Collected Papers
IN HONOR OF
Charlie R. Steen, Jr.

Richard A. Bice
Florence Hawley Ellis
Robert C. Euler
Marjorie F. Lambert
Charles H. Lange
Robert H. Leslie
Florence C. Lister
Robert H. Lister
Polly Schaafsma
Albert H. Schroeder
David H. Snow
A. H. Warren
John P. Wilson
Arnold Withers
M. Jane Young

Edited by
Nancy L. Fox

PAPERS OF THE ARCHAEOLOGICAL SOCIETY OF NEW MEXICO: 3

ALBUQUERQUE ARCHAEOLOGICAL SOCIETY PRESS
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Published by the Archaeological Society of New Mexico
P. O. Box 3485, Albuquerque, New Mexico 87110

Albuquerque Archaeological Society Press 1983
Statements and interpretations presented in the articles are those of the authors and do not necessarily reflect those of the Archaeological Society of New Mexico nor its individual members.
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NEWSLETTER

Distributed to members only
In dedicating to Charlie Steen this eighth in its series of Papers, the Society takes pleasure in honoring a long-time member and very special friend.

During his distinguished career, Charlie's interests have ranged from the archaeology and ethnology of the Southwest, to Southeast Asia, to the Middle East, and from material culture to historic preservation. Since retirement from his position as Regional Archaeologist with the National Park Service, he has been immersed in a variety of activities, including teaching at the College of Santa Fe and serving as archaeological consultant to the Los Alamos National Laboratory. He continues to be recognized as one of the world's foremost authorities on the stabilization of adobe and other primitive materials.

In addition to revitalizing the Santa Fe Chapter of the Archaeological Institute of America, for the past 30 years Charlie has been tireless in his activities in behalf of the Archaeological Society of New Mexico, and he was responsible for initiating many of the features that distinguish it today.

The papers presented here deal with some of his varied interests, and are offered with their esteem by a few of his many colleagues and friends.

The Society tenders special thanks to the Albuquerque Archaeological Society Press for production of this volume, especially to Richard A. Bice, who bore the major load. We are extremely grateful to Rachel Conine for the cover drawing and for her considerable help in preparation of the illustrations. Our thanks, also, to Lyn Cronk and Kay Coen for the typing.

Nancy L. Fox

August 1982
Charlie R. Steen, Jr.
CHARLIE R. STEEN, JR.
MARJORIE F. LAMBERT

To recapitulate the professional life and personality of Charlie Steen, a colleague whose career spans some 50 years, is both an honor and a challenge.

During the 20 odd years I had a research office at the Laboratory of Anthropology, there was a narrow, well worn path between the National Park Service Southwestern Headquarters (Region III) and our building. It served as a convenient shortcut for the research staffs of both institutions when using the libraries and collections, or to visit back and forth and exchange ideas.

Among our favorite neighbors was Charlie Steen, respected and honored for his expertise and wisdom, as well as for his masterfully told stories. His wit and humor are still legend.

Charlie Steen, Jr. was born October 16, 1908, in Washington, D. C. In 1933, he received his degree in Anthropology from Denver University, where he studied with the French born Dr. Etienne B. Renaud. Renaud was a well known figure at Southwestern scientific gatherings, during which he regularly brought forth aggregates of what he staunchly defended as eoliths, or "dawn stones." His was an Old World view of New World prehistory. Over the years in eastern Colorado, Renaud had gathered masses of pebbles and stones which he thought of as eoliths.

One of Charlie's favorite tales concerns his association with Renaud. As assistant to the professor, it was Charlie's job to organize and supervise the moving of the departmental collections to new quarters. Bulkwise, Renaud's eastern Colorado lithics posed a big problem. But since Charlie always arrived at eight o'clock, and Renaud not until nine a.m., Charlie gradually carried eoliths in quantity to a newly graveled parking lot some distance away. This took the better part of two weeks, and the specimens were scattered over a wide area, well disguised so Charlie thought.

A short time after the deed was done, Renaud, greatly excited and with pockets and arms loaded with the discarded rocks, rushed into the
laboratory exclaiming, "I'm right; they are everywhere; I'm even finding them right here on the campus of our university!"

There is no Southwestern anthropologist today who can lay claim to a more distinguished record of achievement than that of Charlie Steen. He has been, and still is, a field archaeologist, a conservator, a teacher, writer, and lecturer; he is a fine photographer, and a world traveler. His colleagues and friends also admire him as a family man. In 1937, Mary Brown Onstott became his wife. Their children are daughter Allison (Mrs. David) McGowan, and Dr. Charlie Steen III and daughter-in-law Sandy. Charlie and Mary have four grandchildren. The Steens have worked as a team, and their home has always been one of warmth and friendliness.

In 1934, Charlie was appointed assistant archaeologist at Wupatki National Monument, on an archaeological survey and civic work program. In the summer of that year he became a National Park Service Ranger at Casa Grande National Monument, Arizona.

1936 was especially significant in shaping Steen's future career. In May of that year he was appointed Archaeologist, National Park Service Headquarters, Southwestern National Monuments, Coolidge, Arizona. From that year until 1970, he was archaeologist for the National Park Service, working on a variety of projects.

1937 found him conducting an excavation of Hidden House, Natural Bridges National Monument, Utah.

He also conducted excavations at Upper Ruin, Tonto National Monument in 1940.

From 1943-1945 he was with the United States Army Corps of Engineers, serving in the China, Burma, and India theaters as a Technician 5th Class. In northern Burma, he managed to do some valuable research among the Nagas of that area.

As a monument to this endeavor, there is a very fine collection of Naga material culture, donated by Steen, at the Laboratory of Anthropology in Santa Fe.
During 1949-1950, he carried on a significant excavation of Tse-Ta'a, Canyon de Chelly National Monument, Arizona. This research resulted in one of the definitive publications pertaining to Canyon de Chelly archaeology.

From 1951-1953, Steen made an archaeological study of the Arkansas-White-Red River Basins for the U.S. Corps of Engineers and the Inter-agency Archaeological Salvage Project.

From 1951-1966, he directed the archaeological salvage program for the Southwestern Region, National Park Service, and from 1954-1966 Steen held the position of Regional Archaeologist, National Park Service.

One of this archaeologist's most valuable projects was the excavation of Pigeon Cliff, Union County, New Mexico. This work was conducted in 1955.

The Archaeological Society of New Mexico has been one of Charlie Steen's major interests since the mid-1950s. He played a major role in revitalizing this organization which had become almost moribund. It was Steen who suggested a statewide aggregate of local chapters, and an annual meeting during which papers would be given by members, the event to be highlighted with a banquet. He also suggested that an outstanding scientist be chosen for the annual dinner meeting, to be known as the Bandelier Lecturer. Working with other trustees of the Society, the bylaws were changed also. Steen is responsible for publishing the Society's first newsletter.

Because he was now a well established authority on prehistoric Anasazi culture, Steen was selected in 1960 to go to Sweden and Finland to review and study the famous Nordenskiöld Mesa Verde collections in those countries.

In 1963, he returned to Casa Grande, Arizona, this time to excavate Compound A.

One of Steen's most significant contributions to anthropology was made during 1966-1968. He was the supervisory archaeologist on the National Park Service Jordan Planning Team. Charlie's colleagues have enjoyed his accounts of many adventures and experiences during
this period in Jordan, Greece, and Turkey. He was instrumental in helping with plans for the development of historic parks and for their preservation. Some of Steen's illustrated lectures pertaining to the archaeology of these countries bear testimony to him as a fine photographer, as well as an enlightening and interesting speaker.


1970 found Charlie again traveling to a foreign land, this time to Israel. He had been invited by that country's Department of Antiquities to advise the staff on methods of preserving the excavated portions of Tell Asbdod.

1970 also marks the year of Charlie's official retirement from the National Park Service. In 1971, in honor of his many contributions to anthropology, most of which were made over a period of nearly 40 years in the National Park Service, the Department of the Interior presented him with the Distinguished Service Award.

Although retired, Charlie Steen's career was far from over, for in 1971 he was invited to Texas Technological University to plan and research the preservation of earthen structures at the Ranch Museum.

During 1972, he served as consultant and supervisor for the stabilization of the ruins of Abo, Quarai, and Fort Selden State Monuments. The work was done under the auspices of the Museum of New Mexico in Santa Fe.

Beginning in 1945, and continuing until 1975, Steen was widely sought as an expert in the stabilization of structures built of primitive materials, particularly adobe. He experimented with, and used, a variety of materials.

Charlie Steen has been responsible for the revitalization of the Santa Fe Chapter of the Archaeological Institute of America. His interest stems partly from the fact that the Institute was instrumental in launching the first archaeological and ethnographical field work of the famed archeo-historian, Adolph Bandelier, in 1880-1885. With the
help of Steen's wife, Mary, there has been a varied assortment of
good programs, dinner meetings, and field trips.

From 1971-1980, Charlie Steen taught classes in archaeology and
anthropology at the College of Santa Fe. This activity was conducted
under the auspices of the Continuing Education Program.

Still another new project opened up for Steen in 1972. The Los
Alamos Scientific Laboratory hired him as a contract archaeologist.
The investigations carried on by him lasted for two years.

In 1975, he received an appointment as an archaeological con­
sultant from Los Alamos National Laboratory, and he is still acting
in this capacity.

Honors still come to Charlie, for in 1980 he went to Oxford,
England, invited there by Crown Prince Hussan of Jordan. He was one
of the participants in a significant conference pertaining to the
archaeology and history of Jordan.

It would be interesting, if space allowed, to describe in detail
each facet of Charlie Steen's professional life, which spans half a
century. But in summary, it can safely be said that he has enjoyed
every year of his career. He occupies a special niche in American
anthropology, as well as in the hearts of his many Southwestern col­
leagues and friends. His warm and engaging personality plus his un­
flagging interest in anthropology make him unique.

It is especially fitting, therefore, that he be honored at this
time by the publication of this volume of papers.

Santa Fe, New Mexico
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In press

INTRODUCTION

The mask as a ritual object and often elaborate art form is known throughout the world and appears in the archaeological record early in man's history. As a religious or ceremonial artifact it often served a number of different functions in ritual, drama, and dance, incorporating human, animal or abstract characteristics. In such cases the mask was imputed to convey power, particularly in its role as the vehicle for impersonating a supernatural being. The power, residual in the mask, passed to the wearer if he was appropriately receptive.

Behind the use of a mask or even face painting—the latter may be regarded as a type of mask—is the idea of disguise and transformation. The face, commonly considered the center or focus of one's soul or personality is "the feature that must be changed if that personality is to be replaced and transformed" (Cordry, 1980, p. 78). Face painting or a mask removes the wearer from the mundane world and his ordinary identity and elevates him to a supernatural plane. In shamanic practice the mask is a technique for directly contacting the spirit world. The wearer achieves an identity with supernatural forces, becoming one with an ancestor, a god, or an animal spirit, depending on the nature of the mask.

In the American Southwest, the use of the mask is well known in the modern ceremony and dance of several cultural groups. Among the Navajo, masked impersonators are identified with the supernaturals represented. The mask is said to have the "real" look of the being in question, and because of this the mask is potentially dangerous (Haile, 1947, p. xiv). "Before the ye-i people left for the homes to which they were assigned 'they took ni·kehe face prints of themselves in white bead, turquoise, abalone, and jet, but directed that humans should reproduce them in buckskin.'" (Haile, 1947, p. 16). Likewise Pueblo Indians make masks of the kachinas and of the gods in order to represent them in more
substantial form, enabling these supernaturals to visit their villages so that they (the Pueblos) may interact with them more effectively. At Zuni, the mask, and hence masked dancers, have a compelling power which draws the rain-bringing supernaturals to the Pueblo (Bunzel, 1932, p. 902). Using the stuff of the earth—paint, feathers, leather, and symbols—they create masks which when worn invest the wearer with the spirit of the being represented, facilitating communication with the sacred realm.

The representation of the faces of these spiritual beings is not limited to the masks themselves, however, but the faces and/or masks are also often depicted in the rock art of the Southwest. The practice of graphically illustrating the mask as a subject in its own right has a long tradition in Southwest rock art. Masks suddenly appear prolifically in the Rio Grande Style Pueblo rock art around A.D. 1325 and continue to be represented in rock art made in the present century. These Pueblo depictions are preceded in unbroken continuity by masks and faces of the Jornada Style from the desert Mogollon area of southern New Mexico where they are thought to date as early as A.D. 1050. As in the Rio Grande Style, Jornada Style masks are depicted in abundance, and are even more elaborate in concept than the later Pueblo representations. Altogether this comprises a tradition of nearly 1000 years. Style, form and occasionally subject matter suggest that these mask depictions have roots in Mexico where the mask has been a characteristic element in art and ritual since Archaic times. This has been discussed in detail elsewhere, and it is hypothesized that the advent of the kachina cult in the Pueblo world is documented in this tradition (Schaafsma and Schaafsma, 1974; Schaafsma, 1980).

In contrast, prior to A.D. 1050, mask and face depictions are uncommon in Southwest rock art. In the rock art paintings and petroglyphs of the Anasazi, between Basketmaker III and the end of Pueblo III (A.D. 400-1300), masks occur so infrequently that the sites in which they are known can be cited individually. Miniature painted masks associated with Basketmaker III type figures have been described
from a cave near Durango, Colorado (Daniels, 1954, pp. 87-88). These consist of facial features lacking an outline, above which are lines suggesting a feather or cap. Turner (1963, Figs. 22, 47) illustrates two petroglyphs from a Glen Canyon Style 4 context (A.D. 1050-1250) which are mask-like in shape. These atypical figures, both of which are located in lower Cha Canyon, Utah, a southern tributary of the San Juan, are decorated with abstract patterns, and bear no resemblance to other known mask representations. North of the Anasazi, however, in the rock art of the Fremont culture, which is somewhat ambiguously dated between A.D. 450 and 1250 (Madsen, 1979, p. 720; see Marwitt, 1970, pp. 137-145, Ambler, 1969, and Gunnerson, 1969 for more restricted dating of the eastern Fremont), the manner in which certain heads are depicted and the decoration of same, early led to the conclusion that masks are represented (Morss, 1931; Reagan, 1935). We will return to a consideration of these Fremont depictions later on.

The subjects of this paper are two categories of very early masks or faces occurring in the rock art of the Anasazi area. For simplicity, these will be referred to hereafter as "masks," although whether or not we are dealing with a mask per se is ambiguous in some cases. These images occur in the San Juan drainage and in the upper Little Colorado River drainage and are regionally distinct (Fig. 1). To date, the known examples from each region are limited both in actual numbers and in the number of sites in which they are found. The first to be considered are the occasional masks or faces which occur in association with Basketmaker rock art in the San Juan drainage. The second set of masks are among the oldest petroglyphs in the Zuni-Quemado region (Young and Bartman, 1981). Both deserve formal recognition in the Southwest rock art spectrum as elements in their own right and as figures which contribute to our knowledge of early prehistoric ritual and ceremony.
Figure 1. Map of the Four Corners region showing general locations of sites discussed.
MASKS IN SAN JUAN BASKETMAKER ROCK ART

The masks of this group are a component of the San Juan Anthropomorphic Style attributable to the Basketmakers who occupied the middle San Juan region in northern Arizona and southeastern Utah between A.D. 1 and 400. Whether or not the rock art style in question concurs precisely with this time frame is not certain, but for a moment it provides a temporal anchor. The San Juan Anthropomorphic Style is well represented on the sandstone cliffs and within the rock shelters and overhangs characteristic of this region.

The style consists of both petroglyphs and paintings, the latter being the more common, and it is characterized by repeated depictions of large broad-shouldered human figures often wearing headgear, necklaces, and sashes. Emphasis on the heads of these figures varies. The head may be indicated as a small blob, or it may be more fully depicted with eyes and earrings. Headgear is often tall and elaborate. Figures associated with the dominant human forms include handprints, pouches, atlatls, wavy lines and/or snakes, and dots. In some Utah sites there are figures of bighorn sheep, yucca stalks and other plants. In what appears to be a late manifestation of this style, birds become a common element. Finally, but rarely, heads alone are represented which may be interpreted as masks or painted faces. These so-called masks appear to be more frequent in northern Basketmaker, or Utah, sites.

Petroglyph masks occur at one site as isolated self-sufficient elements and in another instance they are shown on complete figures. In all other examples they are painted. Masks approximate life size and are characterized by a thick swatch of hair on either side of the head which may hang to chin level or below. In some cases the hair seems to be tied into bobs. Where fully defined in paint the face shape is oval. Facial features do not seem to be of major importance and may not even be present. In some examples there are horizontal divisions, which although mask-like could represent face painting. Further variation is described below. In three cases painted handprints are associated with the masks. In general, the individual mask
is more elaborate than the heads of most complete figures and seems to be a specialized development. A notable exception to this occurs in SJ-Site 6 described below.

Of the seven sites with masks discussed here, six are in Utah and one is in Arizona. None have been reported from Canyon de Chelly in spite of the numerous Basketmaker rock art sites there and their extensive documentation (DeHarport, 1959; Grant, 1978; Dix, 1979). Basketmaker masks are known from three sites in Grand Gulch, a northern tributary of the San Juan River (Fig. 1) which had an intensive Basketmaker II occupation between A.D. 200 and 400 (Matson and Lipe, 1978).

SJ-Site 1.* Moving down-canyon, the first Grand Gulch site with masks harbors a line of at least ten nearly identical faces painted in green and white at the top of the back wall of a rock shelter (Fig. 2). The visual impact of a long row of such figures is impressive. The hair is green and it increases in thickness toward the bottom, ending at about chin level in a hair bob arrangement. The faces appear as white featureless ovals, but the paint has deteriorated over the centuries and it is difficult to determine if facial detail was formerly present. The first mask on the left differs from the rest in that it lacks hair bobs; the line of hair is abstractly depicted as a horseshoe-shaped arc of green and white which does not vary in thickness. Both types of masks represented here will be encountered again separately at other sites. Other elements at the site include San Juan Anthropomorphic Style human figures and petroglyphs of animal tracks.

SJ-Site 2. In this large Grand Gulch rock shelter which has been described by Castleton (1979, p. 249) a single mask is painted in an isolated position, high on the wall and apart from the many and varied San Juan Anthropomorphic Style human figures that also occur here.

*Site numbers have reference to San Juan (SJ) and Little Colorado (LC) sites as discussed in this paper only.
Figure 2. Row of masks painted with white faces and green hair, SJ-Site 1, Grand Gulch, Utah.

Figure 3. a - Isolated mask, SJ-Site 2, Green Mask Cave, Grand Gulch. The hair is red and the face is yellow (light dots) and green (heavy dots). b - White mask with facial features, SJ-Site 3, Grand Gulch.
The mask, well preserved, is brightly painted in three colors (Fig. 3a). A thick swatch of red hair falls on either side of the face from the top of the head to below the chin. The face itself is painted in horizontal bands of varying widths in green and yellow, and there is a line of green around the chin. There are no other paintings in the immediate vicinity, but mud balls have been tossed at the mask from below, presumably by the later Anasazi occupants of the cave (Schaafsma, 1966, p. 18 and Figs. 14, 25).

SJ-Site 3. Still further downstream a third Grand Gulch site exhibits another mask, along with paintings typical of the Chinle Representational Style, a configuration related to the presumably earlier San Juan Anthropomorphic Style (Schaafsma, 1980, pp. 122-127) but which seems to have developed in Basketmaker II times. The mask represented here is painted in white (Fig. 3b). The hair, increasing in thickness toward the hair bobs at the end, defines the facial area which in this case is unpainted. Features, however, are indicated by thin lines. Although unusual in form, the flaked condition of the paint of these features indicates that they were part of the original painting.

SJ-Site 4. This site is located east of Grand Gulch in Butler Wash, another northern tributary of the San Juan River. In this shelter a faint isolated face painted in white occurs. Two long rows of white handprints are situated immediately to the left of the mask. The latter appear to have been made after the mask was painted, as one print is superimposed over the lower corner of the left hair bob (Fig. 4). In this example the top of the head is flat so that the unpainted facial area is more rectangular than oval in shape. Incised lines at the base of the thick hair indicate where it was tied together. Eyes and mouth are painted as lines, and, as well, there is a horizontal line above the eyes and a vertical mark below the center of the mouth. Below the chin falls a white rectangular shape suggestive of a beard-like element. A similar feature appears in the nearby petroglyph masks from SJ-Site 5.
SJ-Site 5. Upstream from Butler Wash on a cliff above the San Juan River is a large well-known panel of petroglyphs which includes several mask elements (Fig. 5), as well as Glen Canyon Linear and San Juan Anthropomorphic Style designs and a wealth of larger Anasazi figures. The finely pecked masks are scattered in their distribution among various human forms, phallic fluteplayers, mountain sheep and other Anasazi work. A slightly heavier patina suggests that they are among the older elements in the panel. These horizontally banded masks are closely related conceptually to both the green painted mask at SJ-Site 2 and the one just described from Site 4. Like the Butler Wash
Figure 5. Petroglyph masks with beard-like element, SJ-Site 5, San Juan River, Utah.

Figure 6. Petroglyphs of large complete human figures, four of which appear to be masked, SJ-Site 6, Butler Wash.
painting, they tend toward rectangularity, and they have a well-defined and distinctive beard-like appendage. The exaggerated length of the hair seems to be the result of a later addition.

SJ-Site 6. At a second Butler Wash site, large complete San Juan Anthropomorphic Style human figures are shown apparently masked (Fig. 6). Such an occurrence is extremely unusual. The figures in question are petroglyphs pecked on an exposed cliff face and a number of the anthropomorphs have been weathered to the point where detail has been obliterated or at best is difficult to see. At least four of them appear to have been depicted as masked with the facial area divided into horizontal bands. Two of these are preserved in detail—eyes, hair, and possibly the beard motif are shown as well as impressive headgear.

SJ-Site 7. In the Chinle drainage of northeastern Arizona, a seventh site has two painted masks. Like the mask on the far left at SJ-Site 1, these images are defined by a horseshoe-shaped outline of unvarying thickness (Fig. 7). Although the painting is primarily in white, the left-hand figure's hair has a yellow outline. The association of pink, green, and yellow handprints with the masks is a notable aspect of this site. Also present are painted human figures typical of the San Juan Anthropomorphic Style.

Among the 20 or so masks or face representations from the seven sites listed above, typological distinctions begin to suggest themselves although the masks are by no means mutually exclusive in their specific characteristics. Among the figures discussed one can differentiate between those with a horseshoe-shaped outline, those with oval faces and hair bob, and those tending toward geometric abstractions as at SJ-Site 5. At SJ-Site 1 two of the types occur together in a manner which indicates that the horseshoe type is contemporaneous with and may differ in significance from those with hair bobs.
Figure 7. Faces in white and yellow, Chinle drainage, northeastern Arizona. Hands in red (solid), green (dotted), and yellow (outlined) are associated.

