishing between shaft straighteners and smoothers is difficult; some of the shaft tools which have grooves of varying length and cross section may actually have been used for both processes (fig. 45, d, e, f).

Descriptions of actual Indian use of shaft tools is probably the best clue to correct interpretation of the implements. Pope (1918) described two methods of smoothing an arrowshaft: rubbing it between two pieces of sandstone, or rolling the shaft on the thigh so that it revolves against one piece of sandstone. A similar method of "polishing" shafts, by rubbing a stone up and down on the wood, was noted for *Indians of Southern Utah* by Abbott (1879: 198). The straightening process was also described by "living witnesses" in connection

with shaft tools collected in the 1870's from islands off the coast of southern California: twigs were cut and scraped to the desired thickness and dried in the shade; the arrow-straightener stone was heated and "into the groove of the heated implement the crooked part of the shaft is pressed, and by heating, or steaming, the wood becomes very flexible, and is easily bent and straightened, which position it will retain when cooled off" (ibid.). This is the same technique used by Cosner in his experiments in straightening arrowshafts with grooved stones. Cosner concluded that stone straighteners were not necessary for arrowweed *(Pluchea sericea),* which he had seen Pimas straighten by application of heat and moisture to the wood and bending it in the hands, but that a grooved stone was ideal for reed cane *(Phragmites communis).* His technique included heating the stone to a point where it smoked slightly as the wet cane was applied, and using a downward pressure and slight rotating movement of the cane in the groove. He also noted that the joints of the wet cane could be "ironed" flat on the body of the shaft tool (Cosner, 1951).

On the basis of the kind of groove needed for the above straightening technique, shaft tools illustrated as C through H of figure 45, would seem to be primarily straighteners; they contain deep U-shaped grooves which would afford straight-line resistance along a round shaft. Tools A and B have only flaring grooves which would have been adequate for (and possibly the result of) rubbing along an arrowshaft for the purpose of smoothing (but not of straightening).

Griddles and slabs

There are 7 griddles which are whole or nearly so, 23 fragments, and 7 probable griddles. All are of sandstone, and were found in the refuse hills of Rooms 1, 4, 5, 6, 10, 18, 21, 32, and 35. Dimensions of the seven measureable griddles are:

	Inches						
Length	18	17	18	18½	17½	20	11
Width	8½	10	12½	8½	6¼	11	6½
Thickness	1	1½	1½	1	1	½	¾

The typical griddle for cooking paper bread shows the carefully rounded and smoothed edges, and the smoothed, treated, and blackened surface which would result from the process of manufacture which Cushing witnessed at Zuni. Cushing described the ritual character of preparation, from quarrying to installing in the house, of stones for the baking of "he'we" or wafer bread; the surface on which the bread would be cooked was alternately heated, anointed with hot pinyon pitch and cactus juice, rubbed with a water-worn cobble stone, reheated, anointed, and rubbed repeatedly (1920: chap. X).

Fire-reddened sandstone slabs, *without* surface or edge finishing, might have been used as firepit linings, or in pit-oven baking. Cushing describes Zuni "stone cake" baking as "huge sandwiches composed of alternating layers of hot sandstone slabs and batter . . . carefully enclosed in a casing of larger slabs cemented with mud, and buried in a hot pit over which a fire was built" (ibid.).

E

F

G H

FIGURE 45 (pages 126 and 127) Shaft smoothers and straighteners. A and B show the flaring, asymmetrical grooves of the shaft smoother; C, G, and H show the U-shaped grooves of the straightener. Three tools (D, E, F) combine a straightening groove on the rigid section with one or more smoothing grooves which run the length of the tool. Length of G, 5 inches.

Other sandstone slabs, which do not show the specialized treatment for a griddle or evidence of heating, might have served as doors, mealing-bin liners, niche covers, or could have been raw material for griddle manufacture.

Metates (fig. 46)

The field catalog listed 69 "plain" metates and 9 trough metates, found in Rooms 1 through 11, 13, 19, 21, 22, 25 through 28, 30, 32, 34, 35, and in the plaza. They were all in refuse fill, and not directly associated with the floor surface, except for two in Room 34. Field classification of material was: 57 of sandstone, 4 of granite, 1 of basalt, and 16 of fine conglomerate.

Of this total, the 34 metates which were seen during my examination of Gran Quivira stone materials included 24 slab metates, 9 troughed metates, and 1 oval-bowl metate.

Slab metates

Standard terminology for metates is needed. Mealing stones with a flattish grinding area equal to the upper surface of the stone have been called "flat-top," "flat," "plain," "plane," "slab," and "flat slab" (Stubbs and Stallings, 1953; O'Bryan, 1950; Kidder, 1932; Gladwin, 1937; Wendorf, 1952; Bartlett, 1933). These terms distinguish between grinding surfaces which are flat, troughed, and bowl-shaped; but they have not been consistently used to distinguish between the two basically different types of "flat-top" metates, i.e., the flat-top boulder metate and the carefully shaped slab metate designed for use (at least during historic times) in a mealing bin.

As used here, the term "slab" metate is restricted to a stone with all planes shaped, rectangular both in cross and long sections, with a thickness less than one-fifth its width, and a nearly flat grinding area extending over the entire upper surface.

This type constitutes 88 percent of the metates found during the excavation; a group photograph of the 24 from House A would almost duplicate the series illustrated from Pecos Pueblo (Kidder, 1932: fig. 42).

Trough metates

Of the nine metates so cataloged in the field, four are fragments described as "possibly troughed," and only one troughed metate was complete. This specimen (catalog number A–32/460), is of fine-grained sandstone, 21 by 16½ by 1¾ inches, and is open at one end. Of the metates which were definitely troughed, the trough depth varies from ⅝ to 2⅜ inches. One incomplete metate of this class is the shallow, flat trough, beveled-edge type illustrated in Toulouse's report on excavations at Pueblo Pardo (1960: fig. 28c).

Oval-bowl metates

The remnant of a "basin" metate (catalog number A–32/457), with concave cross and long sections, was found with other broken metates in Room 32 of House A. The occurrence of oval-bowl metates in late sites of the eastern Pueblo area has been seen as possible evidence of Plains influence (Wendorf, 1953: 68).

Toulouse reported five oval-bowl metates from Pardo; the one illustrated in figure 28b of his report (1960) is exhibited at Gran Quivira National Monument.

Manos and rubbing stones

A total of 205 handstones, used for grinding, rubbing, or polishing were found. In the field catalog these were classified as 60 "bi-face manos," 74 "triangular to diamond manos," and 42 "polishing stones." (Small pottery polishers were separated from other "polishing stones" for this count.)

The separation used, during the later classification of the "handstones" which were available for study, divided manos (with abrading surfaces sufficiently rough for grinding) from rubbing stones (with smoothed, polished surfaces).

Manos (fig. 46, A through C)

Manos were further divided into those whose grinding surfaces are longitudinally flat (for use with slab or flat-trough metates) and those with longitudinally convex grinding surfaces (for use with oval-bowl or concave-trough metates).

Type I manos, for use with slab metates, demonstrate lengths varying from 10 to 14 inches, matching the width of grinding surfaces of the slab metates; those seen by this writer are all of sandstone. (From the field catalog it was possible to estimate that between 70 and 80 percent of manos of this type were made from sandstone.) Their cross sections illustrate progressive wear, from the loaf shape with one grinding surface, through the development of two grinding planes on the same surface, and a triangular section (resulting from the different angles at which the stone touches the metate during forward and backward strokes of grinding), through similar wear on the reverse face of the mano and the resultant diamond cross section. By the time this final stage of wear was reached, one mano, which was 12½ inches long, had a maximum thickness of only 1¼ inches.

Type II manos, with convex grinding surface developed either from use in concave troughed metates or from the shorter, more rolling strokes within oval-bowl metates, show a higher percentage of metamorphic and igneous rock than the slab metate manos. Those available during this study are similar in appearance to manos illustrated from a Mogollon site in Catron County, N. Mex. (Haury, 1936: fig. 12), the Swartz Ruin (Cosgrove, 1932: pl. 33), and Snaketown (Gladwin, 1937: pl. XLVI e, f, g).

Rubbing stones (fig. 46 D)

Twenty-five handstones were separated from the field classification of manos and polishing stones because of their smooth (in many cases polished) wear surfaces. Their materials include sandstone, quartzite, and a granitic rock. Outlines vary from circular through ovoid to subrectangular; lengths range from 4 to 6½ inches, thicknesses from 1 to 2¾ inches.

These stones are similar in general appearance to those from Pecos which Kidder used to illustrate "rubbing stones," and of which he wrote "they may perhaps have been manos for use in one hand. It is also possible that they served for the preliminary smoothing of walls or floors . . ." (1932: 72). Other illustrated implements which resemble these stones have been described from

Young County, Tex., as "manos, some used with back and forth motion and some with rotary motion" (Krieger, 1946: pl. 12); from Alkali Ridge, as "rubbing stones or small manos" (Brew, 1946: fig. 49, a to e); and from Pueblo Pardo (Toulouse, 1960: fig. 27).