EARLY PETROGLYPH MASKS IN THE LITTLE COLORADO RIVER DRAINAGE

A second distinctive group of mask representations is present among the oldest petroglyphs of Hardscrabble and Carrizo Washes, upper drainages of the Little Colorado River system in west central New Mexico and east central Arizona. In this instance the mask elements are known from only two sites. Nevertheless, a number of masks are depicted in each instance, and superimpositions at both sites contribute to placing them within a relative regional chronology. Associated are elements which tentatively place the masks in the context of an abstract style similar to the Great Basin Abstract Style, which precedes representational styles distinctly Puebloan in character.
These masks bear no resemblance to those of the San Juan Basketmaker group. They are basically rectangular in shape with usually only the top and sides of the head defined. Eyes, near the top of the face, and occasionally the nose are indicated by small circles. Straight or wavy lines fall from the eyes or drop from the top of the mask, sometimes bisecting the face. The figures are extremely abstract and there is little temptation to suggest that they represent human faces or examples of face painting.

LC-Site 1. On a sandstone cliff northwest of Quemado, New Mexico in the Carrizo Creek drainage, a line of at least four and possibly five pecked masks heavily obscured by patina is perceivable beneath clear and lightly patinated petroglyphs of bison, hunters with bows and arrows, birds, scrolls, wavy lines, and tracks (Figs. 8 and 9). The masks, weathered and difficult to see, and which were not recognized in the original study of the site (Schaafsma, 1972, pp. 25-27; Fig. 23), appear to be much older than the superimposing elements. The latter were apparently authored by the former occupants of the valley below where sites from late Basketmaker III through Pueblo III are found.

Of the masks, the left-hand figure is the clearest. It is about 30 centimeters tall and is unusual in that it is divided by two horizontal bands, rather than having vertical line decoration. It is also enclosed all the way around, whereas in most cases the bottom is left open. The eyes, close together at the top of the head, are typical of these figures. The third mask to the right has wavy lines extending downward from the eyes. Details of the others are difficult to see. On the basis of material from LC-Site 2 described below, the series of short straight lines bracketed across the top may be regarded also as a mask (compare Figures 9, second from right, and 10, middle left).

LC-Site 2. Rock art dating from Basketmaker II to present times is found in abundance in part of a mile-long canyon west of the Pueblo of Zuni in the Hardscrabble Wash district in Arizona. The site itself has long been linked with archaeological studies of the region (Beeson,
Figure 8. Petroglyph panel (LC-Site 1) northeast of Quemado, New Mexico, in which four or five mask elements are faintly visible beneath clearer later figures of Anasazi origin. Photograph by Karl Kernberger.

Figure 9. Schematic reconstruction from photos and field sketches of masks at LC-Site 1. Superimposing elements are omitted.
1966, pp. 105-106, 199-205) and also Zuni Mythology. Although much of the rock art here is closely related in style and content to that surrounding the Pueblo of Zuni, the Hardscrabble Wash contains rock art, including that under discussion, which is earlier.

The oldest rock art at this site is found at the head of the canyon and is characterized by the repeated occurrence of many stylistically similar masks (Fig. 10). Thirteen masks, ranging from 20 to 25 centimeters in height are found within an area of approximately 34 meters. One of these masks is partly encircled by two lightly pecked areas (Fig. 10, middle right), somewhat similar to those described for SJ-Sites 1 and 7. The masks are relatively visible--due to the protection of the cave-like shelter. Some of these masks are heavily patinated, however, and it is possible that the area contains even more such depictions than we have been able to detect. The masks occur on closely adjoining panels, and, in some cases, two masks are found on the same panel or rock face. Because of their abstract quality, these masks differ considerably in style from the much later kachina masks found in closer proximity to the Pueblo of Zuni. Within the canyon these masks have a spatial as well as temporal definition--they are secluded in a chamber at the head of the canyon, separated from the rest of the canyon by a cave-like entrance where deep pools of rain water collect. Most of the other rock art in this same chamber appears to fall within an early time frame, consisting primarily of rakes, circle-line configurations and rectangular forms with lines and zigzags inside, stylistically similar to the masks. The technique of execution for these masks and the other elements consists entirely of pecking. Superimpositions of later, more lightly patinated forms such as Anasazi flute players, insects, quadrupeds, and anthropomorphs on several of the masks is further evidence of their early date.

DISCUSSION

The masks described in this paper are of interest both as elements in the rock art which emphasize certain cultural-historical continuities, as well as subjects which elucidate prehistoric religious concepts and practices.
Figure 10. Pecked masks (selected sample) from 20 to 25 cm. high, all located in chamber at head of canyon, Hardscrabble Wash.
As for cultural-historical connections, typological similarities are evident between certain San Juan masks and those in petroglyphs from the Fremont area. This similarity is consistent with other observed continuities between human figures of Basketmaker origin and those in Fremont rock art (Morss, 1931, p. 42; Schaafsma, 1971, pp. 139-141), as well as a likeness between these cultures on a more general front (Madsen, 1979, p. 720). Tantalizing specific resemblances exist between Basketmaker masks from SJ-Sites 4 and 5 and the masked anthropomorphs from Site 6, and certain Fremont figures (Schaafsma, 1971, p. 46, Pl. 24) including the disembodied heads held in the hands of anthropomorphs in ceremonial attire in Classic Vernal Style petroglyphs from northeastern Utah (Schaafsma, 1971, p. 11, Pl. 1). Whether the latter represent actual human heads or simply masks has long been open to speculation, although in light of the Basketmaker evidence we are inclined to favor the latter interpretation. In the examples in question, a beard-like element hangs from the chin region, and this distinction as well as other general similarities suggest that we are dealing with related phenomena.

To digress for a moment, it should be made clear that the Basketmaker and Fremont masks cited above do not resemble the well-known faces represented in several sites in Canyonlands National Park immediately to the north of the Basketmaker region (Castleton, 1979, pp. 278-283). The latter have appendageless torsos, and in shape as well as all aspects of detail seem to be painted renditions of the beings represented by the Fremont clay figurines of the San Rafael region (Morss, 1954). The Canyonlands paintings are apparently associated with the Mesa Verde Anasazi occupation of Canyonlands between A.D. 1075 and 1150, and as such they seem to represent a universal borrowing of Fremont art forms by these northern Anasazi, an interesting phenomenon beyond the focus of the current discussion (Sharrock, 1966, pp. 71-72). Important here is the fact that these dates for the paintings are consistent with those of the similar Fremont figurines (Wormington, 1955, p. 184; Morss, 1954, p. 25), thus placing them in time several hundred years after the
Basketmaker masks being discussed in this paper. No dates are available for the typologically similar Basketmaker-like Fremont masks, but we speculate that they may be early within the Fremont period, and, in fact, argue for an early beginning date for the Fremont configuration.

The general significance of masks and face painting in ritual contexts was discussed earlier. Elsewhere it has been suggested that both the San Juan Anthropomorphic Style and the various styles of Fremont rock art, along with the earlier Barrier Canyon Style (Schaafsma, 1980, pp. 61-72) are visual components of historically related shamanic practices on the Colorado Plateau (Schaafsma, 1980, pp. 180-181). This interpretation derives from evidence in the rock art itself which is characterized by rows of impressive abstracted human forms in ceremonial regalia along with other details which indicate that the figures have supernatural significance and may represent shamans themselves or shamanic spirits. Masks or face disguises are commonly used in shamanistic ritual in order to facilitate transcendence to and communication with various sacred entities. Very possibly actual masks were used in early Basketmaker and Fremont ritual for similar purposes.

That the representations themselves also had supernatural importance or power associations is suggested in the Basketmaker examples by the handprints placed near the masks just as they were placed in and around complete figures in a manner to suggest that they served as a type of signature, perhaps identifying an individual who had offered prayers to or through the figure portrayed (Schaafsma, 1980, pp. 117-119).

Turning to the Little Colorado River sites, the typological similarity between the masks described from Carrizo Creek and Hardscrabble Wash is indicative that we are dealing with a common cultural component in the upper Little Colorado River region. It is interesting that no masks were recorded by Pilles (1975), however, in his survey of 18 sites in the central Little Colorado River valley between Winslow and Holbrook, although he did document a regional manifestation of the Glen Canyon Linear Style (Glen Canyon Style 5) (see Turner, 1963, pp. 7-8 and
Schaafsma, 1980, pp. 72-76) which seems to be either late Archaic or a Little Colorado River version of Basketmaker II. This style was not found in the Hardscrabble Wash or Carrizo Creek site. That the Little Colorado River drainage masks and the associated abstract designs date from Basketmaker II or earlier, however, seems evident based on the comparative condition of the petroglyphs at LC-Site 1 and the superimpositions from both sites.

Lacking a comparable interpretive context, the function of the upper Little Colorado River masks is perhaps even more speculative than that for the San Juan faces. The high degree of abstraction of the former, however, lends them a supernatural quality, and deities or shamanic spirits may likewise be the subject of these depictions. In shamanic practice it is not uncommon for shamans to pictorially interpret spirit helpers or faces seen on a spiritual journey (Vastokas, 1977, p. 107). Further, at the site in Hardscrabble Wash, the relative inaccessibility of the masks, their isolation from the rest of the canyon near collection pools, some of which must be waded in order to reach the open rock chamber in which the petroglyphs occur, and the repetition of the same mask motif within a small area, all suggest a connection with the sacred realm. In Zuni mythology this site is today referred to as a sacred place. Whether or not actual comparable masks were worn by impersonators contemporary with the petroglyphs is not known.

In sum, these few figures in the rock art expand not only the rock art inventory, but also our perceptions of San Juan Basketmaker and upper Little Colorado River culture in regard to ceremonial and religious practices. As well, the San Juan examples further emphasize cultural relationships with the Fremont culture.

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1981  *Rock Art of the Zuni-Cibola Region.* Pueblo of Zuni, Zuni, New Mexico.
The purpose of myth is to explain, and, as Sir G. L. Gomme said, myths explain matters "in the science of a pre-scientific age." (Leach, 1950)

Since the discovery of Folsom Man (Figgins, 1927), northeastern New Mexico has been the scene of sparse and sporadic investigations by archaeologists. Among these have been Charlie Steen (1955a, 1955b, 1976) and his early instructor, Dr. E. B. Renaud (1930, 1937). Enough has been done to outline some of the archaeology and many of the problems for the area (Lang, 1978; Mobley, 1979; Oakes, 1979; Stuart and Gauthier, 1981). Much as I may wish to share the knowledge of these investigators and to understand what the world has been, I know that the first several centuries of the Christian Era in northeastern New Mexico are presently beyond my grasp. My aim here is not to solve any of the problems but just to add one or two to the list.

Some of my interest in this area has been stimulated by the excavation of the Belwood Site in southern Colorado (designated CO.Z:1:11 in the University of Denver archaeological survey file). And so--a blessing indeed--my view of northeastern New Mexico archaeology is not in the least colored by the inhibiting circumstance of ever having worked there.

The Belwood Site is located near the south rim of the Graneros Creek Canyon about halfway between Pueblo and Walsenburg and perhaps 2.5 miles east of Interstate 25. The site is in a small clearing surrounded by ponderosa pine and juniper. Some digging was done here from 1950 to 1952. This work revealed two houses and two outside hearths (Fig. 1). The Belwood Site served as the type site for the Graneros Focus (Withers, 1954) and remains almost the only site for this focus that I have ever seen, although there are a few other possibles. These sites are scarce.

*A long time ago (Tewa) (DeHuff, 1922).
Figure I
The Belwood Site

Adapted from Life Picture Atlas of the World, time Inc. N.Y., 1961
The identification of this locality as a Woodland site has never been questioned by any plainsmen of the past (with a brief bow to Jesse Jennings) who have seen the pottery, lithics, or the features of House 1 (e.g., Wedel, 1956). House 1 (Fig. 2) was a circular, shallow, saucer-shaped structure about 10 meters across with a recess on the west side. No obvious entrance was identified. The house had burned, and there were more charred logs on the floor than in any house I have ever seen. The construction may have involved cribbing (Withers, 1981), and the low mound that covered the remains indicated that the house was at least partially earth covered. A few miscellaneous stone slabs were found on or near the floor. These may have been used to patch weak spots in the roof. In places, a single line of rocks outlined the edge of the house, but there was no superposition of these, and there were no slabs placed on edge or upright.

The hearth was a large shallow depression in the floor, with the actual fire area in the center. In the southwest portion of the house was a bell-shaped pit about 60 cm. deep. Charcoal from the floor of this pit yielded a radiocarbon date of A.D. 450 ± 55 (Breternitz, 1969, p. 118).

The cordmarked pottery vessels were conoidal with straight or slightly outcurved rims and sometimes a smoothed zone just beneath the lip. The corner-notched projectile points had straight to concave bases and ranged in length from 2.5 to 8 cm. with the majority falling between 4 and 6 cm.

House 2 (Fig. 3) was quite different and came as a surprise. The surface of the ground provided not the slightest clue to its existence. At the time of excavation this house immediately called to mind a Southwestern pit house. I knew then that this was most unlikely. The house has bothered me ever since, as I waited to find something like it closer to home. Nothing has turned up, and it still looks like a Southwestern pit house.

Parts of the house were hard to define, but the shape was oval with a ramp entrance to the east and a ventilator to the west. The
Figure 2
House Structure I
Figure 3

House Structure 2
depth varied from one-half to one meter, depending upon the gentle slope of the clearing which falls away from southwest to northeast. No clear post pattern was found except along the sides of the entrance. There were two post holes in the south portion of the floor and two just outside the north wall. Also, there were two smaller post holes on the west edge of the ventilator.

The stone artifacts and pottery found in House 2 were duplicates of those in House 1, but fewer in number. Nothing about the site suggested any possibility of two occupations. It is assumed that Houses 1 and 2 were being used at the same time.

There are no nearby houses with which to equate or compare House 1. The ramp entrance on the east side is a common Mogollon feature. The bulbous ventilator is not common, nor is a pit house with both side entrance and ventilator. Haury (1940) found one such (House 4) at the Bear Ruin in the Forestdale Valley south of Showlow, Arizona. On the same site his House 1 had a bulbous ventilator with sticks around the perimeter to support a cover. The Bear Ruin is near the farthest western extension of the Mogollon Culture along the Mogollon Rim, and I am suggesting no direct connection with the Belwood Site. Another example of this bulbous type of ventilator was found in the subterranean Room 3 at the Wind Mountain Site southwest of Silver City (DiPeso, in preparation).

In the Rio Grande drainage, Allen and McNutt (1955, p. 244) describe a circular pit house near Santa Ana Pueblo on the slope of an old terrace of the Jemez River. The pit house (designated no. 2) had a seven foot long side entrance on the east. This had a bulbous distal end, and the feature may have been a ventilator. The majority of sherds on the site were Lino Gray, but there was a good representation of Mogollon types.

In shape, these ventilators are rather like the degenerate ante-chambers of Houses E, F, G, and the ventilator in House L at Site 13, Alkalai Ridge, Utah (Brew, 1946).

As I stand on the edge of House 2 at the Belwood Site and look in all directions for anyone who might have had some responsibility for its construction, my eyes always return to the south. But who was in northern
New Mexico east of the mountains during the Christian Era and prior to perhaps A.D. 700 or 800?

I suggest, on no authority whatsoever, that there is the possibility that a few of the Eastern Mogollones (this far north I hesitate to label them "Jornada") occasionally explored this area and even set up housekeeping now and then. There is the evidence of Jornada Brownware (or Alma Plain) in the Texas Panhandle at an early date, in what has tentatively been called the Palo Duro Complex (Hughes, 1978, pp. 189-190, 280). The probability of Mogollon-Woodland contact there has been suggested earlier (Withers, 1981). Some of these Mogollones may have drifted even farther down the Canadian River toward western Oklahoma.

The chance of an exchange of ideas with others presents some interesting thoughts about such Mogollon frontiersmen. Some of the differences in the Woodland pottery of the Graneros and Parker Foci in eastern Colorado (Withers, 1954) might stem from such Mogollon-Woodland contacts. For example, the slightly recurved rims on a few Graneros Focus jars seem very much like rims on some of the early Alma Plain jars (Haury, 1936a, Fig. 8:3). Could it be possible that the roughening of the surface on some Alma Plain vessels to produce Alma Rough (Haury, 1936a) was inspired by such contact? The Woodland people could have gained some horticultural knowledge about crops and techniques. Also, some investigators have been intrigued by possible contacts between the Southwest and the Southeast (Haury, 1936b; Wedel, 1950; Wendorf and Reed, 1955; Wheat, 1955). The Canadian River is the only watercourse making a direct connection between the two areas. Early Mogollones on the Canadian River could have served as carriers of some of these ideas.

I know that many of my colleagues would deny that any Mogollon people penetrated farther north than the Tucumcari region and the southern bend of the Canadian River just to the north, where they have been tentatively identified (Dick, 1953; Hammack, 1965; Lang, 1978, Fig. 23). Some would support the idea that even these ceramic evidences are too far north to be Mogollon, and would inhabit northeastern New Mexico with Archaic peoples until about A.D. 1000 (Hammack, 1965; Mobley, 1978; Wendorf, 1960).
Others would admit some Woodland people into the area prior to A.D. 1000 (Campbell, 1976; Lang, 1978; Oakes, 1979), although the evidence for this is indeed sketchy. It means labeling some non-ceramic sites as Woodland, which I believe to be a precarious position. As with the Mogollon, I think that there is the possibility of a few small Woodland groups occasionally inspecting the area. After viewing site collections at the Laboratory of Anthropology, I have noted only one site with a possibly Woodland affiliation (LA 1367 on the old Jaritas Ranch east of Springer)--and this is on the basis of a single undistinctive sherd from the bottom of a jar. But this slight evidence would fit with the highly negotiable boundary that I suggested for the southernmost extension of the Woodland people in the western Plains (Withers, 1981).

The scarcity of pottery-bearing sites in the area is in some ways puzzling. But in this time period neither the Woodland nor the Mogollon people in such a frontier area were making much pottery. Their populations were sparse, their pottery production sparser. I know that it is possible during a survey to find such sites and observe only lithic remains. This may sometimes be the case here. And making the puzzle even more difficult, projectile points and some other stone tools of the Woodland and early Mogollon people and the late Archaic assemblages show very few differences. In the absence of pottery they are difficult to distinguish.

I cannot help but agree with Beckett (1979, p. 224) that:

There is a need to redefine the whole preceramic culture or cultures that underlie the Jornada Mogollon Area.

The term "Archaic" has become an uncomfortably awkward wastebasket in eastern New Mexico archaeology.

If some of the Woodland people were lured into the Land of Enchantment, I can see no reason at present to distinguish them from those of the Graneros Focus. However in southeastern Colorado along the canyons of the Huerfano, Apishapa, and Purgatoire Rivers, these Woodland people of the Graneros Focus were replaced by quite a different group whose cultural remains have been labeled the Apishapa Focus (Withers, 1954),

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best dated by the intrusion of Santa Fe Black-on-white pottery on some of the sites. I can see no present evidence for extending this group into northeastern New Mexico. I am sure that there were people here then, but some other cultural tag would seem to be more appropriate.

There have been reported a few occurrences of plain brownware in the northeastern part of the state, but almost none are identified or dated. One possible exception is reported by Glassow (1980, p. 72) from a site that he assigns to his Pedregoso Phase, radiocarbon dated at A.D. 750. This site is on Ponil Creek near Cimarron, and the pottery is the earliest that he found in that immediate area. He describes about a dozen sherds as "very crude, thick, oxidized pottery." This description may or may not be enough to admit these sherds to a home among the brownwares.

But in all of this I have been encouraged by Lang (1977, p. 369), who feels that:

... much of the character of Basketmaker III in the Rio Grande, as it may be defined archaeologically, bespeaks of closer fundamental relationship to Mogollon than to the western Anasazi, until some point in Pueblo I when the region is more closely drawn into the core of the Anasazi sphere.

ACKNOWLEDGEMENTS

I am grateful to these people for their time and patience, which contributed finally to the termination of this paper: Laura J. Holt, Marjorie F. Lambert, Richard W. Lang, Geronima Montoya, Ann Noble, Larry V. Nordby, Yvonne R. Oakes, Stewart Peckham, Regge N. Wiseman, and Geoffrey Withers.

Any raised eyebrows may be directed at them, for they are all aesthetically inclined and reliable students of gestures (Morris, et al.).

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The Sterling site is a Chacoan ruin located near Farmington, New Mexico on the B-Square Ranch of former New Mexico Governor Tom Bolack. The site rests on the south bank of the San Juan River and is a smaller companion of the Salmon ruin, found about 5 miles upstream, and of the Aztec ruin some 13 miles to the northeast. It shares the heritage of a far-flung group of prehistoric pueblos that had their cultural center in Chaco Canyon, 45 miles to the southeast.

As with the other nearby pueblos, it appears that the Sterling site had first been occupied by Chacoan people perhaps as early as A.D. 950 and certainly by A.D. 1040. It was abandoned by about 1100 and then reoccupied some time later by San Juan peoples with different traditions and architectural tastes. The principal emphasis of this report is on the architectural features of the site and on the information these features reveal.

Partial excavation of the site was done by field schools of the Archaeological Society of New Mexico during the summers of 1972, 1973, and 1974.

ACTIVITIES OF THE ARCHAEOLOGICAL SOCIETY OF NEW MEXICO

In 1972, Harry Hadlock, chairman of the ASNM Field School Committee, made arrangements with the Bolacks for conducting the first ASNM field school on the Sterling site. At the same time, Cynthia Irwin-Williams of Eastern New Mexico University was in the process of excavating the Salmon ruin through grants and ENMU field schools. Arrangements were made with her for the Sterling site activities to be included in "The San Juan Valley Project," and her help was sought in obtaining the services of graduate students to supervise the ASNM schools.
Ben Robertson from the University of Maryland was the director during the 1972 and 1973 field seasons, and John Roney of Eastern New Mexico University was the director in 1974. After the first year, ENMU credit was offered during the schools.

The Salmon project provided field forms and seminar instructors in excavation techniques, laboratory techniques, and artifact recording. The Salmon project laboratory at the Bloomfield, New Mexico High School was also made available to the ASNM students for rotational assignments.

During the first year, activities began on August 4, 1972, and continued through August 12. Work assignments included laying out the site and establishing its coordinates and elevation. The initial excavations of Rooms 2 and 3 were performed also.

The second ASNM field school was conducted from July 1 through July 29, 1973. Included in the program were excavations in the large and small kivas, as well as work within various rooms.

The third and last field school at the Sterling site was held in the summer of 1974, from June 30 through July 28. The planned work on the kivas was finished and work on other rooms was continued. The student attendance by years was as follows: 1972 - 39; 1973 - 42; 1974 - 14.

SCOPE OF REPORT AND DATA RESOURCES

At the conclusion of the field program, the records and the artifacts were stored at Eastern New Mexico University. In 1981, they were transferred to the Salmon Ruins Museum near Farmington, where the ASNM assumed the responsibility for analysis and report writing. The author agreed to undertake the preparation of this initial report, which emphasizes the site and its architecture. The next report is expected to feature an analysis of the cultural material from the site.

The following data sources were used: field photographs, notes and forms; an overall map of the surface features of the site pre-
pared by John Runyan and Harry Hadlock during the first and second seasons; photographs taken by the author during these same years; photographs taken by Bob Powers and Harry Hadlock in 1981 prior to re-stabilization of the site; photogrammetric mapping; and some structural details obtained during a personal site inspection in 1982.

Through Jim Judge of the Chaco Center at the University of New Mexico, and Tom Lyons of the Remote Sensing Laboratory, a pair of aerial stereo photographs of the site was made available. The photography had been done as part of the Chaco outlier study carried out by the University of New Mexico-National Park Service Project. Making use of these photographs, which contain ground control survey markers and data, the Society contracted for the development of photogrammetric contours of the site.

THE SITE AND ITS LOCAL SETTING

Figure 1 is a map of the Sterling site area. The site rests on the edge of a flood plain overlooking the San Juan River. The plain is south of the river and extends about one-half mile to the base of an escarpment that confines the river valley on that side. The other edge of the plain, where the site is located, is eroded and drops abruptly about 25 feet to the sandy flats that border the flowing stream.

An arroyo exits the escarpment hills almost directly south of the site. It continues toward the river forming a channel that cuts the north edge of the flood plain immediately east of the site. This normally dry water course broadens out below the site, takes a path parallel to the flood plain, and then angles northward to enter the river. Undercutting action along this route during heavy runoffs has undoubtedly washed away some of the site. Erosion has exposed the masonry along the north edge, but just how much of the site has disappeared cannot, of course, be determined. It is likely that at
Figure 1. Map of local setting of the Sterling site.

Figure 2. View of exposed walls on north slope.
least a north houseblock and possibly an east houseblock have been eroded away.

Judging by the floor levels of the rooms, the site was built on a low bluff that sloped slightly downward to the east. At the present time, the height of the bluff is exaggerated by the mound of the ruin itself. This mound is about 79 meters long north to south and approximately 50 meters wide east to west.

At the beginning of the field school, standing walls, exposed by erosion, could be seen along the north edge of the pueblo. It was here that the ruin had suffered extensive damage due to seasonal runoff from the arroyo. The walls in the rest of the pueblo were not easily discernable. Figure 2 shows the nature of some of the exposed structures.

The large kiva could be readily identified because of its open walls; the small kiva, on the other hand, was completely covered and only a slight depression in the ground gave a clue to its location. A mound of cobblestones on the west side of the site suggested an isolated structure.

The site datum elevation was determined from benchmark number 18MC30 located about a third of a mile to the southwest. The site was laid out and staked by four meter square grids. Excavation was undertaken by one meter square grids to allow provenience control of the architecture, the artifacts, and the various samples. Each grid was identified by the coordinates of its northeast corner, and the usual vertical increment of excavation was .10 meters.

Figure 3 is the planview map of the site. Elevation cross-sections are shown in Figure 4. The codes on the maps designate known walls, probable walls, possible walls, and the areas excavated by the field schools. The known walls were exposed sufficiently well to allow their outlines to be traced. The exposure was accomplished by field school excavation, by erosion, or by excavations that may have been carried out previous to the time of the field schools. Probable walls are logical extensions of known walls; on the other
Figure 3. Planview map of the Sterling site.
Figure 4. Elevation cross-sections of the Sterling site.
hand, possible walls are those that are strongly suggested by land contours.

ROOMS OF THE STERLING SITE

The characteristics of the Sterling site rooms, except for Room 3, fall within the traditional Chacoan pattern with respect to wall construction, room dimensions, and doorways. Room 3 was probably constructed at a later time than the main pueblo, as is discussed separately under its heading.

Wall Construction

The method of wall construction varied somewhat in different rooms. The walls of Room 6 were similar to Chaco Type 1 as described by Judd (1964, Plate 10): "Spalled sandstone slabs of wall width laid in abundant quantities of mud and often protected from the elements by closely placed stone chips." The inside face of the west wall of Room 6 is shown in Figure 5, and the outside face of the east wall is shown in Figure 6. The cross-section of the stub of a wall extending north from Room 6 is illustrated in Figure 7. This latter view shows that the slabs are only occasionally of full wall width, and as a result the walls do not exactly fit the idealized type description. But this amount of variation can certainly be expected from site to site, and is influenced by the availability of local building materials.

Another feature of the construction in Room 6 is that the chips between slabs are sometimes used to anchor the plastered facing. This is well illustrated by the wall on the south end of the room (Figure 8) where the adobe plaster has eroded just enough to expose the anchor chips.

An evolution in design seems to have been in process: On the inside south wall of Room 2 (Figure 9), the slabs are laid closer together with less adobe and more abundant use of chips than was the case in Room 6. The next step is illustrated by the south wall of
Figure 5. Inside face of the west wall of Room 6.

Figure 6. Outside face of the east wall of Room 6.
Figure 7. End of stub wall that extends north from Room 6.

Figure 8. Protruding chips used to anchor adobe plaster in south end of Room 6.
Figure 9. Masonry on inside of south wall of Room 2.

Figure 10. Masonry of the south wall of Room 8.
Room 8, shown in Figure 10. This approaches the classic Judd Type 2 masonry described as "Rubble veneered with casual blocks of friable sandstone dressed on the face only and chinked all around with chips of laminated sandstone" (Ibid.). Finally, the Type 2 design is clearly achieved, not in any excavated room, but in the wall of Kiva 4 shown in Figure 13.

Although it is possible that these different wall styles were constructed contemporaneously, it seems more likely that they expressed different building periods, as at Chaco Canyon. Hawley (1958, pp. 247-255) equates Judd's Type 1 to Chetro Ketl Type I, and gives dates of A.D. 945-1030 for the construction period. Similarly, she equates Judd's Type 2 to Chetro Ketl Type II, with a construction period of 1030-1070. Thus the full time span of construction suggested by the wall types is A.D. 945-1070.

Room Dimensions

Pertinent room dimensions are listed in Table 1. It will be noted that the six Sterling site rooms under investigation range from 5.9 to 6.9 meters in length and 2.3 to 4.8 meters in width. The average room is 6.1 x 3.6 meters. In comparison, a drawing of the Salmon site (Pippin and Irwin-Williams, 1972, p. 15) shows 52 non-elongated rooms with average dimensions of 4.6 x 2.8 meters. The range of room sizes at Salmon is 3.5 to 6.5 meters in length by 2.0 x 5.5 meters in width. Thus the few known rooms at Sterling average larger than the Salmon rooms, but the range in room sizes between the two ruins is comparable.

The standing wall heights are at a maximum in Rooms 6 and 7, where they extend up to 3.2 and 3.3 meters above the floor. If these were the original heights, as seems likely, the original ceilings were between 10 and 11 feet above the floor.

The tabulation of ceiling heights at Pueblo Bonito (Judd, 1964, pp. 241-163) shows that most of the rooms were from 6 to 9 feet in
<table>
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<tr>
<th>Item</th>
<th>Room Number</th>
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<tbody>
<tr>
<td></td>
<td>1 2 3 6 7 8</td>
</tr>
<tr>
<td>Wall Length</td>
<td></td>
</tr>
<tr>
<td>North</td>
<td>4.2 1.3* 1.0* 2.3 2.3 3.8</td>
</tr>
<tr>
<td>South</td>
<td>4.8 2.3 2.3 3.2 6.0</td>
</tr>
<tr>
<td>East</td>
<td>1.0* 4.5* 6.7 6.7</td>
</tr>
<tr>
<td>West</td>
<td>(5.0) 6.0 5.9 6.7</td>
</tr>
<tr>
<td>Approx. Standing Wall Height</td>
<td></td>
</tr>
<tr>
<td>North</td>
<td>1.3* 2.5* 3.2</td>
</tr>
<tr>
<td>South</td>
<td>2.7 3.2 3.2 2.7</td>
</tr>
<tr>
<td>East</td>
<td>2.6* 3.0* 3.3</td>
</tr>
<tr>
<td>West</td>
<td>1.5 3.2 3.3</td>
</tr>
<tr>
<td>Floor Level mbd.</td>
<td>(3.4) 3.2 2.4-2.6 3.6</td>
</tr>
<tr>
<td>Doorways, Approx. Dimensions</td>
<td></td>
</tr>
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<td>North Wall</td>
<td>W 1.35 1.10</td>
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<tr>
<td>South Wall</td>
<td>.80 .42 1.05</td>
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<tr>
<td>East Wall</td>
<td>.50 .52 1.25</td>
</tr>
<tr>
<td>West Wall</td>
<td>Unkn .85 .60</td>
</tr>
<tr>
<td></td>
<td>.60 1.60 .80</td>
</tr>
<tr>
<td></td>
<td>.60 1.00</td>
</tr>
</tbody>
</table>

Notes: Since no complete rooms were excavated, dimensions were obtained from several sources: field notes, the Runyan-Hadlock site map and by scaling from photographs.

* Incomplete Walls.
( ) Best estimate.

Table 1. Dimensions of Sterling site rooms.
height. However, a group of 19 first floor rooms in the southwest corner (room numbers 25, 105, 106, 117-127, 333, 334 and 337-339), that were added to the structure as part of the Late Bonitan second addition, have ceiling heights in the range of 10 to 12 feet. Judd (Ibid., p. 51) states that 44 tree-ring samples provide a range of dates for Late Bonitan houses of A.D. 1011 to 1126. The second phase of Late Bonitan construction should fall in the mid-portion of this time period, ca. 1050. Thus the ceiling heights at Sterling, including those in rooms of the early wall type, correspond to the high ceilings of the second phase of Late Bonitan construction.

Doorways

The doorway dimensions of the high ceiling Bonito rooms listed above were tabulated from Judd (Ibid., pp. 264-337). These are compared in Table 2 to the doorway dimensions, converted to inches, from the Sterling site.

<table>
<thead>
<tr>
<th>Site</th>
<th>Width</th>
<th>Height</th>
<th>Sill Height</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Av.</td>
<td>Range</td>
<td>Av.</td>
</tr>
<tr>
<td>Pueblo Bonito</td>
<td>25&quot;</td>
<td>15&quot;-27&quot;</td>
<td>42&quot;</td>
</tr>
<tr>
<td>(19 doorways in high ceiling rooms)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sterling</td>
<td>21&quot;</td>
<td>17&quot;-24&quot;</td>
<td>33&quot;</td>
</tr>
<tr>
<td>(7 doorways)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Doorway dimension comparisons.

The doorway dimensions between the high ceiling rooms of the two sites compare favorably, although the Sterling site sill heights, at least in the six rooms on which data are available, are all in the high sill group.

A discussion of individual rooms is now presented.

Room 1

Two exploratory grids were dug in the north end of this room.
There is no record of the floor level having been reached. However, the north wall and a part of the east wall were excavated to a level about a meter below the surface, exposing the top of a doorway through the north wall into Room 8. The southern side of the south wall was located during the excavation of Kiva 5, but it was apparently in a very deteriorated condition. The west wall is the north-south spine wall of the site.

The floor level is estimated as being the same as Room 8, in the vicinity of 3.4 meters below site datum (mbd.).

Room 2

The eastern half of Room 2 was excavated to floor level at 3.2 mbd. The eastern half of the south wall and east stub wall were fully exposed. The west wall had been uncovered enough by erosion or previous excavation to show a doorway at about the middle of the wall. However, its exact dimensions and the sill height are unknown.

No floor features were detected, but two beam impressions each 10 centimeters (4 inches) in diameter were found in the soil slightly above floor level. They were spaced about 30 centimeters apart, suggesting the size and spacing of some of the roof beams.

Cobblestones formed the wall foundations.

Tree-ring dates discussed under Kiva 4 indicate that this room may have been constructed shortly after A.D. 1035.

Room 3

The cobblestone mound west of the main house is designated Room 3. Fifteen one meter square grids were dug and the floor level was reached at 2.4-2.6 mbd., about one-half meter below the ground surface. Two manos rested on the floor in grid 8N-14W, and a red burned streak in the floor of 9N-12W seemed to mark the edge of a wall.

A mixture of sandstone slabs and river cobbles was encountered throughout the excavation. The percentages of each changed with depth as shown in Table 3:
Table 3. Percentages of cobbles and slabs by depth in Room 3.

The placement of slabs and cobbles at and near the floor level are shown in Figures 11 and 12 respectively. From the pattern of the stone placements, it appears that cobblestones formed the foundation of a circular structure about 2.5 meters in diameter. Its center is in grid 8N-13W. No doubt the wall was built mostly of cobbles since they were found in high density in the fill. This density is depicted in grid 10N-13W where the excavation did not reach the defined floor surface.

As shown in Table 3, the percentage of sandstone slabs reached its highest at and just below the floor level. The slabs in the fill above the floor suggest that some of them were used with the cobbles in the wall construction. However, the more important use of the slabs may have been as floor level work platforms both inside and outside the structure.

The burned soil area helps to define the outer limits of the wall and, in conjunction with the embedded upright slabs next to it, shows that a formal fire center was once located against the wall. Flat slabs on the floor near the manos denote a probable work area inside the structure.

There are clues which suggest that Room 3 was built at a different time than the main Chaco structure—perhaps during the later San Juan occupation. Supportive evidence is as follows:

The structure is isolated from the main house and the method of construction is different.
Figure 11. Sandstone slabs in Room 3 at and just below floor level.

Figure 12. Cobblestones in Room 3 at and just below floor level.
It seems clear that those who built the structure were not persuaded to expend the effort to obtain building material from distant sandstone quarries, but rather that they procured a few slabs from the deteriorating ruin and traveled only to the nearby river bottom, where cobblestones were available, to provide the remainder of their construction material needs.

The floor level is about one meter higher than that of nearby Room 6 and just a little below the floor level of the Mesa Verde type Kiva 5. This suggests that in the period after the Chaco abandonment, the ground level had been raised by repeated floods and aeolian deposits similar to those that placed two or more meters of overburden on top of Kiva 4. Thus a later time of occupation is likely for Room 3.

**Room 6**

This room, at the northwest corner of the present room block, was excavated to floor level in its south half. Its north end extends over the bluff that drops away toward the river channel. The northeast corner of the room had washed away, but there was enough of the north wall intact to show the existence of a doorway through that wall.

Room 6 was connected by doorways to all of the adjacent rooms and also to the outside of the house block on the west side. Three of the doorways are illustrated in Figures 5 and 8.

The masonry type suggests early Chaco period construction. No floor features are described in the field notes.

**Room 7**

Room 7 is adjacent to and south of Room 6. An interesting fact is that it had been filled with cobblestones. An east-west trench was dug across the middle of the room. The cobblestones persisted to a depth of about 2.5 mbd., approximately a meter above the floor. The field records do not go beyond 2.9 mbd. but, judging by the
floor level in Room 6, it is likely that the floor in Room 7 was in the vicinity of 3.6 mbd.

The cobbles were piled high against the east wall and sloped downward toward the west. Blow sand occupied the pocket between the cobbles and the west wall. The cobbles in the upper half-meter of the fill were in a matrix of loose, brown, loamy sand, below which they were embedded in a matrix of very hard adobe. This suggests that they had either been there a very long time--time enough for the adobe from the surrounding walls to have filled the interstices—or else that they had been placed intentionally in the adobe.

In either case, it is possible that the room was filled with cobbles at a time in the life of the pueblo when it was prudent to stabilize that corner of the house block from erosion or flood plain action.

The other possibility is that the room was used as a convenient receptacle for cobbles cleared from nearby agricultural fields.

The room was connected to Rooms 6 and 8 by doorways.

Room 8

Room 8 was not excavated during the field schools. However, it had been exposed by erosion or previous excavation so that three walls could be identified and described. The placement of the north wall was not evident, but its likely location is shown on the site map, Figure 3. Its west wall is shown in Figure 10.

This room had at least three openings, one each in the west, south, and east walls. Its floor level was probably at approximately 3.4 mbd., judging by the levels of adjacent Rooms 2 and 6.

Plaza Trench

A trench four meters long and one meter wide was dug in the plaza area halfway between the main house block and the large Kiva 4. It was excavated about .8 meters below the surface to a level of 2.1 mbd. No structural elements were encountered, but the excavation did not
reach the plaza living surface. This living surface level can be approximated at 3.5 mbd. by averaging the floor level of Room 2 and the top of the wall of Kiva 4.

KIVAS OF THE STERLING SITE

There were two identifiable kivas at the Sterling site. Kiva 4, a circular structure located at the east end of the site, just below the eroded lip of the flood plain, was explored only by an east-west trench excavation. Kiva 5, a smaller keyhole-shaped unit found near the center of the site, was fully excavated in the interior.

Each kiva contains a distinct set of architectural characteristics, which indicates that those who built them were of differing backgrounds. The small kiva is judged to fit the traditional Mesa Verde style, and the larger one the traditional Chaco style. This judgment is now analyzed in some detail.

McLellan (1969) in his doctoral thesis made a comprehensive statistical study of small kivas from the Mesa Verde and Chaco areas. He defined the regions (p. 72) as follows:

The Mesa Verde region includes the Animas, La Plata Mancos and McElmo drainages of the San Juan River in the Four Corners region. The Chaco Wash in north western New Mexico and adjacent regions to the south and west make up the Chaco Canyon Region.

In this analysis, he tabulated a number of kiva attributes that occurred in P I, P II, and P III times and carried out tests for statistical significance. He did not specifically define the dates that he associates with P I, P II, and P III, but since he included about one-half of his total of 86 Chaco kivas in the P III category, it is likely that his phases were based on the status of cultural development rather than on classical dates.

In his summary of results (Ibid., p. 137) he concludes that there was a great similarity between the kivas of both areas during P II times; that at Mesa Verde, most of the P II traits persisted into P III times; and that at Chaco during the P III period, there
was a somewhat radical change in kiva architecture resulting in significant differences in style between the two regions.

In order to focus the McLellan study onto the problems of the Sterling site, the author has summarized applicable data from the thesis (Ibid., pp. 77-102) into Tables 4 and 5 by converting numerical data into percentages. These tables compare key attributes and dimensions from the McLellan report with those observed in the two Sterling site kivas along with averages of dimensions taken from other kivas.

Kiva 4

Among the masonry structures exposed by erosion on the northern edge of the site is Kiva 4. The top of the wall of this structure is about two meters below the level of the uneroded ground surface that extends south of the kiva. The wall seems to be intact on a portion of its periphery, but much of the northwest quadrant of the kiva has been washed away leaving both the inside and the outside of a portion of the wall exposed (see Figure 13).

Only partial excavation was done on this structure. An east-west trench was dug to floor level, and an additional one meter square grid adjacent to the trench on the north side saw limited excavation. About halfway between the surface and floor of the kiva, a pit had been cut into the fill. Thus the kiva demonstrated two occupational periods for the site. The pit was fire-hardened and contained turkey bones, probably from a single bird.

Information on the kiva dating and architecture were obtained from the trench excavation and from the erosion-exposed walls. The masonry is similar to Judd's Type 2 as previously described, which dates at A.D. 1030 to 1070. Sixteen tree-ring samples from the Sterling site were submitted to the Laboratory for Tree-ring Research at the University of Arizona by Jo Smith, the Director of the San Juan Archaeological Research Center at Salmon Ruins. William J. Robinson (1981) wrote:
Figure 13. View of exposed wall of Kiva 4 looking northwest.

Figure 14. Theoretical reconstruction of Kiva 4 based on statistical attributes of small Chaco type kivas.
The collection included ponderosa pine, juniper and cottonwood. Only the first could be dated and the results are enclosed. Due to the fragmentary nature of the samples, none of the dates is a cutting date, but it would appear that the Sterling site is roughly contemporaneous with the Chaco occupation at Salmon Ruins.

The dates quoted are as follows:

<table>
<thead>
<tr>
<th>Inside</th>
<th>Outside</th>
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<tbody>
<tr>
<td>Room 2</td>
<td>0930 - 1030 vv</td>
</tr>
<tr>
<td></td>
<td>0986 - 1031 vv</td>
</tr>
<tr>
<td></td>
<td>0992 - 1035 +vv</td>
</tr>
<tr>
<td>Room 4</td>
<td>0996 - 1060 vv</td>
</tr>
<tr>
<td>(Kiva 4)</td>
<td></td>
</tr>
</tbody>
</table>

vv - there is no way of estimating how far the last ring is from the true outside.
+ - one or more rings may be missing near the end of the ring series whose presence or absence cannot be determined because the specimen does not extend far enough to provide an adequate check.

These dates indicate a Kiva 4 building date of about A.D. 1060, perhaps within the dates of the Judd Type 2 masonry.

The limited amount of excavation done on this structure placed a corresponding limit on the amount of architectural information that could be developed. The wall is about .70 meters thick and tapers toward the top. It rises 2.4 meters above the floor. A bench or banquette is built around the inner periphery, so that the diameter at floor level is 5.9 meters and that above the bench is 7.5 meters. The bench height is .56 meters. There was a shallow pit with some loose soil in the floor at about the center of the kiva, but the pit contained no clues as to its function.

Table 4 allows these dimensions to be compared with the McLellan statistics. The diameter and bench height of Kiva 4 fall within the most popular dimensions of McLellan's P III Chaco kivas. The bench width is at the maximum noted by McLellan and, significantly, all three of the dimensions are well within the range of twenty-six
<table>
<thead>
<tr>
<th>Item</th>
<th>Chaco Type Kivas</th>
<th>Mesa Verde Type Kivas</th>
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<tbody>
<tr>
<td></td>
<td>Sterling Pueblo</td>
<td>Bonito McElhaney's Study</td>
</tr>
<tr>
<td></td>
<td>Kiva 4 Av. Range</td>
<td>PII PIll</td>
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<table>
<thead>
<tr>
<th>Diam. above Bench</th>
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<tbody>
<tr>
<td>3.0 or less</td>
<td>18% 0%</td>
<td>3% 3%</td>
</tr>
<tr>
<td>3.1 to 4.0</td>
<td>21 23</td>
<td>20 37</td>
</tr>
<tr>
<td>4.1 to 5.0</td>
<td>4.70 42 15</td>
<td>4.34 4.57 4.95</td>
</tr>
<tr>
<td>5.1 to 6.0</td>
<td>11 31</td>
<td>48 35</td>
</tr>
<tr>
<td>6.1 or larger</td>
<td>7.50 7.99 9.70</td>
<td>25 17</td>
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<table>
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<th>Height of Bench</th>
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<td>.6 or less</td>
<td>.56 .66 .46 0</td>
<td>62 9 4</td>
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<tr>
<td>.7 to .8</td>
<td>30 33</td>
<td>36 24</td>
</tr>
<tr>
<td>.9 to 1.0</td>
<td>10 2</td>
<td>42 45</td>
</tr>
<tr>
<td>Greater than 1.0</td>
<td>1.07 60 2</td>
<td>1.25 13 27</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bench Width</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>.2 or less</td>
<td>.28 17 14</td>
<td>.25 .29 5 22</td>
</tr>
<tr>
<td>.3 or .4</td>
<td>.50 49</td>
<td>.36 .46 67 52</td>
</tr>
<tr>
<td>.5 or .6</td>
<td>.64 17 18</td>
<td>23 26</td>
</tr>
<tr>
<td>.7 or .8</td>
<td>.80 1.17 16 28</td>
<td>5 0</td>
</tr>
</tbody>
</table>

| Pilaster Height/Floor     | --- .91 1.79 1.35 | 1.30 1.60 1.85 1.68 2.08 |
|                          |                  |                  |
| Excav. Wall Height/Floor  | 2.40 ---          | 1.30 1.60 2.24 1.68 2.90 |
|                          |                  |                  |
| Estim. Ceiling Height/Floor| --- 3.20 2.44 3.96 |                  |

1. From data presented by Judd (1964, pp. 178-179) for kivas defined as Chaco type (ibid, p. 183) at Pueblo Bonito and in the size range of Kiva 4:
McElhaney numerical data. Boxes show highest dimensional percentages for each characteristic.