Mortars and pestles

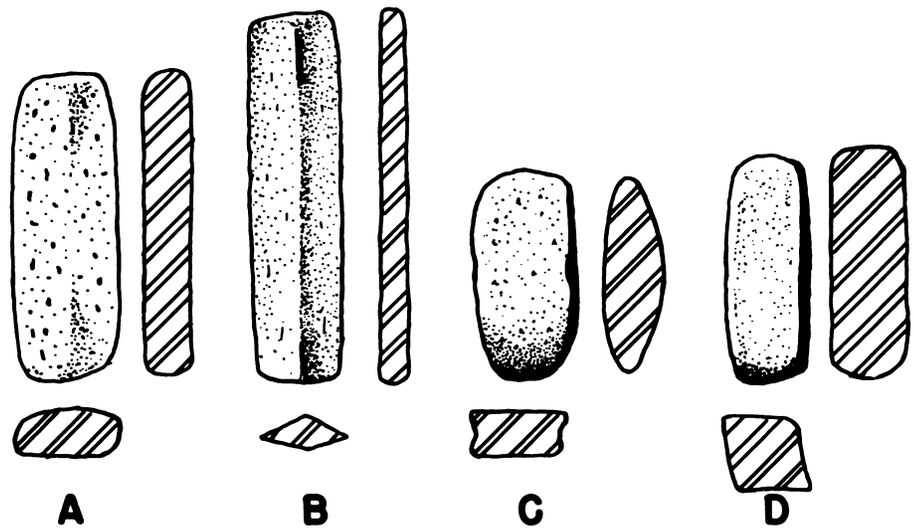
Two of four mortars were complete and were later examined at Gran Quivira. The complete mortars are of the boulder type, with shaping confined to the upper face. The mortar from the fill of Room 6 (catalog number A–6/80) is about 10½ inches long and 7 inches wide, with thickness varying from 2 to 3 inches; the grinding depression is ½-inch deep at the center, with a diameter of 4½ inches. The other mortar (catalog number A–4/164) is nearly the same size, with a depression 1 inch deep. Both are of sandstone. Both depressions are smoothed from use—as in grinding or mixing material (such as paint), rather than pounding.

Only one pestle was recovered. It is of sandstone, dark in color, not well smoothed and is 5¾ inches long and 2¾ inches in diameter.

It is very likely that some of the stones listed in the field as hammerstones were handstones used as grinding tools in mortars. Two of these handstones (A–11/249 and A–6/205), which showed no pounding scars, were tried in the mortars and worked very nicely. They are very similar to those illustrated from Mesa Verde (O'Bryan, 1950: pl. XXIX B).

Hammerstones

There was a total of 16 hammerstones (some of which may have been used for grinding tools in mortars—see "Mortars and pestles" above); they were found in the refuse fills of Rooms 3, 6, 10, 11, 14, 17, 19, 21, 22, and 28. Field classification shows eight as quartzite, or probably quartzite, three as limestone, two as sandstone, two unclassified, and one as chalcedony.



Polishing pebbles

There were 18 small pebbles which were probably used in smoothing pottery. They were found in the refuse fills of Rooms 6, 10, 11, 19, 16, 22, 28, 25, and 26.

All are of very hard, fine grained igneous or metamorphic rock, as were those from Pecos Pueblo (Kidder, 1932: 64). Their length varies from 1¾ to 3¾ inches. Three showed evidence of having also been used as hammer stones.

Hematite nodules

Twenty nodules of hematite were found, usually in the refuse fills, in Rooms 14, 15, 19 (2), 21, 22 (10), 25, 26, 28 (3). The smallest diameter cataloged is seven-eighths of an inch; the largest diameter is 3¼ inches. All nodules were described in the field as "worked" or "smoothed." Five show one or more well-smoothed rubbing surfaces and 1 has 11 used planes. Another shows, in addition to smoothed planes, three surfaces where pecking had worn a shallow basin, and one surface, in which a shallow groove had been cut; this specimen appears to be the densest and heaviest of the five, and may have yielded more coloring material by pecking than by rubbing.

V-grooved abrader (fig. 44)

This artifact, found in Room 15 of House A, is of micaceous schist with a talc-like surface; dimensions are 2½ x 1¾ x 1½ inches. On the larger face are two V-shaped grooves, each ⅜-inch deep and crossing at their centers, and a shallower groove in one quadrant; one edge shows many scratches as from a pointed tool. It may have been used to point and smooth bone awls.

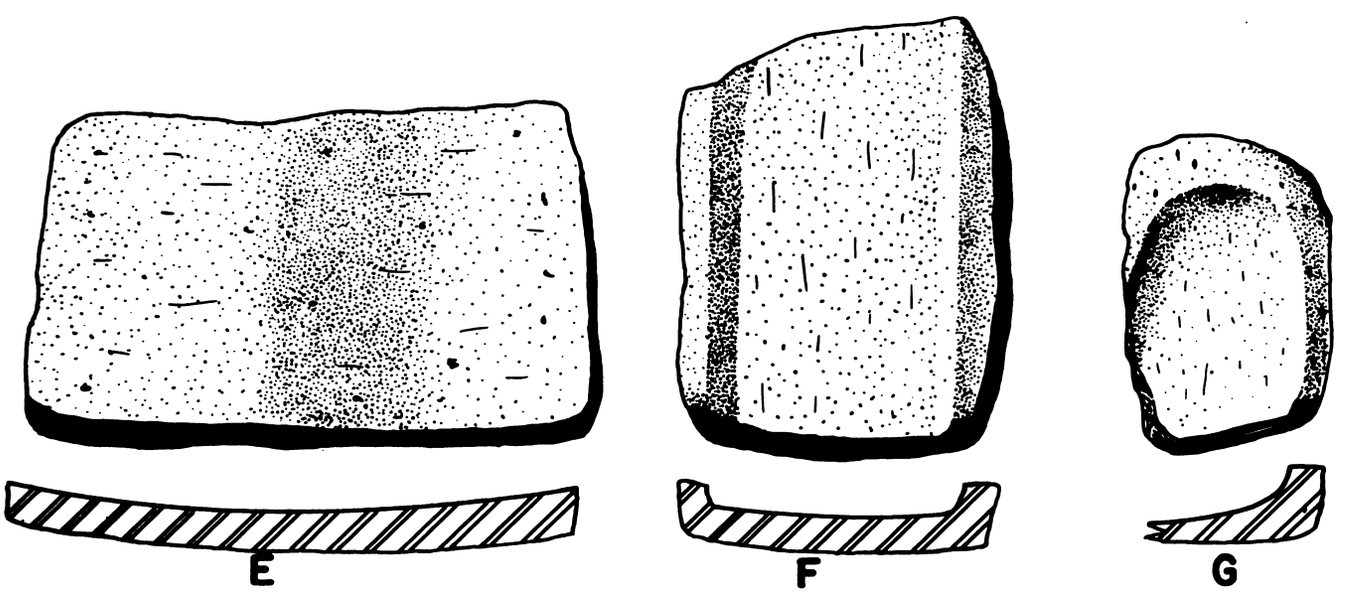


FIGURE 46 (pages 130 and 131) Two types of manos; a rubbing stone (D); and three metate types. Manos A and B were for use with slab metates (E) or flat-trough metates (F); illustrated are two stages in progressive wear of the Type I mano (from a three-grinding surface, sub-triangular profile mano to a four-grinding surface, diamond profile stone). The convex grinding surface mano, Type II (C) was used in oval-bowl metates (G) or concave trough metates (not illustrated). Length of B, 13¼ inches.

Ringing stone (fig. 44)

Catalog number A–28/406 is a tapering piece of talcy schist 14 inches long, 2½ inches wide at the top, and about 1 inch thick, with a blunt point. Ten inches from the point is a smoothed depression, 1½ inches in diameter and ½-inch deep. The stone "rings" when struck; see Lambert 1954: 132 for discussion of distribution and use of "bell stones or kiva ringing stones."

"Cubes" and "block"

Two "stone cubes" were cataloged; one from the refuse fill of Room 3 (catalog 49) is of sandstone, slightly rounded, 2¾ x 2¾ x 2½ inches. The other was in Room 2 (catalog 34) and is described as a worked limestone block, pillow-shaped, 12 x 7 x 3 inches.

Disks

Five slabs of limestone, round in outline, are recorded in the field catalog; their diameter varies from 9 to 13 inches; the edges are chipped, but the surfaces are unworked.

Plano-convex disks (fig. 47)

Thirty-six plano-convex disks were found; all but three were of limestone. They were in the refuse fills of the kiva and of Rooms 5, 16, 17, 18, 19, 21, 22, 25, 26, 28, and 35 of San Isidro church.

Diameters of the disks range from 2 to 4 inches. Maximum thickness varies from ½ to 1½ inches.

The only evidence of shaping on the majority of the disks is in chipping from the convex surface toward the flatter surface, resulting in a roughly circular outline. On a few specimens, the plane surface has also been improved by chipping; these chipped areas seldom oppose chipping from the convex side—the idea seems to have been to obtain a flattish undersurface and rounded perimeter, rather than a cutting edge. When the flat surface does meet the rounded surface with a sharp line, the flat surface shows natural cleavage planes, rather than retouching.

The disks do not show the wear scars limestone would bear if they had been used as scrapers or as pounding tools. One of those examined has a smoothed area on its flat surface; none are use-chipped on their edges. The impression obtained from looking at 44 disks (including some from Abó and Pueblo Pardo as well as those from Gran Quivira) is of wear from handling rather than from pounding or scraping.

Plano-convex disks of the above description have been found at Abó, and at Pardo (Toulouse, 1960: fig. 35a). Besides these 10 disks from nearby sites, I have seen in the collections of stone artifacts of the Museum of New Mexico and at the Laboratory of Anthropology only one other disk which could be lost among the 36 found at Gran Quivira—it is cataloged as L30/519, with the provenience being the "vicinity of Vernal, Utah."

Illustrations of plano-convex to flattish stone disks, of not more than 4 inches in diameter, are numerous; examples are cited below, in section on "Possible occurrences." The pictures are captioned as "disks," "choppers," "scrapers," "miscellaneous objects of stone," etc. Without cross sections or detailed descriptions of these objects (never reported as found in quantity), it is not possible to determine their degree of similarity to the Gran Quivira disks.

Possible uses. The question of the use of these disks might have remained dormant if only a few had been found. But when 36 objects, more like each other than they are like any other object, are found at a site it becomes necessary to define the characteristics which they have in common and to suppose that the combination of those shared characteristics points toward a definite use.

To fit into the classification of the 44 disks seen, a circular chipped stone object should be: not much more than 4 inches in diameter; plano-convex; shaped only enough to obtain a roughly circular perimeter and one flattish surface; of any available stone (availability, rather than hardness, of rock is obviously the determinant, when 92½ percent of the disks from the limestone country of Gran Quivira and Pardo are of limestone); and without evidence of localized wear.

Classification of the Gran Quivira disks as choppers, or scrapers, is difficult to reconcile with their group characteristics (perimeters rounded, instead of retaining any natural irregularity which would have given a good hand grip; general lack of intentional chipping for cutting or scraping edge; and uniformly unused appearance of their perimeters), or with the choice of materials (when required for the purpose of the implement, harder stone was obtainable—as shown by the quartzite hammerstones and rubbing stones and the fibrolite axes).

The disks might have been used for pounding soft substances (such as dried yucca fruits or meat), but why shape so many rounded tools for that purpose, when almost any small natural rock would do?

They might have been used in rubbing hides to soften them after the tanning process. Gifford recorded ethnological evidence of 12 groups of southwestern Indians using stones for this purpose, with a note that the Lipan Apache rubbed buffalo hide soft with caliche rock (1940).

However, the use which best fits the group characteristics of the Gran Quivira disks is that suggested in Marjorie Tichy's *Six Game Pieces from Otowi* (1941), and in Bertha Dutton's report on excavations at Abó in 1944, i.e., the game of "tejas," as played by Spanish Americans of northern New Mexico, and by several Southwestern Indian groups in historic times (Van Valkenburgh, 1954).

Fred Cisneros, the third generation of his family to live at Abó, identified the stone disks Dutton excavated as tejas. Nine years later, when Cisneros saw the disks from Gran Quivira, among other stone artifacts, he chose them for first comment, saying "Ah, tejas! We used to play a game with these." The game he described was essentially that of quoits, the throwing of flat-bottomed stones at a hole in the ground with the object of putting the stones in the hole or of getting your stones closer to the hole than your opponent's stones. The game is still played in Santa Fe, silver dollars, big washers, or other suitable disks having taken the place of stones.

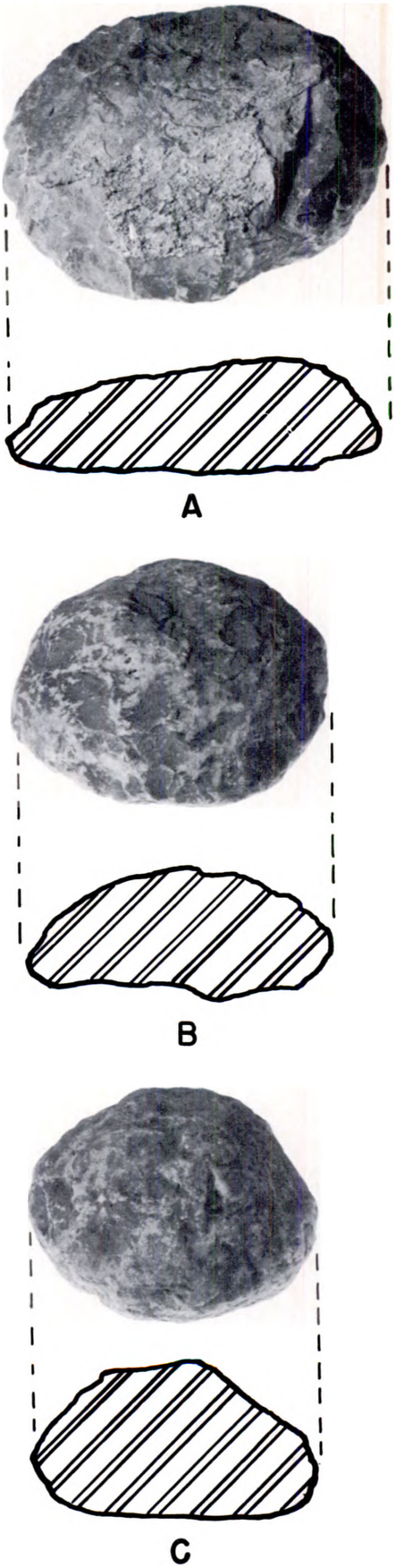


FIGURE 47 Quoits? Thirty-six of these limestone plano-convex disks were found, in refuse fills of 11 different rooms, the church, and the kiva. Diameter of A, 4 inches.

Among the Indians of the Southwest, a game of the quoits type played with stones that were true disks or plano-convex circles has been recorded from 10 Apache groups (including the Lipan), San Ildefonso, Walpi, and Kikimai Papago by Gifford (1940: 56); and from the Tarahumare, the Pima, Mohave, Keres, and Zuni by Culin (1907: 724–728). Among all groups, except Walpi, Keres, and Zuni, the target was a hole. The quoits were two round, flat stones, 4 inches in diameter. The side which could first throw both stones into the hole from 20 paces won the game (Gifford, 1940: 149). At Walpi and at Zuni the target was a corncob (a Keres boy reported using a tin can) on which rested a disk holding the stakes of the game. The stones thrown at the target were described by the Keres as "waiso, smooth flat pebbles about 4 inches in diameter, picked up for the occasion." The Zunis described them as "other disks of sandstone."

The game is still remembered, if not played, at Zuni. When the Gran Quivira disks were shown as problematical objects to Lorenzo Natewa, a Zuni student assistant from the Santa Fe Indian School, he was puzzled, but did volunteer that "they look like stones our people used in game when they threw at another rock on a corncob, but these stones are thicker."

Less information is recorded on the occurrence of gaming disks in pre-European horizons, but there are other reports of possible quoits in addition to those of Tichy and Dutton. A "small discoidal for gaming," from the McDowell Mounds in South Carolina (Griffin, 1952), is almost identical to a "thin ovate discoidal" from Snaketown, Ariz. (Gladwin, 1937). Some of the discoidal plano-convex implements listed in the footnote might, with more detailed description, be found to fit into the pattern of Gran Quivira disks. It is also a possibility that the small, usually sandstone, disks which are often listed as jar covers, are ancestors of the Zuni gaming disks.

Possible occurrences. Central Utah—"Occasional scrapers, which are rather formless or tend toward discoidal shape and were retouched on one side only, occur but rarely." [One of three illustrated, pl. III, 3, is similar to Gran Quivira disks.] John Gillen, *Archeological Investigations in Central Utah.* 1941, Peabody Museum, Harvard University. Page 31.

Southwestern Colorado—Five rounded "hammerstones" are illustrated in plate CXXXIX, 5. The convex surface shown in the photograph is very like that of Gran Quivira disks, but materials listed are quartzite, felsite, diorite, and no cross section is given. Paul S. Martin, *Archeological Work in the Ackmen-Lowry Area.* 1938, Field Museum.

Southeastern Arizona—"San Pedro chipped implements (a) plano-convex axe; chipped entirely around the edge. . . . quartzite, igneous stone." [Illustration, plate XVI, looks like some of the thicker Gran Quivira disks.] Sayles and Antevs, *The Cochise Culture.* 1941, Gila Pueblo.

Also "Penasco Phase chipped implements—sandstone, igneous stones; (a) plano-convex end-scraper." E. B. Sayles, *The San Simon Branch, I. Material Culture.* 1945, Gila Pueblo. Plate X.

Hudspeth County, Texas—"Discoidal hammerstone." J. Charles Kelley, "Archeological Notes on Two Excavated House Structures in Western Texas," *Bulletin of T.A.P.S.,* vol. 20, 1949, Lubbock. Plate 18, G.

Texas, mouth of Pecos River—Photograph of "flat limestone, chipped to rounded edge," from a Pecos Cave Dweller site. Plate XVII, d. [This circular stone

appears more like the Gran Quivira disks in material and shape than like the "hand ax" with which it is compared.] E. B. Sayles, *An Archeological Survey of Texas.* 1935, Gila Pueblo.

Chipped points or knives (fig. 48)

Material of this class is poor and particularly scanty when compared with the abundance of ground and pecked stone. Five small points and a larger specimen which is probably a knife blade comprise the lot. Two of the points, one rather poorly done, fit Kidder's classification of expanding stems with side notches, the typical Pecos point (1932: 18–20), a form also illustrated by Morris as the typical Pueblo III point (1939: 126, 127). Two of those remaining are leaf-shaped blades. These forms were scantily represented at Pecos, and since Kidder had no early horizons there he assigns them to rejects or the clumsy attempts of beginners. Similar material was classified by Morris as being more certainly knives than projectile points. In both the above references the leaf-shaped specimens were somewhat larger than the general run of side-notched or barbed points. In this group, one of the leaf forms is of average size, the other slightly larger than the rest.

There is a single point with a straight stem and asymmetrical barbs. Morris illustrates a large variety of these, assigning them to Basketmaker and Pueblo I times (ibid). Smaller points of this type were believed by Kidder to have been intrusive at Pecos. The material of all four of the smaller points is chalcedony, and the chipping is fair to indifferent. They were made just well enough to serve their purpose.

The large blade, 2 inches in length is an implement "broken" rather than chipped to shape; the unidentified material is dark brown and decidedly grainy. If this collection is representative of the entire period, just prior to abandonment, it would indicate that the flint industry was at a low ebb and that suitable stone was either difficult to procure or that the craftsman was indifferent to its use.

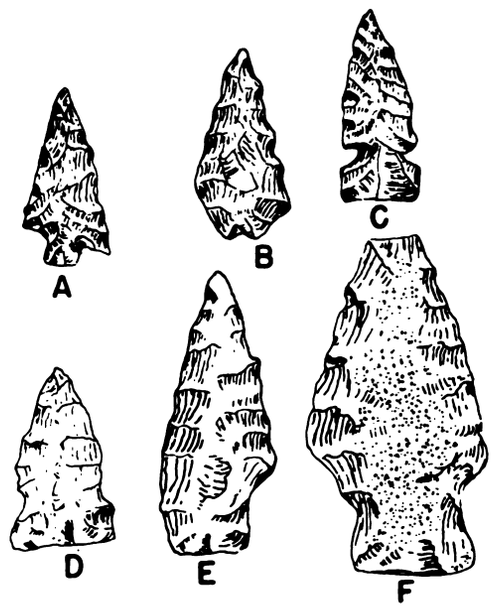


FIGURE 48 Chipped stone. The six pieces are the total recovered from all excavations. Workmanship is poor to indifferent. Length of F is 2 inches.