Table 4. Dimensional comparisons of Sterling Kivas 4 and 5 with Chaco and Mesa Verde type kivas at other locations.
Chaco type kivas from Pueblo Bonito summarized in the table.

Thus it is clear that Kiva 4 belongs within the class of small, late Chaco kivas.

A picture of the features that were not revealed by excavation can be obtained by referring to Table 5 and other referenced sources. The data suggest that Kiva 4 is likely to have contained the following:

Eight pilasters

Kiva 4 is in the midrange of the kiva diameters of its class at Pueblo Bonito. This size kiva tended to have eight pilasters according to Judd's compilation (1964, pp. 178-179).

A bench recess on the south or southeast.

Attribute 3, Table 5.

A sub-floor ventilator.

Attribute 4, Table 5.

A circular firepit without deflector.

Attributes 5 and 6, Table 5.

Possibly a vault in the floor on one side of the firepit.

Attribute 8, Table 5.

No sipapu and probably no niches.

Attributes 9 and 10, Table 5.

A cribbed roof with a center ceiling height of about 3.0 meters.

Kiva L at Pueblo Bonito (Ibid., pp. 178-183) was 18 feet (5.49 meters) in diameter and had six pilasters rising about 9 inches (.23 meters) above the bench. On these were laid fourteen successive cribbed layers of logs resulting in an estimated ceiling height in the center of 9-11 feet (3.0 meters). However, in considering kiva building methods, it should be noted that the fact that pilasters were present in a given kiva did not always denote cribbed roof construction. No doubt in some instances roofs were laid directly across walls without using the pilasters for support. Vivian (1959, pp. 52, 72) and Vivian and Reiter (1960, pp. 85-86) discuss the possibility that pilasters were used instead to support a lightweight cribbed ceiling framework.

Figure 14 depicts a theoretical reconstruction of Kiva 4 with the
<table>
<thead>
<tr>
<th>Item</th>
<th>Chaco Type Kivas</th>
<th>Mesa Verde Type Kivas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sterling</td>
<td>PII</td>
</tr>
<tr>
<td>1. Pilaster</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Masonry</td>
<td>29%</td>
<td>14%</td>
</tr>
<tr>
<td>Post &amp; Masonry</td>
<td>0</td>
<td>50%</td>
</tr>
<tr>
<td>Other</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td>Absent</td>
<td>46</td>
<td>36</td>
</tr>
<tr>
<td>2. No. of Pilasters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>79</td>
<td>3%</td>
</tr>
<tr>
<td>6-10</td>
<td>21</td>
<td>25%</td>
</tr>
<tr>
<td>8-10</td>
<td>0</td>
<td>42</td>
</tr>
<tr>
<td>3. Shape</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Keyhole</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Circular</td>
<td>30</td>
<td>7%</td>
</tr>
<tr>
<td>Circular (Bch Recess)</td>
<td>0</td>
<td>17%</td>
</tr>
<tr>
<td>Other</td>
<td>17</td>
<td>2%</td>
</tr>
<tr>
<td>4. Ventilator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floor Level</td>
<td>90</td>
<td>12%</td>
</tr>
<tr>
<td>Subfloor</td>
<td>10</td>
<td>5%</td>
</tr>
<tr>
<td>Absent</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5. Deflector</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present</td>
<td>71</td>
<td>27%</td>
</tr>
<tr>
<td>Absent</td>
<td>29</td>
<td>73%</td>
</tr>
<tr>
<td>6. Firepit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Circular</td>
<td>43</td>
<td>55%</td>
</tr>
<tr>
<td>Rectilinear</td>
<td>39</td>
<td>12%</td>
</tr>
<tr>
<td>Other or Absent</td>
<td>18</td>
<td>5%</td>
</tr>
<tr>
<td>7. Ashpits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present</td>
<td>28</td>
<td>0</td>
</tr>
<tr>
<td>Absent</td>
<td>72</td>
<td>100%</td>
</tr>
<tr>
<td>8. Vaults</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present</td>
<td>0</td>
<td>48%</td>
</tr>
<tr>
<td>Absent</td>
<td>100</td>
<td>52%</td>
</tr>
<tr>
<td>9. Niches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 or 2</td>
<td>24</td>
<td>14%</td>
</tr>
<tr>
<td>3 or more</td>
<td>2</td>
<td>14%</td>
</tr>
<tr>
<td>Absent</td>
<td>72</td>
<td>72%</td>
</tr>
<tr>
<td>10. Sipapu</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present</td>
<td>53</td>
<td>6%</td>
</tr>
<tr>
<td>Absent</td>
<td>42</td>
<td>94%</td>
</tr>
</tbody>
</table>

* Summary of data from McLellan (1969, pp. 77-102) relating to PII and PIII Chaco and Mesa Verde kivas. Percentages were calculated by author from McLellan numerical data. Boxes show highest percentages for each characteristic.

Table 5. Attribute comparisons of Sterling Kivas 4 and 5 with Chaco and Mesa Verde type kivas studied by McLellan.
characteristics just discussed.

Kiva 5

A photograph of Kiva 5 at the completion of its excavation is shown in Figure 15. The excavation data and the study of similar kivas provide the design details that are shown in Figure 16.

The kiva is 3.84 meters in diameter at the floor level. The walls rise from the floor about .90 meters and then expand to form a .25 meters deep banquette or shelf around most of the perimeter. On the south side, the banquette extends into a deep recess, but at a slightly higher level. The front wall of the recess is set back from the floor circle about .40 meters.

A floor level ventilator shaft pierces the base of this recessed wall and continues radially outward to a point beyond the recess where it turns vertically and terminates at the ground level. The ventilator opening inside the room is .56 meters high and .38 meters wide. The ceiling of the shaft is composed of small juniper logs about .05 meters in diameter. These serve to support the recess platform above the shaft. The nearest vertical wall of the vent is a .13 meters thick stone wall laid to the back wall of the kiva recess. Thus the recess and the vertical ventilator shaft do not share a common wall, but their walls are laid immediately adjacent to one another.

A masonry deflector, .25 meters thick by .64 meters high and about a meter long, was placed on the floor approximately a meter into the kiva from the opening of the ventilator. About .30 meters beyond this is the firepit. It is rounded in shape, about .60 meters across and .43 meters deep. A portion of the floor surrounding the pit was laid with sandstone slabs to form a hearth, while the bottom of the pit was lined with cobbles. The sides are burned clay.

No sipapu was found in the floor. Well up on the banquette wall, opposite the ventilator opening, is a niche about .25 meters square and .28 meters deep. It was plastered with adobe on the inside.
Figure 15. Kiva 5 at the time of completion of excavation.

Figure 16. Design details of Mesa Verde type Kiva 5.
Three pilasters were found on the banquette. They varied in height above the floor from 1.30 to 1.60 meters. Their original height could not be determined because the pilasters as well as the walls had been eroded down to or below present ground level. The field notes state that the pilasters were constructed around large log cores, although pictures of the external stone work do not reveal this.

From their placement, it seems almost certain that there were originally six pilasters, but the wall, particularly along the east and northeast perimeter of the kiva, was in such poor shape as to make it impossible to identify features in that portion of the structure. The pilasters in evidence were about .76 meters wide by .20 meters deep and were set back slightly from the inside edge of the banquette.

Reference is now made to the comparison of Kiva 5 with the statistics developed by McLellan and summarized in Table 5. It will be noted that almost all of the kiva's attributes, with three exceptions, occur in the highest percentage entries of Table 5 for the Mesa Verde kivas from both P II and P III times. The exceptions are as follows: The Sterling kiva had no sipapu, whereas a sipapu was found in 67% of the P II, and 58% of the P III kivas of the McLellan study; more than one or two niches predominated in P III times, but Kiva 5 had only one niche; and the pilasters of Kiva 5 have log cores. Log cores are largely a Chaco trait; nevertheless, three P III Mesa Verde kivas represented in the McLellan data contain this construction element.

In considering key dimensions, Table 4 shows that there is a good match between Kiva 5 and the McLellan data in diameter and bench dimensions. Thus this kiva embodies the architectural traits that were popular in the Mesa Verde area during both P II and P III times. However, additional information is available from Lister and Lancaster to determine the time frame of probable construction with more accuracy.

Lister (1966, pp. 77-87) postulates eight stages in Mesa Verde kiva development, using as his examples kivas dug in four villages of
the Far View Group at Mesa Verde National Park. Stages 7 and 8, as represented by kivas A and B respectively at Site 499, seem to be the best fit from this source for the detailed features noted in Sterling Kiva 5. Nevertheless, neither fits quite perfectly. Kiva 5 has a straight wall at the back of the recess, whereas that of 499A is curved. Also, the location of the ground outlet of the ventilator shaft in Kiva 5 seems to be located in between those shown for 499A and 499B. The Kiva 5 ventilator is constructed with an extra wall of masonry laid adjacent to the back wall of the recess to form its lining.

The construction of Site 499 is believed to have been between A.D. 1100 and 1150 (Ibid., p. 89).

Lancaster (1950, pp. 65-81) proposes six steps in the development of Mesa Verde kivas. Here again the late steps, 5 and 6, provide the best fit with Kiva 5.

Step 5 is represented by Sun Point kiva, dated as the late phase of P III (Ibid., p. 110). Step 6 is represented by Kiva C at Cliff Palace, described by Fewkes (1911, p. 53). O'Bryan (1950, p. 14) provides tentative dates for Cliff Palace as A.D. 1050-1275; whereas Breternitz (1966, p. 37) gives some tree-ring dates of A.D. 1210 to 1273. Since Kiva C is the last step in development noted by Lancaster, its construction date would appear to be in the mid-1200's. This corresponds with dates obtained on Kivas A, E, H, K, O, Q, and R at Long House, all having similar design features to Kiva C at Cliff Palace. These dates range from 1223 to 1280 (Cattanach, 1980, pp. 409-413).

From these facts, one may conclude that Kiva 5 represented architectural features that were in vogue in the Mesa Verde area ca. 1100-1275, with the most likely time for its construction being the mid-1200's.

Some important dimensional elements of Kiva 5 were lacking because of the site condition, but it was felt that this information gap could be filled by a study that went beyond the McLellan
Twenty-four kivas in the Mesa Verde area that contained most of the known attributes of the Sterling Kiva 5 were identified. Several of their key dimensions are summarized in Table 4.

The table shows that the Kiva 5 diameter of 4.34 meters is very close to the Mesa Verde sample average of 4.57 meters; that the banquette height of .90 meters is close to the average of .99 meters, but that the banquette width of .25 meters is significantly smaller than the average of .36 meters.

Other dimensions from the study suggest that the tops of the Kiva 5 pilasters above the floor may originally have been higher than the maximum recorded in the excavation of 1.60 meters. The minimum height of pilasters in the sample is 1.68 meters and the maximum height of a standing wall is 2.90 meters. If one assumes that a cribbed roof such as was described by Cattanach for Kiva Q at Long House (Ibid., pp. 104-115) was laid on 1.7 meter high pilasters, the ceiling height at the center of the kiva would be a minimum of three log diameters higher, or about 2.45 meters (8 feet). Higher pilasters and more cribbed layers of logs would raise the ceiling to yet a higher point.

The surroundings of Kiva 5 also shed some light on its history. It was probably built within an existing Chaco room. The wall outside the kiva on the west side was exposed only on the top. It is .70 to .80 meters thick and is a part of the spine wall of the site. A wall on the north was encountered during excavation and was identified in the notes as Chacoan, but it was not described in further detail. The wall on the south is of double course construction about .40 meters thick. It forms the south wall of the ventilator shaft, but it had been built, plastered, and then smudged by smoke before the ventilator was emplaced, thus further confirming that the kiva was built into an existing room.

No indications were found of a wall on the east, but since much damage had occurred to the northeast part of the kiva wall, any
enclosing eastern wall was probably also damaged and may be buried deep beneath the unexcavated surface.

Figure 15 shows that the kiva masonry is predominantly of shaped blocks with a marked tendency toward coursing. The blocks are mostly laid in contact with each other, with a minimum of adobe mortar. The appearance is similar to the "Non-Chaco" types of masonry described for the Lowry ruin by Martin (1936, pp. 28, 122, and Plate XXVIII) and to Mesa Verde masonry pictured by Kidder (1924, Plate 20). It is also similar in description to Types 1 or 2 masonry at Long House as defined by Cattanach (1980, pp. 12-13). These latter two types are similar to each other except that Type 2 is thicker than Type 1, containing two interlocking courses in thickness. The field sketches of Kiva 5 suggest more than one course of thickness in some areas, but definite information is not available.

The difference in masonry styles between the kiva and the other rooms of the site, and a floor level for the kiva well above that of nearby rooms, indicate reoccupation of the site by peoples of a different tradition after its original abandonment.

Use of Kiva 5

Some interesting insights into the use of the kiva are suggested by the artifacts resting on the floor, on the banquette, or in the niche. The artifact locations are shown in Figure 17. The two items found in the southern recess of the banquette were a bone awl that was propped upright against the south wall, and a red-stained, flat stone evidently used to grind pigment. Additionally, a chopper made from a cobble was on the banquette along the west wall.

Resting on the floor next to the vent opening was a .36 x .23 x .03 meters worked slab, and on the floor just east of the deflector was another slab that measured .36 x .30 x .05 meters. One can only conjecture at the use of these slabs, but it may be that one or both were used for air control at the mouth of the ventilator shaft.

A small bone needle was recovered from within the niche. The
Figure 17. Artifacts and their locations in Kiva 5.
remaining items were associated with food preparation or storage activities. Among these items were six manos resting on the floor in the northeast quadrant of the kiva; much of a broken Mesa Verde corrugated jar that was on or near the floor adjacent to the firepit on the northwest side; and a large sherd of a Mesa Verde B/W bowl recovered from the floor. This bowl was decorated with an inner wide band followed by four narrow bands similar to several bowls recovered from Long House (Cattanach, 1980, Fig. 158 a,b,c, and h; Fig. 159 a, e, and f; Figure 160).

These artifacts suggest that among the activities taking place in the kiva were the preparation of ceremonial paint; clothing manufacture or repair; cooking; and possibly some meal grinding, although this latter activity was supported by the presence of manos only, and not by the presence of metates.

Kiva 5 shows enough evidence of those tasks that are generally accepted as female activities—cooking, mealing, and working on clothing—to provide some support to those scholars who suggest that prehistoric kivas were not the exclusive domain of the male.

SUMMARY AND CONCLUSIONS

The Sterling site was a Chacoan community located on the south side of the San Juan River on what is now the Bolack ranch near Farmington, New Mexico. It was probably contemporaneous with the nearby Salmon and Aztec communities. All three ruins show evidence of two main periods of occupation spaced, perhaps, one hundred years apart and ending at the time of the general abandonment of the Four Corners region.

Over the years, the Sterling site has suffered substantial erosion and may now contain only a small fraction of its former number of rooms. Its current size is estimated at about twenty to twenty-five rooms and two to four kivas.

A small part of the currently existing ruin was excavated by the Archaeological Society of New Mexico field schools in 1972, 1973, and
1974. This included the partial excavation of five rooms and two kivas. Sufficient information was obtained to characterize the site's occupancy and, with some limitations, its time frame.

Judging by the early masonry in some of the rooms, the site appears to have been started prior to A.D. 1030. Tree-ring dates from Room 2, whose masonry is probably later than the earliest type noted in Room 6, indicate construction after 1035, whereas Kiva 4 with its definite Type 2 Chaco masonry has a tree-ring date following 1060. A spine wall running north and south suggests that there was some advanced planning of the house block carried out during this period of construction.

The original occupants were peoples of the Chacoan tradition, and it is likely, based on similar histories at Aztec and Salmon, that the occupants abandoned the ruin ca. 1100. Local settlers with Mesa Verde tastes, indigenous to the river basin, resettled the site a century or more later.

The construction details of Kiva 5, when compared to other Mesa Verde kivas, indicate a building date for this unit of between 1220 and 1270. As of now, no dates for the abandonment of the site by this group are available. However, we do know that the entire region seems to have been abandoned by about 1300.

Since this initial report has dealt primarily with the architectural features of the Sterling site, and only to a very limited degree with its artifacts, the reports that will follow should fill out the picture and provide additional and substantial insights concerning this important ruin.

ACKNOWLEDGEMENTS

On behalf of the Archaeological Society of New Mexico, the author wishes to express sincere appreciation to former Governor Tom Bolack and his son Tommy for their generosity in allowing the ASNM to conduct its 1972, 1973, and 1974 field schools at the Sterling site on their B-Square ranch. The campsite and other support that
they also provided added immeasurably to the success of the programs.

Then, too, our warmest thanks go to Harry Hadlock, Chairman of the Field School Committee, who was the dynamo behind the project, saw to the key arrangements, and helped with the management of the field sessions.

Cynthia Irwin-Williams deserves our special mention for providing a framework for the field schools within the San Juan Project.

We gratefully acknowledge the keen interest of Jim Judge and Bob Powers of the Chaco Center, and Steve LeBlanc of the Archaeological Conservancy for their support and gentle prodding that helped to get the reporting phase of the project underway.

Other initiatives merit special thanks: Bill Sundt, President of ASNM, took action to move the Sterling project into the analysis and reporting phases; Tom Windes and Tom Lyons provided important data sources; and Jo Smith, Director of the Salmon Museum and custodian of the Sterling site records and artifacts, marshalled the material for convenient study.

Ben Robertson and John Roney, acting as successive Field Directors, deserve our commendation for providing the necessary leadership to the field school students whose good natured attitudes, hard work, and archeological skills made the entire project possible.

As the author, I offer my personal thanks to Bob Powers and Harry Hadlock for the use in this study and report of the photographs that they took prior to the restabilization of the site in 1981; and to my wife, Margaret, goes my gratitude and special appreciation for her editorial assistance and suggestions.

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TABIRA: OUTPOST ON THE EAST

JOHN P. WILSON, ROBERT H. LESLIE, A. H. WARREN

INTRODUCTION

Pueblo Blanco, LA 51, is the easternmost of the historical Salinas pueblos. It lies along the south margin of the Estancia Valley about 14 miles northeast of Gran Quivira (Fig. 1). Like the other pueblos, it had a mission church and saw occupation to almost the time of the Pueblo Revolt. The name Pueblo Blanco was in use by the 1870s and although Adolph Bandelier knew of the site he didn't visit it (Bandelier, 1892, p. 278). H. P. Mera described LA 51 very briefly in two of his publications (Mera, 1940a, pp. 15-17; 1940b, pp. 196, 298).

The ruin is on a gently rolling slope, surrounded by a juniper savannah that grades into a woodland (Fig. 2). At the time of occupation, the nearest permanent water supply was a spring 1.5 miles to the south (Caperton, 1981, p. 9). This spring no longer exists. The pueblo is compact, built from unshaped pieces of white sandstone, with about 150 ground-floor rooms. Apart from a dozen or so vandalized rooms, the ruin mounds are about in the same condition everywhere, giving no clue as to which dwelling areas might be older than others. Rubble heights suggest that most room blocks originally had three stories. Numerous shallow depressions around the pueblo may represent water traps, adobe pits, pit house or kiva depressions, or even small terraces. The property is part of Cibola National Forest.

In 1957 and again in 1959 Pueblo Blanco was the scene of limited archeological excavations, the first by persons from Hobbs, New Mexico (Cress, 1957), and the second by the Museum of New Mexico (Stubbs, 1959; Lovell, 1963). The Museum uncovered a small church or chapel, while the Hobbs group confined their digging to the uppermost 18 inches in the northwest and northeast refuse mounds (Fig. 2). The 1957 work was all carried out during two weeks in August. Although
reported in the first Lea County Archaeological Society Bulletin, it was not a Society-sponsored project.

The Cress (1957) report listed a profusion of material culture items of both Indian and Spanish origins. The artifacts were not described, and unfortunately many have since been lost or dispersed. In 1971, Wilson asked Leslie if the remaining historical objects might be made available for study. This was done, and all artifacts in Leslie's possession, aboriginal as well as historical, have now been donated to the Museum of New Mexico for curation. The items not donated to the Museum are no longer available for study.
The collections from the 1957 work deserved a more comprehensive report. In 1972, the three authors decided to write one from the information still available. Wilson was made responsible for the historical aspects, Warren for the ceramics, and Leslie for the aboriginal artifacts. This paper is the result of that decision. Since the Cress (1957) account is difficult to obtain, it is reprinted here as an Appendix.

In order to have some first-hand familiarity with the site, Wilson visited Pueblo Blanco on May 20, 1972, accompanied by Mr. Carl Johnson, then Regional Archeologist for the U.S. Forest Service. Mr. Johnson also encouraged preparation of this report.
Figure 2 is redrawn from the dimensioned sketch made on the May 20 trip; Mera's (1940b, p. 298) published plan shows the wall outlines as more regular than they actually are. The projected mission location shown in Figure 2 is based upon a sketch which Stubbs penciled onto Mera's published plan in the Laboratory of Anthropology Library copy of Mera (1940b), using proportions for the church scaled from Stubbs (1959, Fig. 2). The accuracy of this procedure is questionable and for a more correct location a re-excavation of points along the walls would be necessary.

HISTORICAL BACKGROUND

Tabira, the pueblo long known as Pueblo Blanco, is the most recently identified of the 17th century Salinas missions. Its documentary history is sparse; the essential aspects have been outlined by Scholes (1940b, pp. 283-284) and by Howard (1960). Even so, not all has been said and a restudy of historical records and maps may clarify further the history of this mission.

Howard (1960, p. 69) noted that a historical site known only as LA 572 lay some miles north of Gran Quivira and east of Mountainair, New Mexico. Site survey records at the Museum of New Mexico make it clear that LA 572 is only a mistaken plot for an early surface collection made at LA 51.

There are no dated tree-ring specimens from LA 51. As demonstrated by the ceramic study, LA 51 was occupied from the 13th century through the Glaze A-F periods, with an abandonment during the early 16th century. Its occupational history therefore parallels that of Gran Quivira. Tabira has, in addition, some probable early 18th century European and Oriental ceramics. Since the most recent potsherd from Pueblo Colorado (LA 476), four miles to the south, was a Glaze E specimen (Warren, 1969; 1981b, p. 72), the Pueblo Colorado people could have joined Pueblo Blanco when Colorado was abandoned around A.D. 1600.

For many years Gran Quivira was assumed to be the ruins of
Tabira, an identification that apparently started with Bandelier. On close examination, Bandelier's arguments depended more on assertion than upon weight of evidence, but for almost 50 years they were not questioned (Bandelier, 1890, pp. 131-132; 1892, pp. 282, 290-291). His major error was in assuming that the names Jumanos and Pueblo of the Jumanos were either other terms for Tabira or referred to the lodges of a nomadic group, the Jumanos. Bandelier himself began to transcribe the single most useful body of information about the Salinas pueblos, but only in 1911. Following publication of Bandelier's transcripts (Hackett, 1937), Kubler (1939) soon established that Gran Quivira was actually the 17th century mission of Las Humanas and that Tabira was a distinct but unlocated site.

The next step was to identify Tabira with a known ruin. Scholes (1940b, p.284) and later Howard (1960) accomplished this by excluding those sites that could be ruled out by their age or location. This left Pueblo Blanco as the probable site of Tabira, an identification confirmed by the discovery of a small church there (Stubbs, 1959).

Scholes observed that Tabira was probably a Jumano-Rayado settlement recorded in the Oñate documents. If Gran Quivira was the largest settlement, the one known as Cueloce, then Tabira must have been one of the two smaller villages, either Patuotzey (Pataotzie; Pataoce), or Genouey (Genobey; Xenopue) (Scholes 1940b, pp. 276-278; Hodge, Hammond and Rey, 1945, p. 265; Vivian, 1964, p. 22). We do not know which one, since these names were not used after 1598.

The name "Tabira" first appeared in a list of New Mexico missions from 1641:

The pueblo of Abo has a church and convento, organ and choir, and provision for public worship. It has two visitas, the one for the Jumanos, the other is Tabira. It has 1580 souls under its administration (Scholes, 1929, p. 48; 1944).

The origin of the name Tabira has not been suggested. There is
a small Portuguese city with the same name--Tavira--on the south Atlantic coast. The traditional economic base of Tavira has been agriculture with fishing as a second industry, but a more ancient enterprise also continues:

Along the sea-edge of the Coastal Plain...salt evaporation is simple and profitable. Small salt pans are easily made along the sea front or within tidal reach on streams. ... the largest and most ancient are those near large cities in the business of fish packing. Especially numerous and large are those of the Cape Santa Maria area and those near Tavira and Castro Marim (Stanislawski, 1963, pp. 38-39, 88, 132-139).

Some early New Mexico padre may have seen the proximity between the salt lakes in the Estancia Valley and the nearest occupied pueblo as reason enough to give the pueblo an appropriate hispanic name, Tabira.

Fray Estevan de Perea's Relación of 1632 indicates that no serious efforts to missionize Gran Quivira (Las Humanas) were made before 1629 or 1630 (Bloom, 1933, pp. 225-226). Tabira was even more remote. The 30 new friars who arrived in New Mexico with the 1629 mission supply caravan gave the missionary program renewed impetus, so that by October of 1633 Father Perea could write, in a complaint dated at Curac (Quarai) mission,

One poor religious who is in one of the most miserable and needy conversions describable, because it is a post among the unconquerable cannibal heathen, where there is not even water to drink, and whither food has to be taken to him from neighboring convents (one of which is this one), ...(Hackett, 1937, p. 130).

The implication in this uncomfortable description is that the religious was stationed somewhere further to the east, either at one of the Jumanos pueblos or beyond them among the Apaches Vaqueros (Hodge, Hammond and Rey, 1945, pp. 91-92).
From a bottom date of ca. 1629 until the Pueblo Revolt in 1680, we have not one document from Tabira nor any direct evidence for either the name of the mission or of any priest who served there. In all probability Tabira was a *visita*, meaning that it was administered by a priest who resided at another mission. Howard (1960) reconstructed the history of the Tabira mission, but there is both more to the story and less certainty about it.

Captain Nicolás de Aguilar was a controversial character, "Attila" to the priests, but an ex-*alcalde mayor* of the jurisdiction of Las Salinas and well-versed in the affairs of that district. In 1664 he testified that:

.... the feast of San Buenaventura has been celebrated for many years in the pueblo of Humanas, because Fray Francisco de Acevedo, who has administered those pueblos for thirty years or more, had always kept the feast of San Buenaventura, always taking Indians from the chapel of the pueblo of Abó which is of the same nation, and he built a church in the said pueblo of Abó and in Humanas and Tabira. ...(Scholes, 1940b, p. 281).

Father Acevedo came to New Mexico with the 30 friars that arrived in April, 1629, and he was among the ministers whom Perea, then custodian of the New Mexico missions, allotted to the Piro and Tompiro pueblos (Bloom, 1933, pp. 225-226). However, one of the fathers so assigned--Fray Tomás de San Diego--actually served at Santa Fe, 1629-1632. Acevedo's administrative role in the Salinas district is not clear, since he apparently never learned the native language, nor is he documented as *guardián* or *doctrinero* at Abó although recent writers believe that he was a minister there (Hackett, 1937, p. 163; Scholes, 1940b, p. 281; Hodge, Hammond and Rey, 1945, p. 264; Toulouse, 1949, p. 3; Howard, 1960, p. 70).

In Fray Agustín de Vetancurt's *Teatro Mexicano*, written in the 1690s, there were two statements that pertained to both Father Acevedo and Tabira and which supported Aguilar's claim that Acevedo built the church at Tabira:
61. San Gregorio Abbo. It is situated in the
Valle de las Salinas, where within a ten-league
circuit all of the rainwater is transformed into
hard salt. This they take out as slabs and carry
through all the Custodia, and even beyond for the
mines of Parral. Including two small pueblos,
Tenabo and Tabira, 800 persons were served by a
Religious. Thus far towards the east the adminis­
tration extends, although fifteen leagues from
there are some Xumanas, who were ministered to
from Quarac. Here reposes the venerable Father
Fray Francisco de Azevedo, whose life is in the
Menologio under the first of August, and here con­
cludes the account of that which was (Vetancurt,

August 1. - The venerable Father Fray Francisco
de Azebedo, a native of Sevilla, the son of Gonzalo
Garcia del Terrero and Isabel de Bargas, assumed
the habit in the Convento de Mexico on January 10,
1625, according to what appears in the Book of
Professions. With a zeal for the salvation of
souls he went to New Mexico, where he baptized
many people and with an exemplary life and in­
struction he showed them the road to Heaven. He
built the church at San Gregorio in Abbo, where the
salinas are, and two other, lesser churches in the
two small pueblos of Tenabo and Tabira. His labors
in the vineyard of the Lord came to a glorious end
the first of August in the year 1644 (Vetancurt,

Acevedo did not die in 1644; he was the minister at Alamillo in 1659,
served at Santo Domingo as late as 1663-1664, and was included in a
list of friars as late as October, 1665, but the 1672 mission as­
signments do not name him (Scholes, 1930, pp. 403-404; 1937, p. 417;
Three friars who testified against Governor López de Mendizábal in
1660-1661 gave Fray Francisco's age variously as 90, more than 80
and about 60, López himself saying 90 (Hackett, 1937, pp. 147, 159,
184, 200). Vivian (1964, p. 26) perceived that Father Acevedo's
long service raised a question as to whether he should be credited
with the construction of the chapel of San Isidro (ca. 1629-1630)
at Las Humanas or the church of San Buenaventura there, ca. 1659-1660. The same question relates to Tabira, since that church had been rebuilt. The good father's record of mission assignments, his advanced age, and also his rumored senility by 1660 point to his involvement with only the original churches (Hackett 1937, p. 216).

If Acevedo's credit for the "lesser church" at Tabira seems established, not so is its construction date (Howard, 1960, p. 70). Benavides' claim of "six very good convents and churches" in the Tompina nation might have had reference to Tenabo and not to Tabira as the sixth mission (Hodge, Hammond and Rey, 1945, pp. 65-66; Howard, 1960, p. 70). The 1641 listing of Tabira as an Abó visita implied facilities for worship by this date. With the evidence we can bracket construction of the first church to sometime between 1629 and 1641.

Howard (1960, p. 70) noted that the Bernou map of ca. 1678-1683 showed a "S. Diego" in the proper location for Pueblo Blanco. We presume that this was the name for the Tabira church, but no documents confirm this. Since Fray Diego de Santander is credited with building the church of San Buenaventura at Las Humans ca. 1659-1661, he may also have reconstructed the Tabira mission. A letter dated July 20, 1660, was in fact addressed to him as "doctrinero of Umanes and Tavira" (Hackett, 1937, pp. 160-163). However he was gone by 1662, reassigned to San Marcos (Scholes and Bloom, 1945, p. 65).

Life in Tabira probably differed little from the routine in other Salinas district pueblos; see Scholes (1935), Vivian (1964, pp. 7-30), Wilson (1973), or Tainter and Levine (1982). Trade with the Apaches of Seven Rivers centered at Tabira and Las Humanas (Scholes, 1937, pp. 396, 401; Hackett, 1937, p. 143). New Mexico's exports during the 17th century--hides, coarse woolen cloth, cotton mantas, piñon and salt--were either produced or gathered by Indian labor, and the Salinas pueblos were an important source of this labor.

Such commercial traffic might be on either mission or private accounts, with the governors of New Mexico taking a prominent role. One trade invoice from 1638 listed 36 fanegas of piñones, a known export
for the Salinas area, shipped on the account of Governor Luis de Rosas (Bloom, 1935). By 1660 Governor López de Mendizabal was able to ship out 300 fanegas of piñon, while the next summer an additional 275 fanegas were found in his house; and in 1662 Governor Peñalosa seized another 100 fanegas of Lopez' nuts (Scholes, 1937, p. 391; 1940a, pp. 254, 262, 265). Claims presented in 1661 said that Indians from Abó had carried maize from Tabira and Las Humanas to the house of Nicolás de Aguilar, and that Tabira natives loaded salt at the salt marsh and took it to the house of Francisco Gómez along the Rio Grande (Scholes 1937, p. 394). Governor López also had a hand in the salt traffic, and his successor in office attached some 87 fanegas of López' salt, left at Abó (Hackett, 1937, pp. 188, 254). Goods sent out by the missionaries and other individuals were on their own accounts; proceeds from the sale of piñon nuts bought a fine organ for the Abó mission (Ibid., p. 192).

Other remarks touch upon Tabira at this same time. An Indian man and woman from Tabira, guilty of sexual misconduct, and three women who were concubines in the pueblo of Tabira were brought before alcalde mayor Nicolás de Aguilar. He declined to punish them (Scholes, 1937, p. 411; Hackett, 1937, pp. 159-160, 176, 184). Interestingly enough, Las Humanas was considered a new conversion in 1660, one which had not had a resident minister for some 29 years, and Tabira was now a visitation of Humanas (Hackett. 1937, pp. 135, 145, 159-163). A report from 1663-1666 listed one friar serving in the convento of San Buenaventura at Las Humanas "and in a visita which is also in the mountain area" (Scholes, 1929, p. 54). In 1669 Fray Joseph de Paredes was guardian at Las Humans, but the 1672 record of appointments mentioned neither Humanas nor Tabira; Paredes was then at Senecú (Hackett, 1937, p. 273; Bloom and Mitchell, 1938).

We are told that twice in the year 1670 the Apaches, apparently from the cordilleras of the Seven Rivers district, sacked the pueblo of Las Humanas, and on their September 3 foray they also profaned
and plundered the church (BN, Ms. 19258, letters of Governor Juan de Medrano, June 5 and September 11, 1670, also certification of Governor Juan de Miranda, July 27, 1671; Scholes, 1940b, p. 283). Perhaps Tabira met a similar fate. If these events actually happened then some unknown friar must have returned to Las Humanas and rebuilt the church. Its woodwork, including huge carved beams and even part of the roof, remained as recently as the 1880s (Carleton, 1855; Bandelier, 1883, pp. 30-31; 1892, pp. 285-286). It seems scarcely credible that anyone could have maintained a reconstruction program during the 1670s, after the claimed death by starvation of 450 Las Humanas natives in 1668 (Hackett, 1937, p. 272). Reconciling the reports of the 1670 calamities with the church condition at Gran Quivira in the mid-19th century may be a key to the last years of the Las Humanas mission, and the one at Tabira as well.

Whatever the fate of the missions, the pueblos themselves remained viable for a time. Fray Francisco de Ayeta's petition of early September, 1676, gave the authorities in Mexico their first hint of impending disaster; five settlements had been totally destroyed and the churches burned by the Apaches and their allies. He named only two: Hawikuh (probably in 1673) and Senecú, the latter subsequently resettled (AGN, PI-37, Exp. 7; Hackett, 1912, pp. 146-150; Adams and Chavez, 1956, p. 197). Bandelier alleged that in a letter of April 28, 1705, Fray Juan Alvarez (who served in New Mexico prior to the Pueblo Revolt) placed the loss of the six Salinas pueblos immediately before the slaughter at Senecú and after the massacre at Hawikuh (Bandelier, 1890, p. 131). Alvarez' actual letter was only concerned with the circumstances and is indefinite about the time (Wilson, 1973, p. 25). Bandelier's allegation here is in error.

In another petition of May 10, 1679, Father Ayeta said that six pueblos were depopulated "from the year 1672," these being Curac, Abó Las Humanas, Chililí, Las Salinas and Senecú (Hackett, 1937, p. 298). Almost one hundred years later Father Vélez de Escalante (1962, p. 307)
said much the same: that a few years before the Revolt the enemy Apaches destroyed seven pueblos; these were Hawikuh, Chililti, Tajique, Quarai; and Abó, Humanas and Tabira of the Tompiros. By use of such expressions as "the pueblo of Las Salinas" Ayeta probably meant the pueblo of Tabira, a name that he did not use (Hackett, 1937, pp. 298-299).

Father Ayeta had charge of the mission supply service from 1674, coming and going between New Mexico and New Spain every two to three years. His petitions are a major source of knowledge about this decade. He left New Mexico some time in the spring of 1676, arrived in Mexico City in late August or early September that year, organized the next caravan at what must have been a record pace, and left the capital on February 27, 1677, returning to New Mexico just nine months later (Scholes, 1930, pp. 400-401; Hackett, 1937, p. 297).

During his year and a half absence the pueblos and frontiers of Las Salinas and Senecú had been ruined; most were terrorized and depopulated, with their former inhabitants now wandering about, all because of Apache attacks (Hackett, 1937, pp. 288, 292, 297). It was probably at this time that the pueblo of Las Salinas, ex-Tabira, was lost with its more than 300 families (Ibid., pp. 297-298).

This claim that the Apaches were the cause of all their troubles looks more like Spanish blame-shifting than a complete explanation (Scholes, 1930, pp. 400-401; Steen, 1977). One of the periodic rounds of witchcraft, homicides and schemes of rebellion that plagued 17th century New Mexico involved the Piro Indians. This was during the term of Governor Villanueva, 1665-1668. Some time after that, and prior to 1675, Don Esteban Clemente, Indian governor of all the pueblos of Las Salinas, "formed another conspiracy which was general throughout the kingdom" to destroy all of the Spaniards. The plot being discovered, Don Esteban was hanged (Hackett, 1942, pp. 266, 299-300; Kessell, 1981). Although the next serious conspiracy was

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apparently limited to the Tewas, probably in 1676 rather than in 1675, the earlier abortive revolts could hardly have contributed to peace and stability in the Salinas district.

Forty-three soldiers accompanied Father Ayeta in 1677 to become New Mexico's first full-time garrison. With these men and the new supplies he immediately set to work to turn things around. Senecú was resettled, victualled and provided with soldiers, also Las Salinas "with more than two hundred [families of Christian Indians], with the soldiers necessary for their protection". All of this happened within four months, and on March 28, 1678, Father Ayeta once again left for Mexico. His May 10, 1679 petition written in Mexico City claimed that the resettled pueblos had not been abandoned although the people suffered from hunger and repeated hostilities (Hackett, 1937, pp. 297-298).

Senecú maintained itself until the Pueblo Revolt in August of 1680 but we hear nothing more about Tabira, or Las Salinas. At a guess, this frontier garrison-pueblo persisted until supplies ran out, perhaps for a year. At this point the natives again left their insecure homes. For a pueblo at the end of such a long and exposed supply line, the wonder is that they stayed so long.

The sources that might tell us the time and the circumstances of Tabira's final demise are yet to be discovered. Perhaps they no longer exist. One other line of contemporary documentation that does bear upon the Salinas area and Tabira consists of historical maps.

THE CARTOGRAPHIC EVIDENCE

In their identification of 17th century Tabira, Scholes (1940b) and Howard (1960) showed that Pueblo Blanco was the most likely candidate. Howard noted four 17th and 18th century maps as one type of evidence. Bandelier (1892, pp. 290-291) had at least one historical map at hand but he evidently didn't believe it.

Historians are well aware that map-making grew increasingly
commercial from the 16th through the 19th centuries, so that most maps were not original in the same sense that a diary would be. Cartographers drew freely upon one another's work and even widely-known maps may have had little or nothing that was new, while multiple editions were issued from the same basic plate with changes only in detail or in the legend (Delanglez, 1943; Burrus, 1965). This process is only too apparent in regard to the early maps of New Mexico. There were very few original efforts, and those with details of the Salinas area were fewer yet.

Neither the Martínez map of 1602 nor Henry Briggs' 1625 map showed anything in the Salinas district (Hammond and Rey, 1966; Navarro Garcia, 1964, No. 8; Purchas, 1906, v. 14, opp. p. 424; Tooley, 1964: I; Wagner, 1966: XVII). The Briggs map inspired (or rather it contributed to) many subsequent works; for example, the maps authored by Nicolas Sanson carried over the course of the Rio del Norte and some place names. Sanson editions of 1650, 1656, 1657, and 1669 were a single map with respect to New Mexico. They showed "Tompires" in approximately the right location but no other Salinas-area place names until publication of the 1674 Sanson-Jaillot map. The latter also had Chilili (New Mexico Historical Review, 1936, opp. p. 129; Navarro Garcia, 1964, Nos. 10, 11; Tooley, 1964: IV, VI, XIX; facsimile of 1669 ed. by Museum of New Mexico, 19??). At least one contemporary considered the Sanson maps of Hudson Bay and other parts of North America to be worthless (Delanglez, 1938, p. 34).

Of much greater interest is the so-called 'Peñalosa' map (Bloom, 1934). This ex-governor undoubtedly furnished information for preparation of the map, whatever his involvement beyond that. Several tracings of it have been published (New Mexico Historical Review, vol. IX, opp. p. 113; Wheat, 1957, opp. p. 44; Weber, 1969), and the Library of Congress has a photostat copy (Lowery Coll. 225), while the original is held in the Bibliothèque du Department de la Marine (Paris) B. 4049 (28). Comparison of the photostat with other
documents confirms Delanglez' (1943, p. 297) opinion that the title and legends are all in the handwriting of the French Abbé Claude Bernou (Delanglez, 1938, pp. 10-12). In a June 27, 1683 letter to Abbé Renaudot, Bernou himself made a passing reference to "my maps of Peru and of New Mexico (BN, Coll. Renaudot Vol. 7497, fol. 18-19). We know that by 1678 Peñalosa was in France, promoting schemes to wrest away parts of northern New Spain from his old sovereign Carlos II, while various French memoirs in support of these plans appear to have been drafted in the 1682-1684 period, all in the handwriting of the industrious Bernou (Fernández Duro, 1882, pp. 50-53; Delanglez, 1938, pp. 66ff.). The estimated date for Bernou's map is this same period, 1678-1683.

Howard (1960, pp. 69-70) noticed that this map showed a "S. Diego" northeast of Xumanas (Gran Quivira) in the proper relative location for Pueblo Blanco. The San Diego mission at Jemez pueblo was shown as "los Emas." While some names on the Bernou map were located inaccurately, this was by far the best map of pre-rebellion New Mexico. Howard's conclusion that the Tabira mission was dedicated to San Diego is reasonable.

Bernou's sketch was the basis for the New Mexico part of Coronelli's 1687 map, La Nouveau Mexique appelee ausse Nouvelle Grenade et Marate,... Whereon "S. Diego" was now shown almost north of Xumanas (New Mexico Historical Review, 1936, opp. p. 297; Navarro Garcia, 1964, No. 12). Delanglez (1943, p. 297) said that the map was published in 1687, while Wagner (1968, pp. 156, 319) dated it to 1688 or 1689. It had no new information and two later Coronelli maps of North America were simplified in the New Mexico portions, with no pueblo names shown for the Salinas district (Tucker, 1942: IX; Tooley 1964: XXIII, XXV). One of the later maps had a 1688 date in its legend, but Wagner (1968, p. 319) indicates publication in 1690 and Tooley (1964, p. 19) in 1696.

The 1695-1696 map by the Jesuit father, Fray Eusebio Kino, included an original representation of New Mexico with place names
that reflect a pre-Revolt source (Bolton, 1936, opp. p. 271; Burrus, 1965: VIII). The New Mexico information was new, whatever the authority, since it was not copied from any other known map. Despite some wild inaccuracies north of the Keres pueblos, from that area south and in the Salinas district most settlements were located accurately. *Tavira* appeared for the first time on any known map, shown as almost due south of Humanas! There was no San Diego.

Kino's map was first published in 1936. However, very early it was the basis for Nicolas de Fer's Map of California and of New Mexico, published in France in 1700 with a second edition from the same plate in 1705 (Leonard, 1932, opp. p. 88; Bolton, 1936, opp. p. 272; Tooley, 1964: XXXIII; Burrus, 1965: XIV; Wagner, 1968, pp. 146, 322). The 1700-1705 editions had *numbers* alongside the location dots and in an expanded legend gave a correlation of names to numbered locations. In 1720 a third de Fer map designated the settlements directly by their *names*, the result being a product closer to Kino's original (Tooley, 1964: XXXIII; Burrus, 1965: XV).

Adolph Bandelier (1892, pp. 290-291) had had access to the 1705 de Fer map and gave little credence to the relative locations. This was fortunate for him because the 1700-1705 editions contained a serious error. The correlation of names to numbered locations slipped by one following No. 37 (Hacona). By comparison with Kino's 1695-1696 map and his own 1720 edition, de Fer's vacant No. 38 should have been San Ildefonso, a name already used (No. 14) west of the Rio Grande. By the same comparison Nos. 39 and 40 should have been Cuyamungue and Pojoaque respectively, but Cuyamungue was dropped entirely from the 1700-1705 list of names and No. 39 shown as Pojoaque. In consequence of all this, everything in New Mexico after No. 37 was mislocated by one number. Therefore while Tavira should have been No. 52 according to Kino's original, Bandelier would have read Tavira (No. 51) situated south from Abó (No. 49) and east from Humanas (No. 50). There is a certain irony
because the technical error in the 1700-1705 editions resulted in relative locations for Las Humanas and Tabira more nearly correct than those shown on the Kino map!

The 1703 *Carte du Mexique et de la Floride* by Claude and Guillaume Delisle was a notable cartographic advance over anything earlier (Tucker, 1942: XIII; Delanglez, 1943; Burrus 1965, pp. 63-65, 73-74). The Delisles had both the Bernou and Kino Maps available and they followed the former (simplified) for the Salinas area in New Mexico, thus showing "S. Diego" northeast of "Numanas." The 1703 Delisle map was a superb synthesis for the period but had no new information about New Mexico.