Miscellaneous minerals

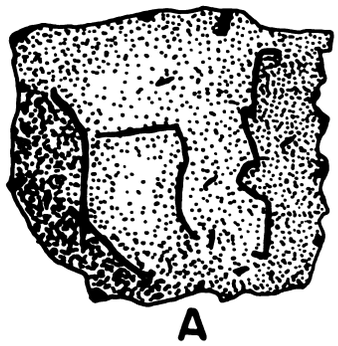
Minerals recorded in the field catalog are: a small piece of malachite showing rubbed surfaces, from Room 11; a tabular sheet of selenite, 3⅝ by 3½ by 5/16 inches, from Room 10; a quartz crystal showing some use, from Room 15; an unworked piece of galena, from Room 16; and an unworked piece of sphalerite (?) from Room 21.

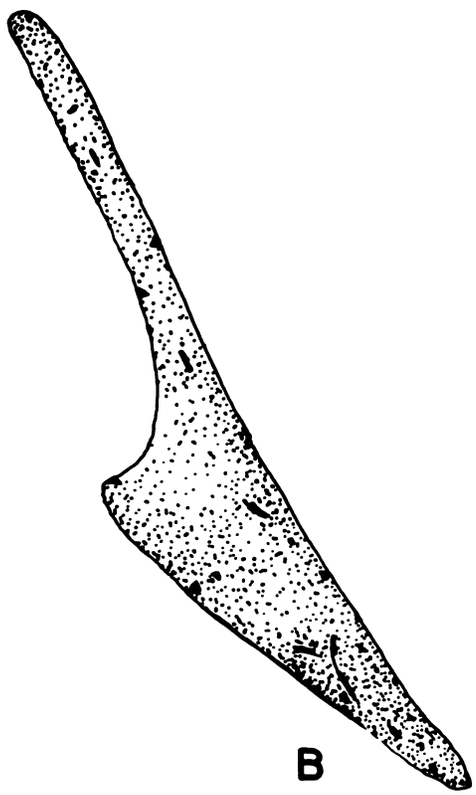
Concretions

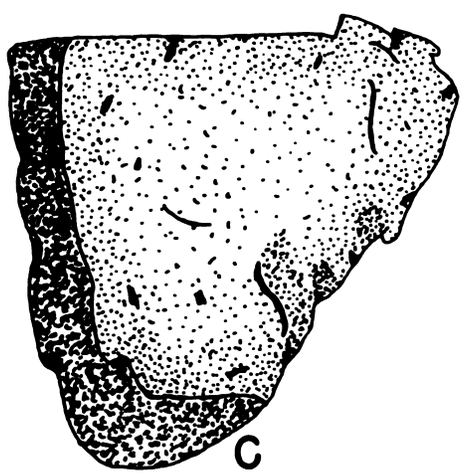
Two sandstone concretions each one-half inch in diameter, were found in the fills of Rooms 11 and 15.

BONE

There were 12 bone artifacts, from Rooms 8, 12, 19, 21, 28, 31, and 32. There were two complete awls, four awl fragments, one spatula, three bone tubes,







one tine implement showing some use at the point, and a tool which may have been a flesher, 8¾ inches long, with an average width of 1½ inches. This was made from a rib, possibly bison.

SHELL

Four pieces of shell were found, including a broken pendant in the kiva, the hinge of a fresh-water clam in Room 2, a fragment of broken fresh-water clam-shell in Room 22, and part of a small cross worked from shell, recovered from the top of the east wall of Room 17. The cross fragment measured 9/16 by 7/16 of an inch; a break had occurred just below the arms, where there is some indication of a hole having been drilled. The pendant is 3 inches long. The end opposite the drilled hole has been broken off.

METAL

Copper (fig. 49)

Two specimens of copper were found, a fragment of sheeting in the refuse of Room 20, and a disk with stamped design, in the fill 1 inch above the floor of Room 4. The fragment of copper sheeting is approximately one-sixteenth of an inch thick, roughly triangular, with the longest side measuring 1¾ inches.

Figure 49 illustrates the ornamented side of the disk; the reverse is unornamented. Father Angélico Chavez, after seeing a photograph of the disk, thought that it might have been a button, or part of a clasp for a mantle or a priest's cope (personal communication 4/20/53).

Iron (fig. 49)

One iron blade, illustrated, was found in refuse above the floor of Room 5. It is almost identical with the blade found at Pecos and classed as a knife (Kidder, 1932: fig. 250b), and with one in the museum at Abó State Monument. According to Fred Cisneros of Abó, this was a tool used in shearing the "old type" sheep, whose wool was longer and straighter than the dense greasy fleece of recently introduced breeds. The shape and size of the blade is also very like those, with finger loop attached, which were found at Pimeria Alta mission sites, and classed as scissors (Di Peso and Woodward, 1953: pl. 79). The Gran Quivira blade is 4 inches long.

Four badly rusted pieces of iron, also illustrated in figure 49, are not identifiable in their present condition.

FAUNAL REMAINS

Faunal remains recovered from House A were not particularly abundant and were confined to the thin layers of refuse on the floors of 10 rooms and the plaza.

The mammal material was identified by John F. Turney and the bird remains by Lyndon L. Hargrave, collaborator, both at the Southwest Archeological Center. The identifications, specific elements by provenience, are on file at the center and are available, as is the material itself. Table II, a condensation, gives the provenience and numbers of elements by species. Following that is a list of specific elements. The elements in order of frequency were jackrabbit 55, pronghorn 47, cottontail 22, sheep 17, mule deer 12, horse 11, bison bison 7, bison (?) 4, cougar 3, and prairie dog, gray fox, sheep/goat, red-tailed hawk, and prairie falcon 1 each. Random human remains are omitted.

This compares with the Late Period at nearby Pueblo Pardo (Toulouse, 1960: 36–38—which is still somewhat earlier than the Gran Quivira material—where the list was led by a preponderance of cottontail followed by jackrabbit, pronghorn, etc., in much the same order as the Gran Quivira material. The horse and gray fox of Gran Quivira were missing at Pueblo Pardo, but the wood rat, rock squirrel, bobcat, dog, gopher, deer mouse, and skunk of Pueblo Pardo were not represented at Gran Quivira. Both lots are rather small and the small variations in native fauna may have no real significance.

[Note: The material from Pueblo Pardo was also identified by John Turney and the original data and the material are on file at the Southwest Archeological Center. The material was submitted in three lots: Early Period, Kiva No. 1, Late Period. Due to an apparent typographical error, the heading *Late Period,* was omitted from Toulouse's 1960 publication. It should appear at the top of his page 37 in order to retain the provenience by which it was submitted.]

Table II. Distribution of Faunal Remains

HOUSE A—GRAN QUIVIRA

	Rooms												
	1	4	15	16	18	19	21	25	30	31	34	Plaza	Total
Lepus californicus (texianus?) (Blacktailed jackrabbit)	4	8	2	1	13	2	1	2	15	2		5	55
Sylvilagus (auduboni?) (Cottontail)	4	3	1			3		1	5			5	22
Cynomys (ludovicianus?) (Black-tailed prairie dog)					1								1
Urocyon cinereoargenteus (Gray fox)												1	1
Felis concolor (Cougar)			3										3
Ovis (capra?) (Sheep/goat)												1	1
Ovis aries (Domestic sheep)	5	5					1		4			1	17
Odocoileus hemionus (Mule deer)		1			2				2		4	3	12
Antilocapra americana (Pronghorn)	8	12	2		1	2	1	1	9	1	6	4	47
Bison bison (Buffalo)		5					1			1			7
Bison (?)									3		1		4
Equus caballus (Horse)		1					1		3	1		5	11
Buteo jamaicensis (Red-tailed hawk)					1								1
Falco mexicanus (Prairie falcon)	1												1
Totals	22	35	8	1	18	7	5	4	41	6	11	25	183

Lepus californicus (texianus?) (Blacktailed jackrabbit). Partial skull (1), right ramus (1), left ramus (3), partial horizontal right ramus (1), rib (1), right os

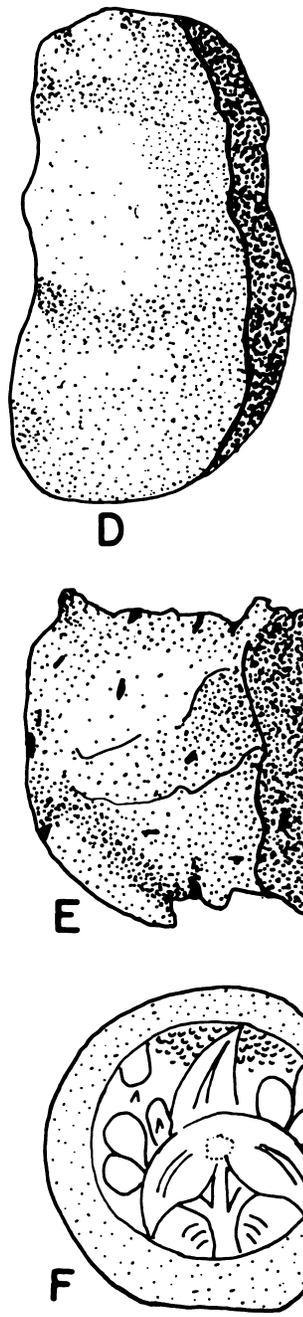


FIGURE 49 (pages 136 and 137) Metal objects The iron blade (B) was possibly used in shearing sheep. The copper disk with stamped design, 1⅜ inches in diameter and less than 1 mm. thick (F), may be a button or clasp fragment. Four pieces of iron (A, C, D, E) are thoroughly rusted and of undeterminable use.