The most important map series for Spanish New Mexico was authored by the versatile Don Bernardo de Miera y Pacheco, apparently reflecting Miera's own first-hand knowledge. His earliest known work, from 1758, showed the Salinas missions of Chilili, Tajique, Cuara and Aboo in their correct order along the east side of an unnamed mountain range (the Manzanos). Tavira, another "ruined mission," lay four leagues or so south-southeast of Abo but was crowded by the west side of the map legend (Kessell, 1979a, pp. 507-512), perhaps distorting its location. Miera's next available map, ca. 1760, showed the positions of Taxique and Cuarc switched about, an obliging change to reflect the opinion of his patron, Governor Marín del Valle, after this worthy's archeological search through the old Salinas mission for the body of a priest (Lange, Riley and Lange, 1975, pp. 514-525; Kessell, 1979a between pp. 166-167; 1979b). There was no Tavira on this map.

Don Bernardo's most famous map series is dated 1777-1779 and was drafted to represent New Mexico plus the discoveries made by the Dominguez and Vélez Escalante expedition. There were at least seven maps. The four or five dated to 1777-1778 reintroduced Tabira and showed it some five leagues east or east-northeast of Abó, a good directional estimate but short by one-half the distance if Miera was actually intending to represent Tabira and not Gran Quivira/Las Humanas
Auerbach, 1943, opp. pp. 24, 38, 46; Bolton, 1972; Navarro Garcia, 1964, Nos. 109, 110; Yale University, 1970). The latter names were not shown on any Miera maps. His two 1779 maps shifted Tabira around to a point southeast of Abó, nearly where it had been on the 1758 edition (Thomas, 1932, opp. p. 87; Adams and Chavez, 1956, pp. 2-3; Navarro Garcia, 1964, No. 114).

The conclusions from this winnowing of early maps are that Bernou's draft of 1678-1683 and Father Kino's 1695-1696 production are the two surviving 17th century maps that located S. Diego or Tabira and distinguished it from Las Humanas. Of the two, the Bernou sketch is more reliable, probably because the source of information was an ex-governor, while the basis for Kino's New Mexico section is unknown. The Miera maps of 1777-1778 could be read as showing Tabira at Pueblo Blanco. None of Miera's maps showed a Las Humanas or Gran Quivira.

SOME ARTIFACTS OF INDIAN ORIGIN FROM TABIRA

As stated by Cress, all of the objects found during the 1957 excavations were within the top 18 inches of the northwest trash mound, excepting only a few items from the surface on other parts of the site (Fig. 2). Rarely if at all was the depth of the digging more than 18 inches; a red sand layer encountered at 12 to 18 inches produced very few artifacts. Upon discovering this, the digging was confined to the historical levels, above the red sand, where artifacts were more numerous. The crew members concluded that this wind-blown red sand represented either an extremely dry interval when the site was abandoned, or a period when other areas were used for trash disposal.

Cress' report is the best first-hand information on the 1957 excavation because he had an opportunity to examine most, if not all, of the items collected. The 375-odd Indian artifacts described below amount to some 22 per cent of those listed by Cress and are a good sample of the chipped stone and worked bone, shell
and potsherd collections recovered. Very few charred or uncharred pieces of corn cobs were found.

PROJECTILE POINTS

Of the 321 projectile points described here, some 305 or 95 per cent were small, apparently intended for arrows that could be used with a bow. The remaining 16 could probably be typed as dart points. Overall 37 per cent were of obsidian and 63 per cent of chert. The large number of points suggested an increased reliance upon hunting as compared with earlier periods.

Arrow Points

Figure 3, A-E, and Figure 4, A-E:

Outline: Triangular.
Blade edges: Straight, slightly convex, and slightly concave.
Base: Convex, rarely straight.
Notches: Corner, usually wide and forming a rounded, bulb-like stem. Rare specimens have narrow notches, an expanded stem and straight base.
Length: 1.2 cm. to 2.6 cm.; average 2.0 cm.
Width: 1.0 cm. to 2.0 cm.; average 1.7 cm.
Number of specimens: Obsidian 21, chert 15; total 36.
Discussion: This is the only type in which most specimens are made of obsidian. Large numbers of this type of point are reported from LA 476 (Pueblo Colorado) and LA 2091, two sites located some four miles south of Tabira. The occupation periods at these two sites are thought to be somewhat earlier than the upper level of the northwest trash mound at Tabira, especially for LA 2091, a defensive site atop a mesa, with pottery from the black-on-white period (pre-A.D. 1300) to Glaze B (Mera, 1940a, p. 16). Similar arrow points are very common in the early pottery period (Queracho Phase) of the Eastern Jornada Branch in southeastern New Mexico and are dated there to A.D. 1000-1200 (Corley, 1965).
Figure 3. Arrow points made of obsidian. All from the upper 18 inches of northwest trash mound.

Figure 4. Arrow points made from various colored cherts. All from the upper 18 inches of the northwest trash mound.
Figure 3, F-J, and Figure 4, F-J:

Outline: Triangular.
Blade edges: Straight to slightly convex, rarely concave.
Base: Straight, convex and concave. This usually reflects the style of base on the notched points in association.
Notches: None.
Length: 1.5 cm. to 3.0 cm.; average 2.0 cm.
Width: 1.0 cm. to 1.5 cm.; average 1.25 cm.
Number of specimens: Obsidian 48, chert 58; total 106.
Discussion: Many of these are thought to be "blanks" for other arrow point types, but in some cases they represent the finished product.

Figure 3, K-O, and Figure 4, K-O:

Outline: Triangular
Blade edges: Straight to slightly convex, rarely concave.
Base: Straight.
Notches: Side-opposed.
Length: 1.0 cm. to 3.0 cm.; average 2.25 cm.
Width: 1.0 cm. to 1.5 cm.; average 1.2 cm.
Number of specimens: Obsidian 9, chert 12; total 21.
Discussion: One obsidian specimen has a second notch on one side (Fig. 3M) and differs from the style described by Brook (1972) in having a straight rather than a convex base. This type, dating from about A.D. 1200 to 1400, is found in extreme southeastern New Mexico, but is not very common there.

Figure 5, A-E, and Figure 6, A-E:

Outline: Triangular.
Blade edges: Straight to slightly convex.
Base: Slightly to deeply concave.
Notches: Side-opposed.
Length: 1.0 cm. to 2.5 cm.; average 2.0 cm.
Figure 5. Arrow points made of obsidian. All from the upper 18 inches of the northwest trash mound.

Figure 6. Arrow points made from various colored cherts. All from the upper 18 inches of the northwest trash mound.
Number of specimens: Obsidian 17, chert 35; total 52.

Discussion: Points of this type made from obsidian usually were smaller than those made of chert. It was a very common type to the east and south of Tabira, within the Pecos River Valley-Mescalero Ridge area, dating to around A.D. 1200 to 1400 (Leslie, 1978), and also found within the Panhandle-Plains Cultures of the Neo-American Period in west Texas.

Figure 5, F-J, and Figure 6, F-J:

Outline: Triangular.
Blade edges: Straight to slightly convex.
Base: Straight to deeply concave.
Notches: Side-opposed and base (i.e., triple notch).
Length: 2.0 cm. to 3.0 cm.; average 2.25 cm.
Width: 1.0 cm. to 1.5 cm.; average 1.25 cm.
Number of specimens: Obsidian 18, chert 55; total 73.

Discussion: There were fewer obsidian specimens of this type than of any other arrow point type. All of the obsidian points had deeply concave bases while the chert examples more often had straight bases.

This type first appeared in the Mescalero Ridge area about A.D. 1400, during the Ochoa Phase of the Eastern Jornada Branch (Corley, 1965; Leslie, 1965). It was common in the South Plains of west Texas about this time and later, possibly into the historical period.

Figure 5, K-O, and Figure 6, K-O:

Outline: Triangular.
Blade edges: Straight, slightly convex, and concave.
Base: Convex.
Notches: Side-opposed. Rare specimens have a second notch on one side.
Length: 1.5 cm. to 3.5 cm.; average 2.25 cm.
Width: 0.75 cm. to 1.25 cm.; average 1.0 cm.

Number of specimens: Obsidian 7, chert 10; total 17.

Discussion: The obsidian examples were usually smaller than those made from chert. This was the least common of the arrow point types. It was the earliest type of side-notched arrow point in the Eastern Jornada Branch of the Mogollon Culture, along the Pecos River and the Mescalero Ridge area in extreme southeastern New Mexico, where it apparently never gained popularity and had more or less localized distributions. Its time period has been estimated as around A.D. 1200 to 1300 (Corley and Leslie 1960; Leslie, 1978).

From excavations and surface surveys, members of the El Paso Archeological Society have recorded specimens with the second notch on one side in numbers sufficient to warrant naming this the Temporal point (Brook, 1972). The dates given by Brook for the El Paso area and those for the extreme southeastern New Mexico are similar, but are some 400 years earlier than the age of the upper or historical level of the northwest trash mound at Tabira.

Dart(?) Points

Figure 7, A-E:

- Outline: Triangular.
- Blade edges: Slightly convex.
- Stem: Expanded.
- Base: Convex.
- Notches: Corner; medium to wide.
- Length: Complete specimens (C,D,E) 3.2 cm. to 4.3 cm.
- Width: 2.4 cm. to 3.0 cm. (at shoulders).
- Thickness: 0.35 cm. to 0.9 cm.

Figure 7, F:

Base fragment, two-thirds complete. Expanded stem, convex base, and wide corner notches which form strong shoulders.
Figure 7. Dart (?) points of various colored cherts. From the upper 18 inches of the northwest trash mound and random surface finds around the site.

Figure 8. Dart and/or arrow points. Point A is made of obsidian; the other points are made from various colored cherts.
Width 2.2 cm.; thickness 0.8 cm.

Figure 7, G:

Base fragment, about two-thirds complete. Similar to Fig. 7 A-E except that base is slightly concave. Width 2.7 cm.; thickness 0.6 cm.

Figure 7, H:

Base fragment with both corners of expanded stem broken off. Original outline uncertain.

Discussion: These eight specimens represented a very common type, found within an area extending from the Sangre de Cristo Mountains on the north (Wendorf and Miller, 1959) to the Carlsbad area on the south (Mera, 1938), all along the Mescalero Ridge and south into Texas (Leslie, 1978), and from the South Plains of west Texas (Shawn, 1973) as far west as El Paso (Davis, 1973). This was one of the common types in the Hueco Phase of the Jornada Mogollon Culture (Lehmer, 1948). In-place occurrences all seemed to be on Late Archaic sites. The specimens from Tabira were probably pickups from earlier sites.

Figure 8, A:

Obsidian point with convex edges (dull point), expanded stem, concave base and weak shoulders. Length 2.7 cm., width at shoulders 1.7 cm., thickness 0.6 cm.

Figure 8, B:

Base fragment, about two-thirds complete. Straight blade edges and straight stem, indented base, weak barbs and wide corner notches. Width at shoulders 2.0 cm.; thickness 0.6 cm.

Figure 8, C:

Chert point with straight blade edges (dull point), expanded stem, concave base, wide corner notches and one strong, one weak shoulder. Length 2.7 cm., width 1.5 cm., thickness 0.6 cm.
Figure 8, D:

Chert point with one blade edge slightly convex, one slightly concave (dull point), expanded stem, concave base and weak barbs.
Length 2.6 cm., width 1.8 cm., thickness 0.8 cm.

Figure 8, E-H:

Small, thick triangular points.
Blade edges: Slightly convex.
Base: Straight and convex.
Notches: None.
Length: 2.5 cm. to 3.0 cm.
Width: 1.0 cm. to 1.6 cm.
Thickness: 0.5 to 1.0 cm.
Discussion: These eight specimens appear to be either small dart points or thick, crude arrow points. Fig. 8, E-H might represent "blanks" that were never finished.

STONE TOOLS

Scrapers

Figure 9, A:

A low-back combination side and end scraper, oval in outline.
Flaking all around the margins; one of the better-made examples.
Length 6.8 cm., width 4.0 cm., thickness 0.8 cm.

Figure 9, B:

Crudely-made planer or high-back scraper, about three-quarters complete. Length 4.2 cm., width 2.3 cm., thickness 0.8 cm.

Figure 9, C:

Crudely-made planer or high-back, snub-nosed end scraper.
Length 3.7 cm., width 2.5 cm., thickness 1.4 cm.
Figure 9. Scrapers. A and B are made of white quartz; C - E are made from a red blended chert. All from the upper 18 inches of the northwest trash mound.

Figure 10. Drills, knives, and ground stone artifacts. A and B are obsidian; the others are of chert. All from the upper 18 inches of the northwest trash mound.
A small, thumbnail scraper, made from a flake. Relatively thin and oval in outline; flaking all around the margins. Length 3.0 cm., width 2.2 cm., thickness 0.4 cm.

Figure 9, E:

A small, well-made end scraper with a straight-sided stem for hafting. Length 2.8 cm., width 2.2 cm., thickness 0.8 cm.

Discussion: Numerous scrapers were found. Most were utilized flakes or random pieces of material with evidence of very little working in order to make them tools, as if fashioned for a single job. A few specimens did show careful workmanship. There appeared to be no particular type or types; each specimen differed in some way from every other.

Drills, Knives, and Ground Stone

Figure 10, A:

Obsidian drill, complete. The worked base has a very fine point. Length 3.0 cm., width 2.0 cm., thickness 0.6 cm.

Figure 10, B:

Base fragment of an obsidian drill, point missing. Base is finely worked. Length 1.8 cm., width 2.3 cm.

Figure 10, C:

Base fragment of a chert drill, point missing. Base is worked to shape. Length 2.0 cm., width at base 1.1 cm.

Figure 10, D:

Fragment of a chert drill with point and part of base missing. Length 2.5 cm., width at base 2.2 cm.
Figure 10, E:
Elongate polished stone with one sharp pointed end and one blunt end. Use unknown. Length 3.9 cm., diameter 0.8 cm.

Figure 10, F:
Elongate polished stone with two blunt ends, both ground. Length 4.1 cm., diameter 1.0 cm.

Figure 10, G:
Chert knife, well-worn. Length 6.7 cm., width 2.2 cm., thickness 0.7 cm.

Figure 10, H:
Well-worn point fragment from a chert knife. Present length 6.2 cm., width 2.2 cm., thickness 0.7 cm.

Discussion: Complete drills and knives were rare, most consisting of base or point fragments. In addition to the four drills described, there were seven small base fragments and several points. The only other stone knife in the collection was a large base fragment. Rusted sections of metal knives were also much in evidence (Cress, 1957).

BONE AND SHELL ARTIFACTS

Bone Awls

Figure 11, A:
Complete splinter awl; appears to have been broken and refinished at the end. Length 8.8 cm., width 1.3 cm.

Figure 11, B:
Fragment of a splinter awl; appears to have been much larger. Length 6.9 cm., width 1.0 cm.

Figure 11, C:
Fragment of a very slender splinter awl, probably much longer
Figure 11. Bone awls. All from the upper 18 inches of the northwest trash mound.

Figure 12. Shell, bone, and turquoise ornaments. All from the upper 18 inches of the northwest trash mound.
before it was broken. Length 7.0 cm., width 0.6 cm.

Figure 11, D:
A large bone sliver with a nicely-worked point; apparently a complete artifact. Length 6.3 cm., width 1.9 cm.

Figure 11, E:
Complete awl made from a split section of a deer or pronghorn medapodial. Length 8.8 cm., width 2.2 cm.

Discussion: The awls in Fig. 11, A-C appeared to have been manufactured from the same bone sections, only with the joints removed, as was used to make the awl in Fig. 11, E. Their style was that of Hayes' sharp tapered awls (Hayes, Young and Warren, 1981, pp. 142-143). There was a complete absence of carving. Cress (1957) mentioned bone beads, flutes and pins in addition to awls.

Ornaments

Figure 12, A:
Five small Olivella shell beads with a drill hole through the spiral end. These show trade, probably indirect, with the Baja California area. Length 0.6 cm. to 1.7 cm.; width 0.5 cm. to 0.7 cm.

Figure 12, B:
Two bone beads, made from bird leg bones. Lengths 1.0 cm. and 3.5 cm.; diameter 0.5 cm.

Figure 12, C:
Two small turquoise pendants; very poor grade of material. Both specimens 0.6 cm. in length and 0.2 cm. thick.

Figure 12, D:
Triangular pendant made from a fresh-water mussel shell with two drill holes. Size 1.1 cm. by 1.1 cm. by 1.6 cm.
Figure 12, E:

Small rectangular pendant made from a fresh-water mussel shell; drill hole present. Size 1.2 cm. by 0.9 cm.

Figure 12, F:

Pendant fragment, original or intended shape unknown, made from a fresh-water mussel shell. Two drill holes present, two more in evidence along broken edge. Size 1.9 cm. by 1.2 cm.

Figure 12, G:

Figure-eight shell bead with hole drilled through one lobe. Size 1.0 cm. by 0.6 cm.

WORKED SHERDS

Projectile Point Shapes

Figure 13, A:

Fragmentary, made from body sherd of a Chupadero Black-on-white jar. Length 4.3 cm., width 3.1 cm.

Figure 13, B:

Complete, also made from a Chupadero Black-on-white jar sherd. Length 4.8 cm., width 2.7 cm.

Figure 13, C:

Fragmentary, made from a rim sherd of an unidentified black glaze-on-red bowl. Length 3.5 cm., width 3.6 cm.

Discussion: Apparently very similar to the worked sherds classified as pendants in Hayes, Young and Warren (1981, p. 160).

Disks

Figure 13, D:

Complete, made from an unidentified glaze polychrome bowl sherd. Diameter 4 cm.
Figure 13. Worked sherds. All from the upper 18 inches of the northwest trash mound.

Figure 13, H:

Complete, made from an unidentified grey sherd. Diameter 1.45 cm.

Rectangular and Subrectangular Pieces

Figure 13, E:

Complete, made from body sherd of a Chupadero Black-on-white jar. Length 4.6 cm., width 2.9 cm.

Figure 13, F:

Complete, made from an unidentified black glaze-on-red bowl sherd. Length 3.5 cm., width 2.3 cm.
NOTES ON THE POTTERY OF TABIRA

The similarity of the pottery of Tabira to that of Gran Quivira was noted more than a decade ago during a petrographic study of the ceramics of the Salinas district, in particular those of Gran Quivira (Warren, 1981a). Although only 320 sherds from Tabira Pueblo were examined petrographically (Table 2) compared to over 1,200 from Gran Quivira, the ceramic chronologies, relative frequencies of the pottery types, and tempering materials all evidenced similar patterns throughout a 500 year period. The pottery types present at each site included Chupadero Black-on-white, a full complement of Rio Grande glazewares, Tabira Black-on-white and Tabira Polychrome, and Corona Corrugated and Corona Plain (Table 1). Classifications of pottery were based upon those defined and described by Hayes et al. (1981, pp. 63-103).

Chupadero Black-on-white and Corona Corrugated were the predominant wares of the earliest occupation at Tabira. Hayes et al. (1981) dated Chupadero Black-on-white to between A.D. 1175 and 1545 at Gran Quivira. It seems probable that this black-on-white ware was not produced after A.D. 1400, however. For instance, of 79 sites listed by Mera (1940a) in the Piro, Tompiro, Jumano, and East Tiwa divisions which included the Salinas pueblos, 18 sites with Group A glazewares
<table>
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<th>TYPE NAME</th>
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<td>Tabira Polychrome</td>
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Table 1. Classification of pottery types of Tabira, Salinas District (after Mera, 1933; Hayes et al, 1981).
<table>
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<tr>
<th>Temper Type</th>
<th>Glaze A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
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*Probable source, pueblo or area
also produced Chupadero Black-on-white sherds, while no post-Group A sites were reported to have Chupadero Black-on-white sherds. This suggests an end date of A.D. 1400 or earlier.

Two major temper types were found in Chupadero Black-on-white sherds from the Salinas area. The first was predominant in sherds at Pueblo Colorado (LA 476) and consisted of crushed, vitrified sherd characterized by tiny vesicles; the vitrified sherd ranged from dark gray to purple-gray and was often vitreous. Forty-one per cent of the Chupadero Black-on-white sherds from Tabira were tempered with this material. No data for Gran Quivira are available. It would be necessary to examine more sherds from both Pueblo Colorado and Tabira to determine the possible source of the Chupadero vessels tempered with vitrified sherd.

At Gran Quivira 90 per cent of the Chupadero sherds examined contained "crypto-crystalline calcite and rounded shale-like fragments;" varying amounts of "quartz grains, iron oxides, crushed sherd, or traces of crushed igneous rock" may have been present in minor quantities (Warren, 1981a, p. 179). At Tabira 56 per cent of the Chupadero sherds examined contained temper similar to the Chupadero sherds of Gran Quivira.

Corona Corrugated utility vessels are believed to have been produced between circa A.D. 1225 and 1460; Corona Plain has been dated from A.D. 1450 to A.D. 1672 (Hayes et al., 1981). Corona Corrugated is associated with both Chupadero Black-on-white and the early Rio Grande glaze-paint wares.

Only five sherds of Corona Corrugated from Tabira were examined, and all were tempered with fine-grained quartz mica schist similar to that observed in nearly two-thirds of the Corona Corrugated sherds examined from Gran Quivira (Hayes et al., 1981, p. 64). Although neither the source of the schist nor the place of manufacture of these utility wares has been determined, quartz mica schists occur extensively in the Manzano Mountains (Myers and McKay,
1972) and probably occur in pediment or channel gravels peripheral to the mountains.

Rio Grande glaze-paint wares appeared in the Middle and Upper Rio Grande areas shortly after A.D. 1300 and were produced for nearly 400 years. All groups from A to F as defined by Mera (1933) were present at Tabira.

During the early glaze periods, the pueblos of the Salinas district probably obtained vessels in trade from the villages along the Rio Grande and Galisteo Creek. Agua Fria Glaze-on-red pottery at Tabira, as at Gran Quivira, was tempered mainly with reddish brown vesicular basalt, a rock believed to have been the tempering material used by potters at Pottery Mound (LA 416) or at neighboring villages along the Rio Grande. Vessels of Cieneguilla Glaze-on-yellow and Largo Glaze-polychrome were obtained from San Marcos Pueblo or from other Galisteo Basin villages.

By Glaze C times production of pottery had increased in the Abo-Tenabo area, allowing trade to neighboring villages up until the abandonment of the area about A.D. 1672. The Abo potters used hornblende felsite, an intrusive igneous rock apparently indigenous to that area, to temper their glaze-paint wares. Between 25 and 60 percent of the Intermediate Glaze-paint ware sherds examined were from Abo vessels; 27 percent of the Kotyiti Glaze-polychrome sherds were tempered with hornblende felsite.

The presence of trade from the Galisteo Basin and Tonque Pueblo is indicated during the Intermediate Glaze periods (Table 2), a pattern that was also noted at Gran Quivira.

Although it is not certain that the sherds from Tabira were necessarily representative of the entire ceramic assemblage, an increase in the number of late Glaze E and Glaze F period rims has been noted (Table 2). Again this was similar to the relative distribution of glaze-paint wares at Gran Quivira, where a period of abandonment was indicated by architectural and ceramic evidence during the early
16th century (Hayes et al., 1981).