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innominatum (pelvis) (1), partial right os innominatum (2), left os innominatum (5), left scapula (2), partial left scapula (1), distal end of radius (2), proximal end of right ulna (1), left humerus (2), distal end of right humerus (2), proximal end of left humerus (1), right femur (1), proximal end of right femur (2), distal end of right femur (2), left femur (1), distal end of left femur (2), left tibia (1), fragment of left tibia (1), proximal end of left tibia (3), distal end of left tibia (diaphysis) (1), partial right tibia (diaphysis) (1), proximal end of right tibia (1), distal end of right tibia (diaphysis) (2), vertebra (1), 5th lumbar vertebra (1), 6th lumbar vertebra (1), 7th lumbar vetebra (1), os sacrum (1), left 2d metatarsal (1), left 3d metatarsal (1), left 4th metatarsal (1), right 4th metatarsal (1), left 5th metatarsal (1).

Sylvilagus (audubonii?) (Cottontail). Left os innominatum (3), right os innominatum (3), partial right os innominatum (1), right humerus (1), proximal end of right tibia (1), left tibia (1), distal end right femur (1), left femur (2), complete skull (1), partial skull (3), right ramus (2), left ramus (1), proximal end of scapula (1), vertebra (1).

Cynomys (ludovicianus?) (Black-tailed prairie dog). Left tibia (1).

Urocyon cinereoargenteus (Gray fox). Proximal end of rib (1).

Felis concolor (Cougar). Right 2d metatarsal (1), right 3d metatarsal (1), right 4th metatarsal (1).

Ovis (capra?) (Sheep/goat.) Anterior portion of vetebra (½).

Ovis aries (Domestic sheep). Right astragalus (1), proximal end of right tibia (1), distal end of right tibia (2), right scapula (1), distal end of right humerus (2), left radius (1), distal end of right radius (2), left ulna (1), proximal end of rib (1), distal epiphysis of left femur (1), left metatarsal, distal epiphysis missing (1), left magnum (1), left calcaneum (1).

Odocoileus hemionus (Mule deer). Right calcaneum (2), partial right maxilla (1), proximal end of rib (1), distal end of metatarsal (1), distal end of right tibia (1), proximal end of right tibia (1), glenoid fossa, left (1), fragment of right acetabulum (1), proximal end of left radius (2), lumbar vertebra (1).

Antilocapra americana (Pronghorn). Right metacarpal (1), 1st phalange (10), left 1st phalange (1), right 1st phalange (2), right 2d phalange (1), 3d phalange (1), 2d phalange (2), right calcaneum (1), proximal end of left radius (1), distal end of right humerus (2), fragment of right os innominatum (1), partial right os innominatum (1), partial os innominatum (1), partial left os innominatum (2), rib fragment (2), proximal end left metacarpal (1), distal end left metatarsal (1), distal end of metacarpal (1), right metacarpal (1), thoracic vertebrae (3), partial lumbar vertebrae (3), distal end left femur (1), distal end of left humerus (2), proximal end right ulna (1), left glenoid fossa (1).

Bison bison. Naviculo-cuboid (1), rib fragments (2), fragment of tibia (1), terminal phalange IV (1), cuneiform (?) (1), head of femur (1).

Bison (?). Proximal end of 1st phalange (1), naviculo-cuboid (1), cuneiform (?) (1), rib fragment (1).

Equus caballus (Horse). Partial rib (1), rib fragments (2), fragment proximal end of metapodials (2), 1st phalange (2), partial 1st phalange (1), partial phalange (1), glenoid fossa (1), 2d phalange (1).

Buteo jamaicensis (right femur). Red-tailed hawk—Room 18, House A.

Falco mexicanus (right femur). Prairie falcon—Room 1, House A.

A PUEBLO RELIGIOUS CEREMONY IN 1900.

JUMANO OF GRAN QUIVIRA

The Indians of that province [Jumanos] are all orderly, peaceful and timid, and live in great fear of the Spaniards. They have neither attacked nor offered other resistance than the aforesaid.

Gines de Herrera, 1601

The Jumano of Gran Quivira in historic times were basically Pueblo Indians of Rio Grande Anasazi stock; they lived in masonry pueblos; their ceremonial life centered around circular kivas; they used black-on-white pottery, and in general followed Puebloan customs in agricultural and artifact patterns. They were also a peripheral people whose cultural ancestors had lived on the shifting frontier here between the Anasazi Pueblo to the north and west, and a branch of another basic Southwestern culture, the Mogollon or "Southern Pueblo." In considering the evidence of ceramic traditions exposed in the Jumano material, we have seen the apparent persistence of an included Mogollon or southern tradition in the use of a brownware utility pottery—made as late as the Spanish occupation. It has also been thought that Mogollon-derived customs were apparent in the rather scattered settlement patterns of masonry pueblos existing into historic times.

This continuing thread of non-Anasazi habits among the population suggests that certain Mogollon or southern traditions had unusual survival value in an otherwise northern Pueblo group. On the other hand, Mogollon traditions of pottery making were apparent in the earliest known remains of sedentary occupation. These traditions were kept alive by contact during the development of masonry pueblos and were strengthened by migration from the adjacent Jornada Branch of the Mogollon during later times. This continuing strain of Mogollon tradition may have had far greater influence upon the ultimate destiny of the Jumano, and their cousins, the Tompiro, than would be indicated by a lingering taste for brown-paste utility pottery and a loosely knit community pattern.

Development

The earliest known occupation of the Jumano area was in a pithouse horizon exposed some 3 miles northwest of Gran Quivira. This was a village of at least nine pithouses and numerous storage pits. Two of the houses and several pits have been excavated. The pithouse reported by Green (1955) was relatively shallow, 33 inches deep and 15 feet in diameter. The roof was supported by four posts arranged in a rectangle. The firepit was centrally located, rectangular, and surrounded by a clay rim. There was apparently neither side entrance nor ventilator, and access must have been through the roof. Within the depression, the fill was separated into two levels by fallen roofing. One hundred sixty-five sherds were recovered from the level above the roofing and 64 from the fill between roofing and floor. The two groups were remarkably alike. Seventy-nine percent of both groups were Jornada Brown, 6 to 7 percent of both were Lino Gray or Kana-a Gray; the remainder were "fine-pasted" brownware, smudged brownware, or were unidentified. On the basis of the Lino or Kana-a Gray, Green assigned a possible date of A.D. 600 to 700 to the site with an upper limit of 900.

The dwelling excavated by Fenenga (1956: 226–233) was a moderately deep, circular pithouse with a depth of 5.2 feet and a diameter of 13.5 feet. The roof was supported by four posts arranged in an interior rectangle; the firepit was centrally located, rimmed, and basin-shaped. Entry was through the roof, and the ventilator was on the east side. While these dwellings lack certain floor features of earlier Anasazi houses in the San Juan area, in their shape, arrangement of

roof supports, placement of the firepits, and one ventilator, they were like contemporary houses in the Rio Grande.

Seventy percent of the pottery recovered by Fenenga was Jornada Brown and Alma Plain; 24 percent was Pueblo-derived varieties of Lino Gray with an additional 1 percent of decorated Pueblo ware, San Marcial Black-on-white. There were, in addition to the houses and pottery, irregular and bell-shaped storage pits, mortars, flat metates, single surface manos, scraper planes, core and pebble hammerstones, and flake scrapers. Fenenga assigned the site to the Mogollon stock rather than to Basketmaker/Pueblo on the basis of the pottery, and he considered it contemporaneous with Basketmaker III on the Rio Grande. This agrees fairly well with Green's dates of 600 to 700 with an upper limit of 900. I am inclined to favor the upper limit of 900.

At this relatively early period, and even with a strong preponderance of brownware pottery types, the inhabitants of the Gran Quivira pithouses were following or participating in Anasazi developments in the Rio Grande. There was also an underlying strain of brownware in the Rio Grande at this same time. Except for the amounts of the different kinds of pottery in use, there was no great difference in material culture between the inhabitants of Gran Quivira and those of the Rio Grande. Contemporaneous dwellings near Santa Ana in the Rio Grande drainage were similar to those in the Gran Quivira village. Houses were circular, 13 to 14 feet in diameter, but rather shallow. They also had four roof supports arranged in a rectangle, and centrally located basin-shaped firepits. Extensions to the east have been variously called side entrances or ventilators. These dwellings have also been thought of as either (1) being similar to earlier dwellings in the Forestdale region of Arizona, or (2) as having derived from earlier Anasazi houses to the northwest.

The same pottery complex was in use in the Santa Ana pithouses as was found at Gran Quivira, but at Santa Ana the emphasis was on varieties of Lino Gray which altogether made up some 75 percent of the pottery in use. San Marcial Black-on-white was represented, but scarce, and the remainder of the pottery was brownware (Allen and McNutt, 1955; Wendorf and Reed, 1955). Quite similar circular houses at the Dennison Site between Albuquerque and Isleta have also shown contemporaneous use of the northern graywares—Lino and San Marcial—and southern-derived brownwares (Vivian, Gwinn, unpublished manuscript). Additional unexcavated sites in the Rio Grande reported in Wendorf and Reed (1955) show further mixtures. It should be noted, however, that this was not invariably the case, as witness the pithouses excavated at Zia which, while similar, contained no Mogollon brownwares (Vytlacil and Brody, 1958).

With similar traditions of pottery making and use, and quite similar houses, the peoples of the Gran Quivira village at about Basketmaker III times, were as much like the Anasazi Pueblos of the Rio Grande as they were like the Jornada Mogollon to the south. It is true that a brownware pottery was present, but this strain was also evident in the Rio Grande at the same time. Whatever the relative strengths of these ceramic traditions, both had behind them long periods of development in other areas before they met in the Gran Quivira district and among the peoples of the Rio Grande. The brownware, perhaps spreading from southeastern New Mexico, was several centuries the older. The Anasazi graywares with their distinctive method of firing and the development of black paint design, while

younger, also had several centuries of development in the west behind them. The decorated San Marcial Black-on-white seems an offshoot of White Mound Black-on-white from the Chaco branch. Both San Marcial and White Mound carry the same design elements and both have the same distinctive thin and pinched rims. Both have black lines on the rim. Some San Marcial is slipped and better finished than White Mound and, altogether, it looks a little later and a little better developed.

From the Rio Grande to the Jornada Mogollon

As long ago as 1935 Mera suggested that the makers of San Marcial Black-on-white, who were the earliest known sedentary population in the Rio Grande, were of the Tanoan linguistic stock. More recently Wendorf and Reed have supported this view. They see the first Rio Grande Anasazi as a thin and scattered population of Tanoan speakers whose various subdivisions—Tewa, Tiwa, Towa—"and the otherwise inexplicable Piro to the south," differentiated in place. The early population of the Jumano area then, dialectal relatives of the Piro, were also Tanoan speakers and tied by language as well as other traits to the Rio Grande. Although on the frontier, they were, at a time when events moved more slowly, in the mainstream of Rio Grande developments.

For approximately 300 years following A.D. 900 there was a gradual increase in the Tanoan population of the Rio Grande valley. This increase was derived from the resident population and was not the result of migration from outside the area. Wendorf and Reed (1955) have summarized this period in their reconstruction of Rio Grande prehistory; the sites included ranged from 963 to 1194, with the greatest concentration in the century from 1050 to 1150:

> The sites range from small ten-to-twelve room pueblos to fairly large communities of over a hundred rooms, having from one to more than four kivas. Not all of these kivas were necessarily occupied simultaneously; this point is not clear from the available records. Associated are above-ground cellular structures of small rooms with walls constructed of coursed (?) adobe with stone foundations . . . The kivas are all closely similar to that found in the Tonque Arroyo site . . .: semi-subterranean; circular, in outline; adobe walls often reinforced with vertical poles, ventilators to the east (or, rarely, to the southeast) side; sipapus; and simple, circular, clay-lined firepits and ashpits. Significantly, there were no benches, pilasters, deflectors, or southern recesses in any of the kivas excavated at these sites.

The Rio Grande Anasazi, then, did not participate fully in the ceramic and architectural developments of the Mesa Verde/San Juan area but lagged behind them in several fields, notably the use of stone masonry and rather highly specialized kivas. In the earlier sites of the Rio Grande series—Tonque Arroyo—there was the tendency to continue the use of Lino Gray utility ware beyond its recognized span in the San Juan area. Further, however strong the brownware tradition may have been in the period up to about 900, these later sites with surface houses lack specific identifiable Mogollon brownwares, and all that remained of the tradition among the Rio Grande Anasazi was the pottery which became Los Lunas Smudged—"a line of descent from the basic brownware ancestry" (Mera.)

The increasing population in the Rio Grande and the development there of a regional architecture and kiva style was reflected in the spread toward the southeast of certain Pueblo traits, notably in architecture. This is seen in the changes taking place among the northern Jornada peoples bordering the Jumano. While these people remained basically Mogollon in the period up to the 12th century, some northern Pueblo traits made their appearance at a relatively early date. Little is known of the first, or Hueco, Phase—a period of long duration with a terminal date of about 900. Borrowing from the San Marcial villages to the north produced the Capitan and Mesilla Phases wherein circular pithouses were probably of Pueblo derivation. Beyond this, the rate of Pueblo influence from the Rio Grande increased until by 1200 the Jornada peoples had adopted such Pueblo traits as "new artifact types," surface houses, and painted pottery (?), and as a result, the "slant" or orientation of the northern Jornada was radically altered in this, their most important cultural change (Lehmer, 1948).

Meanwhile, the people of the Gran Quivira area kept pace as Rio Grande developments were transmitted through them. By the 13th century, such villages as L.A. 789 were pueblo groups of 12 or more surface buildings. Following the use of the earliest black-on-white pottery, they adopted the use of another mineral paint type which Mera characterized as a "Chaco II" style and which bore Red Mesa designs derived from farther west. This was followed by the development of Socorro Black-on-white, also a mineral paint ware, that continued the general Anasazi tradition from the Chaco, until about the end of the 12th century, when it became Chupadero Black-on-white. The development in the 1200's of the distinctive Chupadero with its "brushed finish" interior marks the end of active participation in Rio Grande ceramic styles by the Jumano.

Jumano and the Jornada Mogollon

The final San Andreas phase of the Jornada, from 1200 to its dissolution about 1400, was marked by a formalizing of previously adopted traits, and so strong were the Anasazi developments that the total aspect of the Jornada changed. Pithouses still saw some use as dwellings at the Bonnell Site, while other houses had risen to ground level and the lower walls were of stone masonry (Holden, 1952). Other villages were of adobe-walled rooms laid out around plazas. Remaining Mogollon traits were brown pottery and flexed burials, either intramural or in shallow refuse between buildings; the "resident" pottery was El Paso Polychrome, Polished Brown, Plain Brown, Jornada Brown, Three Rivers Red-on-terra cotta, Lincoln Black-on-red, Chupadero Black-on-white, and corrugated culinary. Pottery intrusives were various polychromes: Gila, St. Johns, Ramos, and Heshotauthla (Lehmer, 1948).

The important point here is that the northern part of the Jornado branch of the Mogollon had taken on a decided Puebloan cast by A.D. 1300, and that it ceased to exist after 1400. The basis for the change in direction of the once fairly progressive folk of Gran Quivira and the adjoining area may be sought in the abandonment of the Jornada area and the subsequent absorption of these people. There are several lines of evidence for this movement. Mera noted that "There seems to be little doubt, according to a summation of archeological evidence, that

the several Jumano pueblos noted in this area by the Spanish sheltered the survivors of those brownware people who earlier had accepted so much of Pueblo culture. To these may also possibly be added others who migrated northward after the great exodus which, from all present evidence, depopulated the entire central section of all sedentary groups" (1940b: 296). The migration of peoples from the Jornada Mogollon to their geographical and cultural neighbors would account in part for the development of the large centers of population at Gran Quivira, Pueblo Colorado, and Pueblo Blanco.

This migration and resulting culture-contact situation is also accounted for in the persistence of the ceramic tradition to be examined later. The data from both situations—persistence of ceramic tradition and culture contact—tend to reinforce each other here as well as in other areas of the Rio Grande.

It is suggested that the Jornada element in the Jumano population was responsible for the "rrayado" faction of the populace practicing the non-Pueblo art of body painting or tattooing. But more important than the introduction of a tattooed element is the effect that the addition of a diverse element, from farther out on the Anasazi periphery, had upon the subsequent fortunes of the Jumano. The classic period of the Rio Grande Pueblos of 1325 to 1600 exhibited a florescence of material culture—elaborate axes and pipes, numerous vessel forms, carved bone tools, stone effigies, and mural painting—a development that was still expanding when it was abruptly modified by the Spanish occupation. It is interesting that Wendorf and Reed (1955) attribute the major stimulus for this development to factors inherent in the Pueblo culture itself. It came in part, they believe, as the result of fusion of slightly diverse elements mingling in the Rio Grande area about 1300. But the mingling of diverse elements does not necessarily produce a virile strain. From a cultural background similar to that of other Tanoan speakers in the Rio Grande valley, the Jumano had developed a direction, a "slant," or cultural personality that was akin to that of the Rio Grande up to 1300. During this same period the people of the northern Jornada had become increasingly Publoan in some aspects. The mingling of these two groups resulted in stagnation of the Jumano. The Jumano were henceforth Pueblo in material culture and architecture and largely Pueblo in the socio-religious use of the kiva. On the other hand, they contained regressive factors—traits that had limited the Mogollon to transmitters of culture, however important these may have been; traits that led them to adopt an increasingly Pueblo aspect and which finally permitted their disappearance as a cultural entity.

After the development of Chupadero Black-on-white, a fairly widespread and long-lived local pottery type, the Jumano failed to participate in further ceramic developments spreading from the Rio Grande. At about the time Chupadero Black-on-white came into vogue, a widespread change from mineral paints to carbon paint—a change that had slowly diffused eastward from the San Juan region of the Pueblo area—reached the Rio Grande drainage. The new paint type was adopted there in all but the extreme north and east sections in the vicinity of Taos, and along the tributaries of the Canadian (Wendorf and Reed, 1955: 144). The use of carbon paint, however, was not adopted by the Jumano, nor was it adopted in the Saline area farther north or on the east side of the Manzano Mountains. Also neglected in this general region was the slightly later influence of Mesa Verde decorative style—the employment of

heavier design, less use of hatched elements, a tendency toward panel layout, and ticked rims.

By 1300 early glaze paint pottery was making its appearance in the Rio Grande, and while its use spread to the Jumano area, it was not made there; the actual source of Glaze I Red was probably the Rio Grande, and of Glaze I Yellow, the Galisteo region (Shepard, 1942). We cannot date the point at which glaze-paint ware was first made locally in the Jumano area, but it was probably not until the advent of what Shepard calls the Late Group—typical Glaze IV and later, from about 1550. The Jumano were not only slow to adopt glaze-paint ware, but, more important, they also clung to the production of black-on-white pottery as long as they existed as a group. This is in marked contrast to the Rio Grande, where black-on-whites were abandoned with the advent of glaze paint in all areas except Jemez on the western frontier, and among the Tewa north of Santa Fe, where Biscuit Ware was followed by a matte-paint polychrome in historic times.

Persistence of the ceramic tradition

There are some interesting connotations with regard to the long persistence of old ceramic traditions among the Jumano. The persistence of ceramic traditions in general, as opposed to the acceptance of new traditions in architecture and settlement pattern, under certain conditions, has been remarked by Willey and others (1956: 14). In their examination of culture contact situations wherein there was a fusion of two cultural groups with dominance of the resident group (the Jumano in this case), Willey's group noted several examples of a persistence not unlike that exhibited by the Jumano.

> It is worth noting that in the Maya case as in the example of Lamar and Chimu, intrusive features are most persistent in architecture and settlement pattern while the features of the original resident pattern predominate in pottery. With more examples, it may be possible ultimately to make a generalization covering such cases (ibid.).