There appears to have been an overlap or at least a continuum in time between Corona Corrugated and Corona Plain according to the production periods established by Hayes et al. (1981) at Gran Quivira. Hayes noted that there was a complete gradation from rubbed-ribbed to rubbed-indent over to completely smoothed utility wares. This transition was not noted in the temper traditions of the two types, however, except perhaps in the use of fine-grained quartzite in a low percentage of sherds at Gran Quivira. The apparent independence of the utility ware traditions and chronology from those for the decorated wares did suggest independent production of the two classes of pottery, however. Nearly 50 per cent of the Corona Plain sherds from Tabira were tempered with fragments of sandstone, limestone, and crushed sherd, a temper category that was not present in the Corona Plain wares at Gran Quivira. Another 38 per cent, however, contained crushed biotite felsite, which was a common temper in Corona Plain pottery from Gran Quivira.

The historical period decorated wares of Tabira--Tabira Black-on-white and Tabira Polychrome--were also tempered with biotite felsite. These wares were probably made at Gran Quivira, although it is possible that a local source of the temper was available at Tabira.

Contemporary with the Tabira wares were late glaze-paint wares of Groups E and F. A primary source of the Group E or Puaray Glaze-polychromes appears to have been the Abo-Tenabo pueblos. However, the highest frequency of sherds was from vessels produced at Quarai, an early 17th century mission (Fig. 1, Table 2). Potters at Quarai tempered their pots with hornblende schist, a temper type apparently unique to that village. Similar proportions of glaze-paint wares for this period were noted at Gran Quivira.

In summary, the associated ceramics indicated two periods of occupation at Tabira: (1) Chupadero Black-on-white and early to middle glaze-paint wares; and (2) Tabira Black-on-white and
Polychrome and late glaze-paint wares. Very similar ceramic distributions were noted at Gran Quivira (Warren, 1981a), with some differences in the sources of tradewares or in possible local production of pottery. The samples of sherds examined were small, particularly for Tabira. The resulting patterns of pottery and temper classes suggest that sampling for this type of analysis can be effective, however. Additional studies, particularly of the utility wares, are needed.

**ARTIFACTS OF SPANISH ORIGIN**

Items of Spanish origin studied in 1971 are shown in Figures 14-18. The glass, metal, and ceramic artifacts in Figure 15, a-e, and Figures 16-18 were recovered primarily from excavations in the northwest trash mound, with some from random survey on the site area (Fig. 2). All have been donated to the Museum of New Mexico. Those illustrated in Figure 14 were found at one small area in the south side of the northwest trash mound, while the four metal objects in Figure 15, f-i were also recovered in this trash mound. These latter eight items are no longer available for study.

The European artifacts from Tabira are a typical assemblage for a Spanish mission of the 17th or early 18th century, whether in Florida or in the Southwest. Records from early New Mexico mention some of these tool types and implements. Aboriginal communities of the same period in the Northeast and the Middle West had similar objects, considered there to be French trade goods.

Each description below is followed by a brief comparative survey and historical commentary, not exhaustive, in order to place these objects in a better perspective. Figures 14 and 15 were drawn with the aid of a camera lucida.
METAL

Cross

This simple unadorned brass casting is heavily patinated but exhibits a front smoothed by filing or by wear, with sides and reverse partially smoothed and in part left as-cast (Fig. 14a). There is a circumferential groove on the front of one arm. The attachment area has been badly damaged and most of the front half removed by chiseling(?). A tiny suspension hole is centered about 1.0 mm. from the top. Length is 2.73 cm., width 1.77 cm., and maximum thickness 0.30 cm.

Simple crosses of copper, brass, and even silver appear to have been a New Mexico speciality. Sixteen were reported for Pecos, but apparently nothing similar from the other missions (Kidder, 1932, pp. 306-308; Gunnerson, 1970). A total of nine burials in the churches at Awatovi and Hawikuh were accompanied by wooden crosses (Montgomery, Smith and Brew, 1949, p. 98; Smith, Woodbury and Woodbury, 1966, p. 274). The two very detailed inventories of supplies for the friars and missions of New Mexico listed nothing of this nature, so that the crosses might even have been of local manufacture, perhaps reworked from other metal objects (Scholes, 1930, pp. 100-112; Hodge, Hammond and Rey, 1945, pp. 109-124).

In Florida there are reports of one or two lead crosses, and from Illinois several crosses of lead and pewter (Smith, 1971, p. 66; Deagan, 1972, pp. 36, 38; Good, 1972, pp. 80-81, 91). At the early missions and Indian communities in Michigan (Cleland, 1971, pp. 23, 28; Hulse, 1981, pp. 58, 69), Illinois (Good, 1972, pp. 80-81) and Texas (Tunnell and Newcomb, 1969, pp. 58-60) crucifixes were perhaps more common. These were of various metals and more elaborate in design, probably of commercial manufacture. They may also have been slightly more recent.
Figure 14. Metal artifacts. From one small area in the south side of the northwest trash mound. a - Small brass cross (three views). b - Iron blade. c - Chain mail fragment. d - Iron nail.
Iron Blade

This fragmentary iron blade is heavily rusted and has portions of both the point and the handle or tang broken away, with the latter break perhaps at a hole location (Fig. 14b). There is a single cutting edge. Overall length is 6.28 cm., maximum width 1.96 cm., maximum handle width 1.50 cm. and thickness along the back of the blade 0.36 cm.

Knives and also scissors have been recorded from a number of Hispanic sites in the Southwest (Kidder, 1932, pp. 306-307; Vivian, 1964, p. 136; Smith, Woodbury and Woodbury, 1966, p. 243; Hayes, Young and Warren, 1981, p. 166; Tunnell and Newcomb, 1969, pp. 67-69; DiPeso, Rinaldo and Fenner, 1974, pp. 203-206) and Woodward (1953, pp. 187-189) described the design changes in cutlery during the 17th century. Knives are reported in the Southwest much less frequently than at contemporary French-influenced sites in the Middle West, nor is there the French distinction between clasp and sheath knives (Wittry, 1963, pp. 35-37; Cleland, 1971, pp. 19-21; Good, 1972, pp. 157-162; Hulse, 1981, p. 66). Nonetheless, both knives and scissors were among the New Mexico mission supplies (Scholes, 1930, pp. 100-101; Hodge, Hammond and Rey, 1945, pp. 116-117), and iron trade knives were practically a currency for trade with the Plains Apaches (Hackett, 1937, pp. 130, 494; Kessell, 1979a, pp. 137-157, Simmons and Turley, 1980, pp. 36-37).

The blade scrap from Tabira is probably a trade knife or beldunque such as Simmons and Turley (1980, pp. 130-132) describe, but might also be a blade or shear such as Vivian (1964, p. 136) was told had been used in sheep shearing.

Chain Mail(?)

Figure 14c is a small, heavily rusted mass of iron rings, apparently a fragment of chain mail. Close examination suggests that there may be two types of links, both formed of ca. 2 mm. diameter
iron wire. The two types are (a) circular interlocking rings each about 1.0 cm. in diameter, and (b) loop-links, somewhat like modern dress hooks and eyes, each about 0.9 cm. wide and 1.0 cm. in length. If any parts of the links were flattened and riveted or joined by welding, these features are indistinguishable (Peterson, 1956, pp. 106-110).

Wedel (1975) has described the archaeological distribution of chain mail in the central High Plains. A few pieces have been reported from New Mexico and also from Florida and Texas (Lambert, 1954, p. 161; Ellis, 1955; LeVinnés, 1962, p. 8; Snow, 1979, p. 218; Simmons and Turley, 1980, p. 26; Boyd, Smith and Griffin, 1951, p. 109; Smith, 1971, p. 66; Smith and Good, 1982, p. 45). Chain mail was worn by soldiers with Coronado and later with Oñate, after which its use probably declined in favor of padded and leather protection. The 43 soldiers whom Fray Francisco de Ayeta brought in 1677 for the defense of New Mexico had leather jackets and shields but also suits of armor (Hackett, 1937, pp. 288, 292). At the muster in El Paso on September 9-12, 1681, the veteran maestre de campo Thome Dominguez de Mendoza still had a suit of armor, while a few others possessed leather jackets and many passed muster "without a suit of armor" (Hackett, 1942, pp. 34-68). By this time, metal armor should have been obsolescent, but as recently as 1858 in Oklahoma the Comanche chief Iron Jacket, clad in an old coat of scale mail, was killed in a battle with Texas Rangers (Webb, 1935, pp. 155-158).

Nails

There are two iron nails, presumably hand-forged, both heavily corroded. Their shafts have square cross sections up to 0.5 cm. across. One has the head missing and is 8.6 cm. in length (Fig. 14d); the second nail is more complete, with an irregular head ca. 1.1 cm. in diameter, and is 5.3 cm. in length (Fig. 15a).
For a land of adobe, New Mexico witnessed some impressive nail imports, beginning with Oñate's 141,338 horseshoe nails (Simmons and Turley, 1980, p. 24). The mission supply caravans too, particularly the one that accompanied Father Benavides in 1626, brought nails by the thousands (Scholes, 1930, pp. 103-104; Hodge, Hammond and Rey,
On Spanish sites nails are a common artifact, but numbers vary widely and such a major excavation as Casas Grandes produced very few nails (Kidder, 1932, pp. 305-306; Lambert, 1954, p. 161; Hayes, Young and Warren, 1981, p. 166; DiPeso, Rinaldo and Fenner, 1974, pp. 208-209; Tunnell and Newcomb, 1969, pp. 67-70; Boyd, Smith and Griffin 1951, p. 145; Jones, 1973, pp. 42-43; Deagan, 1972, p. 36; 1978, p. 45). Within New Mexico, the only 17th century site where nails were common appears to have been Abó (Toulouse, 1949, p. 14).

**Iron Awl**

An awl is a pointed implement for piercing small holes in wood and leather. There is one example of a small, heavily rusted iron awl with missing handle, but which otherwise may be complete (Fig. 15e). It has a square shaft up to 0.38 cm. in width. Length is 4.92 cm.

Iron awls appeared early in the history of European goods and are widely reported in historical Indian sites from New England to the Southwest. Like nails, their frequencies vary widely (Ritchie, 1954, p. 26; Wittry, 1963, p. 34, Cleland, 1971, pp. 20-22; Bray, 1978, pp. 27-29; Smith, 1971, p. 66; Kidder, 1932, pp. 305-306; Lambert, 1954, p. 161; Hayes, Young and Warren, 1981, p. 166). Forms apparently differ little according to time or place of manufacture, and an awl would be a simple tool for any blacksmith to make. In New Mexico, iron awls were evidently a medium of exchange with the Indians and a regular component of the supplies furnished for the missions (Hackett, 1937, p. 212; Scholes, 1930, p. 100; Hodge, Hammond and Rey, 1935, p. 116).

**Sheet Iron Scrap**

This piece of heavily rusted sheet iron appears to have two sides or ends broken, and it might be a rim (Fig. 15d). There are no holes or visible designs. Size is 2.50 cm. by 2.54 cm. by up to 0.34 cm. thick. It was presumably part of some larger implement.

Unidentified iron scraps are almost ubiquitous at historical
sites, Spanish and otherwise, and unless diagnostic features are present they could have been derived from many things. Iron spoons and a variety of both tools and hardware were among the New Mexico mission supplies, while the comales might well have been made of iron (Scholes, 1930, pp. 102-106; Simmons and Turley, 1980, pp. 116-126). New Mexico had blacksmiths from the time of the first Spanish settlements, and iron scrap could also be waste from a smithy.

Sheet Brass Scrap

One small rectangular fragment of thin sheet brass bore no holes or visible design markings. It measures 2.13 cm. by 1.64 cm. by 0.7 mm. in thickness and has a heavy patination (Fig. 15b).

Scraps of sheet brass and copper are another common find on early historical sites, French as well as Spanish, and in part at least are kettle fragments (Bray, 1978, pp. 60-62; Good, 1972, pp. 166-169, Smith, 1971, p. 61; Deagan, 1972, p. 36; Kidder, 1932, p. 308; Lambert, 1954, pp. 161-162; Vivian, 1964, p. 136; Tunnell and Newcomb, 1969, pp. 56-58; DiPeso, Rinaldo and Fenner, 1974, p. 213; Hayes, Young and Warren, 1981, p. 166). In New Mexico, the supplies to be given to each friar every three years included one large brass basin, while other copper and brass containers were provided for kitchen use and for the divine services (Scholes, 1930, pp. 101-104; Hodge, Hammond and Rey, 1945, pp. 111-121).

Heavy-Gauge Brass Scraps

Two pieces of brass are of marginally heavier material than the foregoing. One fragment has been folded over or around something and exhibits both a fatigue crease and the beginning of a tear lengthwise down the center, evidently as a result of unbending (Fig. 15f). There are no holes or visible designs and it is heavily patinated. Size is 2.26 cm. in length, maximum unfolded width is 2.0 cm. and the thickness up to 0.9 mm. Except that the two ends and one edge are apparently original and show flattening while the
fourth edge is an old break, the general appearance would be that of a ferrule from a crossbow bolthead (Ellis, 1957). Crossbows were virtually obsolete by the time of New Mexico’s settlement and this scrap was evidently reused from some other object (Peterson, 1956, pp. 7-10).

The second specimen has been rolled into the shape of an asymmetrical cylindrical point (Fig. 15g). It is made from a piece of scrap and appears to be complete unless once wrapped around a very small-diameter shaft. The length is 4.23 cm., diameter range 0.8 to 0.9 cm., and thickness of the stock about 0.8 mm.

Brass tubes are occasionally reported from early Spanish sites but this artifact more nearly resembles a conical tinkler. Tinklers, for personal adornment or for use on horse trappings, are a typical find in early French-influenced sites but are rare in the Southwest (Ritchie, 1954, p. 44; Wittry, 1963, pp. 18-19; Cleland, 1971, pp. 23, 27; Good, 1972, pp. 87-90; Bray, 1978, pp. 56-57; Kidder, 1932, p. 308; Woodward, 1953, pp. 204-205). Deagan (1978, pp. 45-47) illustrates brass lacing tips recovered from 16th century Hispanic sites in Florida; these appear to be narrower and more regularly made than the Figure 15g specimen.

Hawk Bells

Portions of two cylindrical brass hawk bells were also recovered in the northwest trash mound. One (Fig. 15h) is a flattened fragment approximately one-third complete but similar to the other specimen.

The second bell is about seven-eights complete (Fig. 15i) and heavily patinated. Both were of commercial manufacture. The two halves of the second bell were joined at a circumferential seam, the precise nature of this joint now being obscured. Inside the bell is a rusted iron pellet that served as a tinkler. No horizontal striations could be seen around the body of the bell. The flat strap attachment is also brass, 0.5 cm. in width and bent into a circular form, then soldered to the top of the bell. Traces of fabric still
adhere to this loop. Maximum diameter of the bell is 2.97 cm., overall height is 3.38 cm., height of the bell alone 2.70 cm., and thickness of the brass stock about 0.4 mm.

Hawk bells came into the Southwest with Coronado; in August of 1540 some Indians from Cicuye (Pecos) came to Cibola and were given "some glass dishes and a number of pearls and little bells, which they prized highly..." (Winship, 1896, p. 490). In small numbers they are widely reported from early historical Indian sites, although few have come from the Southwest (Brown, 1977; Ritchie, 1954, pp. 33, 45; Wittry, 1963, pp. 17-19; Cleland, 1971, pp. 23, 27; Good, 1972, p. 130; Bray, 1978, pp. 60-63; Smith, 1971, p. 61; Kidder, 1932, pp. 306-308; Tunnel and Newcomb, 1969, pp. 62-64; Smith, Woodbury and Woodbury, 1966, p. 275; DiPeso, Rinaldo and Fenner, 1974, pp. 215-218). The mission supplies that Father Benavides brought to New Mexico in 1626 included several items that he must have meant for presents: 30 pesos worth of macaw feathers, 12 bundles of glass beads, and 1 gross of little bells (Hodge, Hammond and Rey, 1945, p. 119). Modern versions of Benavides' little bells are still used on Southwestern Indian dance costumes.

GLASS

The single piece of glass is a handle and vessel wall fragment from a small hand-made glass container, perhaps a small vial or cruets (ampolleta) for use in connection with divine services (Figs. 15c; 16 right). The glass has a light yellow hue and tiny air bubbles in the metal or body. The handle was formed separately from the vessel and has a triangular cross-section. The vessel wall is about 1.5 mm. thick.

Although glass vessels or containers were not specifically mentioned among the mission supplies, the quotation from the Coronado expedition shows that glass was in the Southwest as early as any other Spanish artifacts. The local abundance of pottery vessels must have reduced the demand for more fragile glass containers.
Figure 16.
Polychrome majolica and glass handle fragment. From the upper 18 inches of the northwest trash mound and random finds around the site. Upper left - unnamed. Lower - Puebla Polychrome. Right - handle fragment, light yellow glass.

Figure 17.
Two-blue shades majolica. From the upper 18 inches of the northwest trash mound and random finds around the site.
Glass had been an established industry in Spain from medieval times, and the city of Puebla in New Spain had a "glass house" as early as 1625 (Frothingham, 1964; Montgomery, Smith and Brew, 1949, pp. 146-147).

Early historical sites from the Southwest and Florida have produced small quantities of glass and even complete vessels (Woodward, 1953, p. 230; Tunnell and Newcomb, 1969, pp. 105-107; DiPeso, Rinaldo and Fenner, 1974, pp. 230-231; Hayes, Young and Warren, 1981, p. 167; Boyd, Smith and Griffin, 1951, pp. 120, 126, 149; Smith, 1971, p. 66; Jones, 1973, p. 43; Deagan, 1972, pp. 36-38; 1978, pp. 43-46). In the Cochiti Reservoir excavations, glass was reported for the 18th century historical sites but not from the 17th century ones (Snow, 1979). The glass vessels illustrated by Frothingham are considerably more esthetic than the greenish bottle fragments most common in archeological contexts, but her yellowish glass cup, bowl, covered jar, bucket, vase, and wine glasses may be in the tradition of the Tabira specimen.


CERAMICS

Five very small sherds of majolica represent three separate types of this tin-glazed earthenware. Identifications were made by E. Boyd, Museum of International Folk Art.

Figure 16, lower, is a tiny sherd of Puebla Polychrome, manufactured in Puebla, Mexico, and a diagnostic of 17th century sites to 1680 in New Mexico although it is found in later contexts in Navajo Refugee sites (Lister, 1974, pp. 27-28; 1976, pp. 123, 132; Jones, 1973, pp. 36-38; DiPeso, Rinaldo and Fenner, 1974, p. 198).
Three small sherds of a two-blue shades majolica represent a part of the Puebla blue-on-white and polychrome family but have no particular name; their estimated age is ca. A.D. 1700-1720 (Fig. 17). Other sherds of this type have been found at the Glasscock Site near Ocate, New Mexico, and at a historical site in the Waldo Reservoir (personal communication, E. Boyd; Riddell, ed., 1966, p. 768; Gunnerson, 1969, p. 29; Lister, 1974, p. 29; 1976, pp. 123, 125, 134-135; DiPeso, Rinaldo and Fenner, 1974, p. 197).

The last majolica specimen is an unnamed polychrome; a medley of orange, yellow, blue and black, not Ab6 Polychrome. It is relatively early (pre-Rebellion) and of high quality, with a thin body, good glazing and fine line work (Fig. 16, upper left). It may be of Spanish manufacture (personal communication, E. Boyd; Lister, 1974, p. 27).

Finally, there were five sherds of an inexpensive blue-on-white Chinese export porcelain (Fig. 18). The white body has a bluish tinge. This is probably contemporary with the two-blue shades majolica (P.c., E. Boyd). From the beginning of the 17th century, Chinese porcelains were imported to New Spain in very large amounts (Montgomery, Smith and Brew, 1949, p. 94; Woodward, 1953, pp. 219, 229) and such porcelain is found alongside majolica at early historical sites (Kidder, 1932, p. 308; Toulouse, 1949, p. 21; Lambert, 1954, p. 162). Honey's (1946, pp. 98, 118, 120) description for "Transition Blue and White - mid-17th c." would fit the blue-on-white porcelain found at Tabira.

**SUMMARY**

This paper has brought together the information still available from the 1957 Pueblo Blanco excavations, supplementing this with an analysis of historical references to the site. The previous identification of Pueblo Blanco as the 17th century mission of Tabira is confirmed. Occupation of the site apparently began in the 13th
Figure 18. Blue-on-white Chinese export porcelain. From the upper 18 inches of the northwest trash mound and random finds around the site.

century and continued probably until 1679, with one definite period of abandonment during the early 16th century. The layer of red sand observed in the trash mound excavation may date from this non-occupation interval.

The Tabira people possibly manufactured some of the Corona Plain pottery found there, but whether any of the decorated vessels were made locally is yet to be determined. The extraordinary abundance of arrow points and the reported 120 scrapers from the 1957 digging indicate that hunting and skin preparation were
important activities, while a lack of pottery whorls implies little spinning or weaving of fabrics. This would accord with a 1663 remark by Nicolás de Aguilar concerning the pueblo of Humanas, that "it has never been possible to have herds in that pueblo because there is no water" (Hackett, 1937, p. 142). If Las Humanas had no stock or herdsmen, there is little likelihood that either was present at Tabira, and this pueblo presumably rendered its annual tribute in antelope skins rather than in cotton or woolen goods. Artifacts of Spanish origin from Tabira were relatively numerous and of the types reported from Spanish mission sites elsewhere.

The pueblo had a small church that was rebuilt once. Occupation continued here into the 1670s when a combination of drought, food shortages, Apache hostilities, and weak support led to an abandonment, probably in 1676 or 1677. Although this pueblo was re-established in 1678, the people left again, very possibly when their food supplies ran out. Some of the excavated ceramics point to an early 18th century reoccupation, about which the historical records are entirely silent.

ACKNOWLEDGEMENTS

Sincere appreciation is expressed to the late E. Boyd for her identifications of the ceramic sherds and her suggestions with respect to the other Spanish artifacts, and to Mr. David M. Brugge for his assistance with the Spanish translations. Historical research into French sources was largely carried out in Ottawa at the Public Archives of Canada, with assistance from their staff. For references and suggestions about Tavira in Portugal, we are most grateful to His Excellency the Ambassador, Dr. S. de Sampayo Garrido at the Embassy of Portugal in Ottawa, Canada.

Las Cruces, New Mexico
Hobbs, New Mexico
Albuquerque, New Mexico
The letter of designations (F) (H) (I) provided here were omitted in the original; no drawing to match the text reference to illustration G.

APPENDIX

The original description of the 1957 excavations at Pueblo Blanco appeared in Volume I of the *Bulletin of the Lea County Archaeological Society* (1957), published at Hobbs, New Mexico. This account is reprinted here without change. The artifact outlines that accompanied the 1957 article were presumably full-scale drawings. These are traced and reproduced here as Figure 19. Only artifacts A through E were labeled in the original illustration.

REPORT ON A PUEBLO REFUSE PILE

Johnnie Cress

Having located a pueblo where a number of us could gain experience and knowledge of controlled refuse excavation during the months of the year when our local project became too warm for comfortable working, several of us decided to try our hand at a new
venture. During two weeks in August, 1957, eleven members of the L. C. A. S. spent various numbers of days in removing, screening, and recording artifacts of the Historic Stage on this lesser trash pile of a large pueblo in New Mexico. It is located about fifteen miles northeast of Cedarvale, New Mexico on Juames Mesa.