The situation among the Jumano may not fit Willey's definition precisely; the intrusive feature of architecture can be discounted since masonry architecture was a Pueblo trait recently adopted by the Mogollon. The intrusive feature of settlement pattern may possibly be seen in the "discrete" or scattered layout of the Jumano villages of Gran Quivira, Pueblo Blanco, and Pueblo Colorado (Mera, 1940b: 297). But the persistence of ceramic tradition was certainly exhibited in the features just discussed, i.e., continued use of mineral paint as opposed to the introduction of carbon paint elsewhere, persistence of brown-ware culinary vessels, persistence of Chupadero design against adoption of a Mesa Verde style, and persistent use of black-on-white after the adoption of glaze-paint wares elsewhere.

The Jumano material would seem to reinforce the proposition submitted by Willey. They are mutually strengthened by what are other probable examples from the Pueblo area. In the Jemez drainage, black-on-white pottery also continued to be made into the glaze-paint period. It has been suggested by Wendorf and Reed (1955) that Gallina peoples from the north may have joined

an already existing Anasazi population in the Jemez area about 1300. Here again is the possibility of recent fusion with dominance of the resident population [Jemez] and a resulting persistence in black-on-white ceramic tradition.

The Tewa area north of Santa Fe was another region where black-on-white pottery continued in the face of widespread acceptance of glaze paints. For this area there have been no suggestions of fairly recent cultural fusion. If the examples of the persistence of ceramic tradition are valid, then it may be that such persistence is also indicative of cultural fusion. It might be applied in examining the Tewa. In their discussion of the historic Rio Grande population, Wendorf and Reed (1955: 164) suggest that it was made up of diverse elements, some of them coming from areas west of the Rio Grande, and that in this movement "the immigration of the Anasazi from the San Juan into the Rio Grande prior to 1300 consisted of a gradual drift of very small numbers which did not affect the language distributions, which is not unlikely."

The persistence of the ceramic tradition among the Tewa—their lack of interest in glaze wares, and their continuation of the black-on-white tradition in Biscuit ware through Sankawi to matte paint—suggests that they may have been the resident Rio Grande culture joined by Wendorf and Reed's small groups of San Juan (Chaco?) Anasazi. This is only a suggestion, but it is worth further testing in the light of Willey's proposal and the possible functioning of this process in some other Pueblo contact situations.

Lag in Jumano kiva architecture

Returning to the Jumano and the relationship of kiva architecture there to the later developments in the Rio Grande we find that in this field too, there was a discernible lag in developments beginning about 1400. In the development of the Rio Grande kiva, an important stage was the change from circular, clay-lined firepits and ashpits to the square or rectangular firepit-ashpit-deflector combination, employing slab construction in the firepit and masonry in the deflector. This construction was foreshadowed in Kiva E at Pindi and became quite elaborate after 1300. Table III shows the major characteristics of some 16 excavated Rio Grande kivas and the frequency of various traits. I have distinguished between "dampers" as slabs set into slots or grooves against the openings of ventilators, and "deflectors" as slabs or masonry blocks placed away from the wall and incorporated in the firepit-ashpit combination.

Contemporary Rio Grande kiva styles were followed in the construction of Jumano masonry villages of the 1200's, and this close attention to their architectural features continued on into the 1300's. The rectangular firepit-ashpit-masonry deflector combination of the excavated Gran Quivira kivas and that of Pueblo Pardo, and the loom holes at Pueblo Pardo, were close copies of Rio Grande kivas of the 1300's—a continuation of the older Rio Grande Tanoan tradition. The close adherence to a generalized Rio Grande tradition is also seen in the atypical Kiva E at Gran Quivira with its extreme size and bench. Kiva E at Gran Quivira, with Kiva 12 at Pecos, Kiva I at Paa-ko, and Kiva III at Te'ewi demonstrate that there was in the general area some experimentation with larger, more elaborate circular kiva forms and that the Jumano of Gran Quivira participated in this experimentation.

However, aside from some dalliance with the larger circular kiva form, the Jumano did not keep pace with other developments in kiva styles made in the Rio Grande after the 14th century. By the 17th century the Jumano kivas were essentially the same as those in the Rio Grande 300 years earlier. The elaborate floor features seen in the later Pecos kivas were absent at Gran Quivira. Absent also were the radical changes that became apparent in the Rio Grande with the advent of new linguistic groups (Keresan?) and with still other influences that arrived with the introduction of glaze paints. The numerous subsurface, rectangular kivas—with their accompanying mural paintings—of both Kuaua and Pottery Mound, were absent among the Jumano. Neither did they follow the trend that led to the surface "guardhouse" kivas at Pecos, the above-ground kivas at Tesuque, both circular and D-shaped, or the D-shaped kivas at Pindi.

As with ceramic developments then, the Jumano exhibited in their later days, after 1300, a retarded posture in regard to continuing experimentation in kiva form and changes in interior details. These were but two of the larger factors in their static position, for they also lacked other refinements seen in the Rio Grande: the elaboration of axes and pipes, carved bone tools, and the highly developed art of mural painting. They would appear to have been, at the time of the Spanish entradas, basic and retarded Tanoans of a period some 300 years earlier than their chronological age.

Table III. Features of Later Rio Grande Kivas

Site	Age	Pole walls	Circular firepit	Circular ashpit	Square firepit	Vent	Roof supports	Looms	Deflector	Subfloor cysts	Reference
Tonque	P I		X	X		N	4				D
Tijeras Canyon	P I	X	?	?		E	4				B
L.A. 2567	P II	X	?	?		E	?				A
Arroyo Hondo	P II	?	X	X		E	?				B
Tesuque	P II		X	X		SE	4				B
L.T. 2569	P II ?		X	X		E	6		X		A
Arroyo Negro	1050–1150	X	X	X		E	4				B
Pindi—B	Late 1200	X	X	X		E	4		?		C
Pindi—C	Late 1200		X	X		E	1			X	C
Pindi—D	Late 1200	X	X	X						X	C
Pindi—E [1]	1300–1350				X	SW	0		X		C
Pindi—F [1]	1300–1350				X		0		X		C
Te'ewi I	1250–1500?				X	E	3	X		X	E
Te'ewi II	1250–1500?				X	E	6?	X		X	E
Te'ewi III	1250–1500?		?		X	E	3?	X		X	E
Te'ewi IV	1250–1500?				X	E		X			

[1] D-shaped, surface structures.

References

A—Fenenga, 1956: 236–237
B—Wendorf, 1953: 51
C—Stubbs & Stallings, 1953: 32–44
D—Peckham, 1954: 46–48
E—Wendorf, 1953: 45–50

Plains influence

Any direct Plains influence at Gran Quivira is rather scanty and is quite late in time. The general problem of Plains influence in the Pueblo region, and at Pecos in particular, has been discussed by Krieger (1946), Wendorf and Reed (1955), Kidder (1958), and the Gunnersons (1956, 1960). Plains traits seem to be confined to the possible influence of "Caddoan" vessel forms—the carinated or shouldered bowl forms appearing in some glaze series, the reappearance in the Rio Grande of incised decoration, and the fact that at Pecos there were more clay bells and small clay human figurines than there were at other frontier sites. (But here also, see Morss, 1954, on the probable source of the Pecos figurines.) Krieger has segregated a group of artifacts from Pecos which he attributes to the Plains: snub-nosed scrapers, side scrapers, 4-edged beveled knives, some drill forms, sandstone shaft smoothers, eyed bone needles, shaft wrenches of bison rib, antler rubbing tools, some shell beads, quartzite hoes, and stone beads.

Certain Plains groups arriving in the Southwest presumably about 1525, have been identified by D. A. Gunnerson (1956) as the Teyas and Querecho—ancestors of the Lipan Apache—who enjoyed an unusually close trading relationship with Pecos and who were accustomed to spend long periods in the close vicinity of the pueblo. Schroeder (n.d.: 32–36) identifies the Teyas as probably a Caddoan-speaking Plains group who traded primarily at Pecos, and the Querecho as Apaches whose trading relationships were with Taos, Picuris, and probably Pecos. The Dismal River aspects of somewhat later Plains groups have been identified by J. H. Gunnerson (1960) as also being Apache; he shows a somewhat comparable list of artifacts which were in joint use by both the Dismal River peoples and the inhabitants of Pecos.

The Dismal River Aspect is dated at a 50-year period about 1700, and hence appeared about the time that Gran Quivira was abandoned. Even if there had been mutual interchange between the two groups, we would not expect to find Dismal River materials or influences in any quantity or depth. The total artifact inventory at Gran Quivira was notably poverty-stricken at best. Artifacts of possible mutual use between the Dismal River Apaches and the Jumano were limited to sandstone shaft abraders, hammerstones, metates, mauls, triangular projectile points with or without side notches, some bone awls, bone tubes, and fleshers. Items of Dismal River use, notably lacking at Gran Quivira, were stone hoes, the various small scrapers, and 4-edged beveled knives. Altogether, evidence reviewed here suggests that contact with Plains groups was of short duration and that these contacts were reflected in a short inventory of artifact types of mutual use. Data presented by the Gunnersons and from historic sources herein indicate that prior to the advent of Spanish slave raids, contacts between the eastern Pueblos and the Plains were for the most part peaceful.

Kidder (1958: 308) takes a somewhat longer term view. He believed that the withdrawal from the eastern regions by Pueblo communities in Black-on-white times was due to harassment by nonsedentary tribes, and he saw this as the beginning of a long period of trouble between occupants of the Plains and the people of Pecos. He demonstrates, rather convincingly, that this strife forced the rebuilding of Pecos as a defensive site and that its abandonment in 1838 was the result of pressure from a later Plains group, the Comanches.

Internal factors and dissolution

The abandonment of their homeland by the Jumano in 1672–73 and the move to the Piro villages on the Rio Grande and the Manso mission at El Paso, with resulting loss of identity, is one more case history, fairly well documented this time, in the realinement of Pueblo frontiers taking place since the 12th and 13th centuries. The shrinkage and realinement of the Pueblo world has had many students and few solutions. Both Kelley (1952) and Kidder (1958) have recently examined the problem of abandonment of frontier areas, Kelley for the Rio Grande below El Paso in the vicinity of the Conchos, and Kidder for Pecos, and both authors have considered the problem as applied to wider areas of the Southwest. Kelley brings together, for the first time, the various causes which have been advanced, acting singly or in concert, to cause the abandonment of specific areas. These are: (1) over-utilization of marginal lands, (2) fluctuations of climate, (3) pressure of aggressive nomadic groups, (4) epidemics caused by overcrowding and lack of hygiene, (5) internal dissension and civil strife.

Any one of these factors in sufficient strength could have caused the abandonment of the Jumano area and in fact some case could be made for the successive operation of each one of the causes: (1) the Jumano were in a marginal country to begin with and concentration of the population at the larger centers rapidly depleted the available agricultural land; (2) the drought of 1663–69 or a microclimatic change caused by utilization of the forest border still further reduced the amount of food available; (3) this, in turn, increased the pressure of nomadic groups with whom the Jumano had been living in symbiotic relationship, exchanging agricultural products for meat and hides (Kelley, 1952); (4) Apache attacks, malnutrition, and starvation lessened the resistance of the survivors so that they were easy prey to epidemic. The 450 who died of starvation in 1668 were buried in shallow graves, if at all, and this did nothing to improve hygiene; and (5) it is difficult to imagine any Pueblo group, lacking strong leadership, meeting these catastrophes with equanimity and a well-agreed-upon plan for their solution. This brings us to internal dissension, one group blaming the other for progressive ideas, and another arguing for greater resistance to the Spaniards, and finally, with no surcease in sight, everybody packing up to seek better conditions elsewhere. With regard to internal dissension, it is well to recall that when the Jumano did leave, some joined the Piro on the Rio Grande and others traveled as far as the Manso mission at El Paso.

There was another factor which neither Kelley nor Kidder mentioned with regard to the historic abandonments. Perhaps they considered it too self-evident to note. This was the imposition upon the sedentary villagers, far more than upon the nomadic Apaches, of the alien Spanish culture with its preemption of the most productive lands, its system of tribute and encomienda, and its need to requisition labor for extra-Pueblo activities, mission construction, and maintenance of the mission establishments.

There are lines of evidence, however, which suggest that even though any one or a combination of the above external forces could have been operative in some degree in forcing the Jumano abandonment, they were not among the primary or decisive factors. The factor which caused the Jumano abandonment and the subsequent loss of identity was inherent in the makeup of the group it-

self, and it is considered here to be the same Mogollon strain that produced the retarded period after 1300. To demonstrate the probability of this thesis it will be necessary to show, on one hand, that the migrant Mogollon strain was present in those Pueblos who abandoned their homeland about 1671–72 and was not a part of Pueblo groups who remained steadfast during this period. On the other hand, it will be necessary to show that external forces of the period were not selectively applied against this specific group, but were operative with approximately equal force over the Rio Grande and the eastern frontier for a span of nearly 100 years.

Mera (1940b) has shown that movements of the makers of brownware from the Jornada Mogollon to the area in question, the region he terms the Saline-Medano, includes, but extends little, if any, beyond approximately eight large pre-Spanish pueblos, four or five of them Jumano and two or three Tompiro. While Mera also mentions the southern Tiwa village of Quarai, just north of Abó, he did not specifically include it in the brownware group since it was outside the Jumano problem. It is from the group of four or five Jumano pueblos and two or three Tompiro pueblos, plus Quarai, that there derived the surviving historic peoples who abandoned the area in 1671–72. Escalante listed them as Chilili, Tajique, Quarai, Abó, Jumanas, and Tabirá (Scholes, 1940: 283). No other Pueblo groups vanished during this same period, and none of the pueblos in this area survived. The surveys by Mera on the extent of the brownware penetration, and the historical data, tend to show agreement that the abandoned pueblos were limited to those closest to the Jornada area and having a definite brownware strain.

On the other hand, if it were a single external force, or a combination of external pressures, sufficiently decisive to cause abandonment by the Jumano and Tompiro, it will have to be shown that these pressures did not act with equal vigor against contemporaneous Pueblos in the Rio Grande and on the eastern frontier. If such external forces acted with equal pressure against all Pueblo groups in the area, and if there was no internal weakness inherent in those who harbored the Jornada Mogollon strain, then the results of these pressures should have been approximately equal over the entire area in question—total abondonment or total resistance.

Spanish oppression on the Jumano-Tompiro frontier, with communications and travel difficult, should have been no more severe, if as great, as in the more thickly settled Rio Grande where there were more Spaniards close at hand. And if perhaps there is some thought that Spanish oppression was possibly more savage on the frontier, away from redress and authority in the capital, consider that the frontier pueblos of Taos, Picuris, and Pecos were as isolated as Las Humanas, that they were not appreciably, if any, larger, and that they survived.

The possibility of differences in climatic variations over the Rio Grande—eastern frontier area—variations sufficiently pronounced between small sections to make a difference in the relative food supply—can be examined in two ways. The first of these is through tree-ring studies. I am not competent to judge the relative precipitation reflected in tree-ring records from various small localities in the area, even if they were available. However, the area in question is included in, or largely makes up, the area of the Rio Grande chronology, "in contrast to the Central Pueblo Chronology or any other tree-ring chronology area" (Smiley

et al., 1953: 7). In addition to the fact that the climate of the area was sufficiently uniform to be considered as a single unit, it would also appear that it was small enough, and the topography and elevations of the inhabited sections sufficiently alike, that any fluctuations in the climate would operate equally over the entire area and that there would not be a climatic change registered at Las Humanas which did not have an equal effect at Pecos or Isleta.

Further, the sparse data that can be extracted from published archival material indicates that any droughts were widespread and felt equally over all parts of the province. The reported 3,000 Indian fatalities of the drought of 1640 do not appear to have been confined to any particular sector, but to have been victims at large from the entire province of New Mexico. Likewise, those who perished in the drought and famine of 1663–69, "lying dead along the roads, in the ravines and in their huts," were not, as far as we know, from any particular sector, but were province-wide victims of province-wide climatic conditions.

It may be argued that the Jumano-Tompiro adjacent to the Jornada occupied a particularly precarious position with regard to water supply, and that very small fluctuations in rainfall had a magnified effect. This may well be true. Any irrigation here would have had to be the type described by Kelley (1952: 358) as, "temporal"—the control of water in ephemeral streams resulting from local rainfall. Espejo and Luxán remarked on irrigation from running streams and ponds in the Acoma and Zuñi area (Bolton, 1916: 183; Hammond and Rey, 1929: 87, 92). Kidder assumed that irrigation was practiced at Pecos at this period, and he refers to irrigation at Taos in 1776. But there are no solid data on the type and amount of irrigation, if any, practiced along the Rio Grande at this time. And even if ephemeral or riverine irrigation was practiced extensively, we can find no reference to any Pueblo group, irrigation or no, which occupied an advantageous position during the drought years. Its scourge was felt alike by the just, the unjust, and the hapless Jumano.

In much the same vein, it would be difficult to demonstrate that the Jumano-Tompiro who abandoned their homeland for oblivion in 1671–72 suffered more than their share of Apache depredations, severe and destructive as these undoubtedly were. It should be recalled too, that the Plains Apaches were not always the mortal enemies of frontier pueblos; for a time, living on the frontier had its advantages. During the earlier years of the historic period the Jumano carried on trade with certain Apache groups, notably those from Seven Rivers. This was an expression of the symbiotic relationship examined by Kelley (1952) as an economic base for many frontier pueblos.

The first recorded large-scale conflict, the 1640 attack by the Apaches, in which they burned a reported 20,000 fanegas of corn, does not appear to have been directed against any particular pueblo or group; it was an attack against the entire province and all its works. Likewise, the retaliatory Apache raids, particularly severe in 1647, were against the Pueblos for their unwitting association with Spanish slave raiders. While Apache depredations in Las Humanas in 1653 and 1670, when the church was profaned and considerable other damage done, have been singled out as facets of Jumano history, they were in reality symptomatic of general conditions throughout New Mexico. Apache relations with the Spaniards and Pueblos steadily worsened, and by 1669 raids deep into the settlements were of regular occurrence. It was then that Bernal reported, ". . .

the whole land is at war with the widespread nation of the Apache Indians . . ." and that travelers everywhere went out at risk of their lives. It was at this same time that church authorities found it impossible to send the prisoner, Gruber, to Mexico because of the overall weakness and exhaustion of the colony. In 1672, probably after the abandonment of the Jumano-Tompiro pueblos, a resurgence of violence had, as its principal aim, capture or slaughter of Spanish livestock.

It is true, as it was with Spanish oppression, that the Jumano-Tompiro group occupied an exposed position on the eastern frontier far from authority and possible succor. But frontier positions on the east were also occupied by Taos, Pecos, and Picuris. These groups, although they were also under attack and were reduced by oppression and drought, still managed to survive. Pecos held on through this period, through the Pueblo Rebellion and Reconquest, and on into Comanche times until it was reduced to 20 people in 1838. The Jumano, at the time of abandonment, numbered more nearly 500 persons. The Picuris abandoned their pueblo in 1704 to escape the Spanish and returned 2 years later, having spent the intervening time with, of all companions, the Jicarilla Apaches. The 20 Pecos, when abandonment finally came, joined the Jemez where their identity has remained, at least until recently, not only as Pueblo Indians but as Pecos. So much for the unusual tenacity of these people for their way of life. I suspect, but do not intend to pursue the matter, that the fatal gene introduced by the Jornada Mogollon was this lack of socio-religious cohesiveness and whose outward manifestation was the multiplicity of the ubiquitous kiva. However this may be, it appears at this point that the only serious difference, either in internal factors or in exposure to external forces, between the Pueblos who survived and who largely survive today and those who straggled into oblivion in 1671–72, was this background of the Jornada Mogollon tradition.

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