The trash pile is 150 feet wide by 200 feet long, with a maximum depth of 14 feet. We removed almost the whole of the Historic layer in the specified area, beginning at the lower edge of the steeply sloped sides and working to the top in, usually, 3 foot strips, the layer being 6 to 10 inches deep. Our screen size was one/fourth inch mesh. Underneath this layer is a heavy deposit of yellow to red blown sand and topped with a good growth of grass, reflecting a period of non-occupation at the pueblo. This sand had been blown from sand hills 12 miles to the south up a long valley. This undoubtedly happened in the period of the drouth of 1269 to 1299. Below this are the layers of earlier ages of Pueblo III and back.

We screened about 1,700 artifacts of from two-thirds whole to complete in condition. The articles of chipped stone consisted mainly of Harrell and Fresno type arrow points, from hastily worked, poorly shaped chips, to beautifully chipped complete specimens. There was a majority of obsidian articles, which is true of this area and to the west. The rest of the chipped items are from chert, with a few of quartz and gemlike chalcedony.

Harrell and Fresno points (1,366) Historic Stage, Pueblo IV, estimated age in Texas 900 to 1500 A.D., here showing ages as late as 1700 A.D. 52% obsidian material in this number. Illustrations showing Harrell, A B C, Fresno D, E, Scallorn F.

Scrapers (120) Humpback, Side, Thumbnail class generally used for skin preparation and some pottery making.

Drills (22) Majority small, such as used in ornament and small bead work, illustration G for this use, larger type illustration H. Two stick hafted drills found.
Shaped stone skinning or fleshing tools. 3 of these were found showing evidence that this type of tool was used for skinning animals and explained the absence of chipped stone knives. With the European evidence present, metal knives could have been introduced by this late age as rusted sections of what appeared to be iron knife blades were revealed.

Bone awls (48) These were of medium to good workmanship and fairly plentiful.

Bone beads (99) Ranging from 1/2 inch long by 1/2 diameter to 3 inches long by 1/2 inch diameter, they revealed a people using much decorative dress along with the claws and small shell pieces found fashioned for this purpose.

Among the out of the ordinary items made by these people we have the pearl effigy which won the junior award frame for 1957, illustration I, a lower jaw of a saltwater fish, drilled for a pendant, a bone flute 5/8 inch diameter by 6 inches long, part of another bone flute, a shaped cross of shell, very good engraved shell pendant piece, 6 hairpins, single prong, made of the flat fragmentary bone of the lower leg section of a turkey, pottery human effigy 1 1/2 inches long by 1 3/16 inches wide, illustration J, several pottery arrow point effigies such as illustration K, L, one small full groove ground axe which appeared to have been used and damaged as a stone maul by a later person than the one who fashioned it, 20 ground, rectangular shaped pottery pieces, such as are listed at the Lincoln Courthouse Museum as gaming pieces.

European evidence consisted of 12 square iron nails, copper fragments, rusted iron pieces which by shape appeared to be broken knife or sword blades, numerous bits of fine quality china dishes of very old design, one of which had been attempted to be drilled by indian but did not succeed when the tempered section was reached, one good cross of pewter metal, 3 iron grapeshot from cannon such as the Spaniard used, 1 yellow glass trade bead, a copper button, a rusted musket hammer, and a 1 1/4 inch diameter thin copper disc.
with punched center hole.

Pottery—In this class, no vessels were recovered, so we can only classify the sherds as the following—

Lincoln Black On Red, Three Rivers Red on Terra Cotta, Chupadero Black On White, Casa Colorado Black On White. These types are attributed to Pueblo III age of 900 to 1300 A.D. Being in the lower part of the layer, they represent that used by the people of reoccupation of the pueblo after the Great drouth.

Cienigulla Glaze On Yellow, Agua Fria Glaze On Red, Espinosa Glaze Polychrome, Puaray Glaze Polychrome, Pecos Glaze Polychrome, Kotyiti Glaze On Red, Cicuye Glaze On Red, San Marcos Glaze On Red, Abiquiu Black On Gray, Tewa Polychrome. These types are representative of later ages of 1300 to 1700 A.D. or Pueblo IV. Many of these types have glaze finishes in the design instead of the older painted arts. This glaze has been attributed to Spanish influence.

There were no burials found in the layer and as it covered 300 to 400 years of occupation, one must presume this act of respect was conducted in another place in the area. It is a well established fact that trash heaps were usual places of laying one away, but as we will never know some of the circumstances regulating the conduct of early man, this is one of the items we may find out more about with further excavation.
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The source of and the groups designated by the early names applied by the Spaniards to Athapascan-speaking Indians, and sometimes to others of the Southwest, are still clouded with questions. One in particular is of concern here. Too many have accepted the explanation that the name Apache was derived from the Zuni term Apachu, meaning enemies. The Zunis applied this name to Navajos (Hodge, 1912, p. 63). When the time of the appearance and the use of the names applied to Apaches are reviewed, a number of interesting points emerge.

Though Hernando de Alvarado set out from Zuni on August 29, 1540, and went into the plains east of Pecos Pueblo, his report does not give a name to any of the Indians he met in that area (Hammond and Rey, 1940, pp. 182-184, 217-219). On April 23, 1541, Francisco Vasquez de Coronado also explored into the plains where he found a rancheria of Indians he called Querechos. Presumably this name was derived from the Pecos Taqu Keréok for Apaches or from Keretsa for Navajos (Hodge, Hammond, and Rey, 1945, p. 303) based upon the Jemez name for Athapascans, Kearaitsa'a (Harrington, 1940, p. 512). These Indians did not cultivate crops and used dogs to transport their household items (Hammond and Rey, 1940, p. 186). Five days later, he met Indians whom he called Teyas (from Caddoan Teya meaning allies?). These Teyas were enemies of the Querechos, painted their faces and bodies, and lived like the Querechos, hunting the bison (Ibid., p. 186).

According to the "Relación del Suceso" there were two types of people on these plains, Querechos and Teyas, who were enemies of each other (Ibid., p. 292). Juan Jaramillo, who accompanied Coronado, reported meeting the Querechos, as they were called "by the people of the terraced houses," and later another rancheria of Indians to whom he applied no name (Ibid., pp. 301-302). Pedro de Castañeda's account, written about 25 years after his return from the expedition, refers to Querechos and Teyas who (like others on the plains seeking refuge in winter away from the plains) went to the pueblos (plural is correct) of
Cicuye to spend the winter (Ibid., p. 261). He also mentions a third rancheria or province called Cona (from the Tewa akone? meaning plains: Harrington, 1916, p. 574) which also was occupied by Teyas who raised beans (Hammond and Rey, 1940, p. 239). It also was the Teyas who, first failing in their attack on Pecos, were said to have sacked some pueblos in the Galisteo Basin in 1526 (Ibid., p. 258). A Cochiti tradition apparently refers to this same event (Bandelier, 1892, pp. 116-119). In short, these two groups seem to be culturally different and hostile to one another.

Thus, Coronado and his chroniclers named two groups on the plains: Querechos, who did not cultivate and lived near the west edge of the plains; and Teyas, who raised an abundant crop of beans and lived some distance east of their enemies, the Querechos. Jaramillo reported rancherias of these two groups were 20 days apart (Hammond and Rey, 1940, p. 301). Coronado noted five days separation, plus some wandering around the plains lost? (Ibid., p. 186). Furthermore, Castañeda, in discussing the people of Quivira (in Kansas), stated "the people [were] almost of the same type and dress as the Teyas," and that they lived in round houses with roofs of straw (Ibid., p. 263). I suggested that the Teyas may have been a Caddoan-speaking group, such as the Wichita (Schroeder, 1962, p. 8) whose temporary domiciles on the hunt (tipis) differed from the lodges in their home villages (Hodge, 1912, pt. 2, p. 949). This also nicely fits Castañeda's statement referring to the natives following the buffalo on the plains, that in the winter, "some go to the pueblos of Cicuye, others to Quivira, and others toward Florida..." and "each group to the nearest place" (Hammond and Rey, 1940, p. 261).

In 1565, Francisco de Ibarra crossed to the east side of the Sierra Madre in northern Mexico where he found non-agricultural people, enemies of the Opatas whom Baltasar de Obregon (who interviewed members of the expedition, including those of 1581 and 1582) in 1584 referred to as Querechos (Mecham, 1927, pp. 172-173), probably the first application of the name to a non-Athapascan group. Since Apaches are
not known to have lived in or frequented the area south of the U. S.-
Mexico border until after 1680 (Bandelier, 1892, pt. 2, pp. 573-574),
these non-agricultural Indians may well have been the Gorretas noted
in this region as late as the 1620s (Milich, 1966, pp. 94-95; Schroeder,

In 1581-1582, the Rodriguez expedition, while at Malpartida (San
Marcos Pueblo), was told of the cattle in the plains, but these Pueblo
Indians refused to act as guides because the people who lived among
the cattle were their enemies (Hammond and Rey, 1927, p. 29), perhaps
the same as those who attacked various pueblos in 1526. On the edge
of the plains, Rodriguez met a large group in a rancheria where it was
noted that dogs carried loads (Ibid., pp. 31-32). The Journal does
not apply a name to these Indians who probably were Querchos. The
Spaniards did not go as far east as did Coronado, thus probably ex­
plaining why no contact was made with Teyas. Moreover, it was October,
perhaps too late for the Teyas to be out on the hunt, and perhaps also
explaining why these Indians were near the Pecos River rather than in
the plains because, according to Obregon, "when it was cold or snowed,
they sought shelter in the extensions and slopes of the sierras"
(Hammond and Rey, 1928, pp. 304-305).

In 1582-1583, Antonio de Espejo led another small party to New
Mexico. Some of the Indians encountered were referred to as Querechos.
Near Acoma a group of nomadic Indians were noted by this name (Mogollon
Apaches?) and were said to be "like the Chichimecos," a term applied
to wandering rather than sedentary groups. Again, the word Querechos
was used in the Hopi country (Hammond and Rey, 1929, pp. 87, 97, 112),
most probably in reference to Havasupais, Yavapais, and/or Paiutes
visiting the Hopis. No Athapascans are known to have lived near the
Hopis until about 1700 when Navajos are thought to have arrived in the
Canyon de Chelly country.

Not until 1584 did the term Vaqueros appear--"vile and wicked
Querechos, the Vaqueros" (cowboys)--as written by Obregon (Hammond
and Rey, 1928, pp. 19-20) when he applied the name to Indians near the
junction of the Gallinas and Pecos Rivers (Schroeder, 1974, p. 144), possibly two days east as opposed to 12 to 14 days east in Coronado's day.

In 1590, Gaspar Castaño de Sosa met what seem to have been Apaches, though he did not apply any name to them. These Indians used dogs to carry loads and were seen in the area of the junction of Live Oak Creek and the Pecos River near Sheffield, Texas (Schroeder and Matson, 1965, pp. 56-57). While visiting Picuris Pueblo in January, 1591, he reported that there were "foreign" people living in some huts near the pueblo who had come here for refuge (Ibid., p. 124), a custom of the Querechos in winter as reported by earlier expeditions noted above.

Up to the time of the entry of the Spanish colonists with Juan de Oñate in 1598, the journals either refer to nomadic Indians without giving a name or call those that might have been Athapascans "Querechos." The term Vaqueros was used only by a secondary source, Obregon. Querechos also was applied to obviously non-Athapascans.

On July 7, 1598, Oñate, at the Pueblo of Santo Domingo, received the obedience and vassalage of the Indians of that pueblo plus those of other Cherechos (Keres), southern Tiwas, and Jemez (Hammond and Rey, 1953, pp. 337-338). No Zunis nor nomadic Indians were mentioned as being present. The only other language groups contacted up to this point were the Piros visited in the course of the entry into New Mexico, the Tompiros of the Abó region, and the Tewas.

Between July 8 and 27, Oñate went north visiting Picuris and Taos and then returned south to stop at San Marcos, San Cristóbal, Calisteo, and Pecos. On the 27th they met the main part of the army in the Santo Domingo Valley. On August 2 he went to the Jemez, and on the 7th returned by way of Santo Domingo and San Ildefonso, arriving at San Juan Pueblo on the 10th, where he remained until the colonists arrived on August 18. The entire camp remained here, getting settled and building a church that was completed on September 7 (Ibid., pp. 318-323).

On September 9, Oñate assembled captains of the southern and northern Tiwas, Keres, Tewas, and Pecos at San Juan to obtain their
obedience and vassalage and to assign the eight friars to the various provinces. These included

The province of Pecos with the seven pueblos of the cienega to the east [Galisteo Basin] and all of the Vaquero Indians of that range as far as the Sierra Nevada [Sandias] and the pueblos of the great saline back of the Sierra Puaray [Manzanos].

This is the first use of the term Vaqueros by Spaniards in New Mexico and seems to have been applied to ancestral Mescaleros south of Pecos in what appears to be the same area referred to by Obregon, noted above.

Another assignment was

The province of Picuries, together with all the Apaches of the Sierra Nevada toward the north and east [Sangre de Cristos] and the province of Taos.

In this case, Apaches to the north and east refers to those previously called Querechos (ancestral Jicarillas?).

To the west of the Rio Grande only one assignment seems to relate to Athapascons, and that is the province of Jemez which included all of the Apaches [Mogollon Apaches south of Jemez called Querechos in 1583] and Cocoyes [Navajos] of the neighboring sierras and settlements (Ibid., p. 345).

Onate reports that the Cocoyes were farmers to the north, up the Rio Grande (Ibid., p. 485).

Pueblos not yet visited were included in these assignments also, such as Acoma and the Hopi and Zuni villages (Ibid., p. 346). Thus, Onate either was being given names of groups he had not visited, or that were not present, or he obtained them from previous Spanish expedition journals. In any case, no Zunis were present on this occasion nor were any nomads referred to as being among those present in the above quotations. A Zuni source for the name Apache seems extremely doubtful.

Onate's use of both Apaches and Vaqueros is a bit puzzling. However, Jusepe Gutierrez (who had come into the Southwest on an illegal entry with Leyba and Humana in 1595) reported that he had been a captive among the Apache and Vaquero Indians and escaped to the Rio Grande where he told his story to Onate on February 16, 1599 (Ibid., p. 418).
Onate's use of these names is not consistent. On March 2, 1599, in his letter to the viceroy, he stated that he was reporting on only the provinces that I have seen and traversed, and the people of this eastern part [as opposed to the Zuni-Hopi western part?], the Apaches, the nation of Cocoyes, and many others who in this region and neighborhood are found everyday (Ibid., p. 480).

In this report he also states

We have seen other nations, such as the Querechos or Vaqueros who live among the Cibola cattle in tents of tanned hides. The Apaches, some of whom we saw, are extremely numerous (Ibid., p. 484).

In 1601, on his trip onto the plains, Onate refers to Apaches on the Canadian River, stating that they were the masters of the plains (Ibid., pp. 747, 749). Also on the plains, he mentioned Vaqueros passing through the Canadian River area enroute to their homes after a trading trip to Taos and Picuris (Ibid., pp. 400-401). Perhaps the intent was to identify the Apache groups in the same manner as was later done in the 1620s by Benavides--the Apaches of "this eastern part" being comparable to Benavides' Gila Apaches, the Cocoyes to the Navajos, the Querechos to Benavides' Vaqueros, and the Vaqueros to Benavides' Perillos (Hodge, Hammond, and Rey, 1945, pp. 82-91).

The fact that Zunis apply the name specifically to Navajos further suggests that the name was not used by them until about 1700, since Navajos are not believed to have reached the Canyon de Chelly area before about 1700 or the Bluewater vicinity before 1740. In short, everything points to the name Apache as having its origin in one of the pueblo languages along the Rio Grande where it was first employed, not from the Zunis.

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ONE POT'S PEDIGREE

FLORENCE C. LISTER and ROBERT H. LISTER

The Mexican maiolica vessel illustrated in Figures 1 and 5d is a particularly handsome 18th century specimen which was collected by Houghton Sawyer at the beginning of this century, in whose home it suffered minor damage in the 1906 San Francisco earthquake. It is decorated in a style typical of the period: a rich purified cobalt in light and dark tones in an abstract Orientalized floral style that has come to be known to archaeologists as Puebla Blue on White. For many years this specimen was carried in the catalogue of its present owner, the Museum of International Folk Art in Santa Fe, as a vase or planter.

A comparable 19th century Mexican specimen at the Pennsylvania Museum and School of Industrial Art, Philadelphia, decorated in a colorful polychrome palette with representational motifs, was likewise identified as a vase when an illustration of it appeared in 1908 as a frontispiece for a booklet by Edwin Barber, the museum's director (Barber, 1908, frontispiece and Fig. 29).

In both instances the true function of the vessel form, highly typical for the late periods (15th through 19th centuries) of Spanish-tradition ceramics, was not recognized. Neither of these objects originally was intended for the parlor but for the bedroom, because both are chamber pots.

In the vocabulary of Spanish ceramics, a chamber pot is a bacín. It came in all grades from the finest to the humblest, and in some periods appears to have been made in both communal and individual sizes. As a peculiarly personal kind of receptacle, the chamber pot has been variously treated by the Spaniards who refer to it by a variety of names ranging from the cute (vaso de noche) to the explicit (orinal) (Lister and Lister, 1976, pp. 22, 25, 39, 66). More often than not, if Spanish bacines have been recovered archaeologically, they summarily have been categorized with other typical domestic
Figure 1. Puebla Blue on White bacín. Made in Puebla de los Angeles, first half of the 18th century. Courtesy of Museum of New Mexico.
objects and left undescribed because of their commonplace familiarity to the reporters. Frequently unaware of its use, American archaeologists or art historians sometimes have interpreted bacín to mean basin or, as in the cases above, have thought the form suitable for containers of house plants or flowers. Or, in avoiding any identification with function, they have defined it solely by shape, such as cylindrical jar or beaker. Although these latter descriptions are correct, the reference to utilization in this case adds the dimension of unique specialization. Now, with accelerated interest in the archaeology of the late 15th through 19th centuries in Spain and her former American colonies, it can be expected that as excavations of domestic structures proceed, more bacín remains will be recovered, making necessary a wider recognition of the vessel in question.

What seem to be the oldest bacín specimens in Spain have come from debris at Medina az-Zahra, a vast sprawling palace complex near Córdoba built by the Umayyad caliphate between A.D. 936 and 976. The entire community was destroyed by invading Berber forces at the beginning of the 11th century (Gómez Moreno, 1951, pp. 63-73). Because most of the Cordoban pottery assemblage as a whole can be interpreted as a blend of Persian, Byzantine, and Mesopotamian concepts transplanted to a new environment, it is probable that one or several of those sources were the probable originators of the bacín vessel form. Several of the early Cordoban bacines are covered with transparent uncolored lead glaze on interior surfaces only, exteriors being decorated with simple engraved motifs. Others display elaborate cuerda seca, or wax resist, patterns on exteriors, the interiors glazed but lacking further embellishment (Gómez Moreno, 1951, p. 323; Torres Balbás, 1957, Fig. 662; 1959, pp. 221-243; Velázquez Bosco, 1912, o. 80, Fig. 38; Fig. 2c herein). A contemporary Valencian specimen is painted on the exterior in green and amber over white in patterns comparable to those executed in the cuerda seca technique. Whether the ground is engobe or glaze is not made clear (Fig. 2d). However, the interior is coated with a melado, or amber, lead glaze,
Figure 2. Western Muslim bacín form contours. a, b - Qsar es Seghir, Morocco (Redman and Rubertone, 1976, Fig. 6); c - Medina az-Zahra, Spain (Torres Balbás, 1959, Fig. 17); d - Valencia, Spain (Torres Balbás, 1959, Fig. 1); e - Salé, Morocco (Torres Balbás, 1959, 233); f - Metal bacín, Egypt (Huyghe, 1951, 95; Talbot Rice, 1965, Figs. 137-138).

It is assumed that the substantial embellished bacines were used in communal lavatories such as those located in mosques, next to public baths, or in the large quarters of ruling families, and that they were characteristic only of Muslim or mudéjar grammars. In some cases they represent the finest caliber of ceramics of the times and probably replaced earlier carved stone or marble equipment. That they reflect upper class or municipal situations is due to the focus of archaeological interest thus far on sites or structures left from such utilization. As pottery making steadily became an ever more flourishing activity in the Spanish Muslim culture, smaller, simpler, more movable vessels meant for individual or family service probably also were to be found in humbler homes. Whether of derivation farther to the east or an invention of western Islam, these would more aptly fit the usual interpretation of a chamber pot as a receptacle used as a urinal in the bed chamber. One might expect them to have been wheel turned but left unglazed, as was the case with most coeval utility pottery, or that one or both surfaces might have been dipped into the thin lead glaze solutions gaining popularity for intermediate grades of wares.

The prototype for the individual ceramic bacín may perhaps be found among metal vessels. One indication of this derivation is suggested by a number of elaborate brass or copper receptacles of the same shape as the earthenware urinals which have been recovered in Mameluke Egyptian remains. One such metal vessel was acquired by the French King Louis IX (A.D. 1226-1270) when he was participating in the Third Crusade. These objects bear intricate inlaid silver patterns on both surfaces. A specimen not in the Louvre is said later to have been used for toileting purposes by 17th century royal children at the French court (Huyghe, 1951, p. 95). In calling this example the "baptistry of St. Louis," Talbot Rice suggests another function, but at the same time he considers the container originally to have been a secular object because of the human and animal figures appearing
in the design. He notes that a comparable specimen in the British Museum carries the name of Sultan Malik Nasir Muhammad, A.D. 1294-1341 (1965, Figs. 137-138). The metal examples are larger than coeval ceramic forms, flat based, cylindrical containers with a widely flared rim and no handles (Fig. 2f).

By the 13th century, the rather common usage in all levels of the society of the portable bacín is indicated by materials recovered on the southern side of the Straits of Gibraltar, still within the reaches of western Islam. Ceramics at the fortified port of Qsar es Seghir on the northern Moroccan Mediterranean coast opposite Andalusia, where the most significant Islamic occupation presumably lasted from 12th to mid-15th centuries, demonstrate that the ordinary Muslim citizen of the times did in fact make use of smaller, simpler chamber pots than the communal counterparts noted above (Redman and Rubertone, 1976, Fig. 6; 1978; Fig. 2 a, b herein). The older tubular profile was modified by a concave body wall, a flared flattened rim, an orifice of less dimension than the basal diameter, and, for convenience, a pair of strap handles attached at each side slightly above vessel equator and pulled down to lower body walls. The Muslims at the settlement diffused many of their pottery forms to the Portuguese, who moved into the town in A.D. 1458 and stayed for almost a hundred years. However, given the proximity of Qsar es Seghir to the active regional emporium of Sevilla, where there was a flourishing industry dedicated to economical low grade domestic ceramics, it is not unlikely that much of the utilitarian pottery in use at Qsar es Seghir by the mid-15th century actually may have been Andalusian rather than Portuguese. In any case, both Iberian traditions evolved from the same western Muslim base and undoubtedly shared numerous traits. This would have been especially true of coarse vessels designed for everyday life. In regard to the bacín, there is no appreciable break in the continuum at Qsar es Seghir from Muslim to Portuguese phases except that their size tended to be greater in later periods and, more frequently later, their interiors were coated with transparent lead glaze altered by iron or copper colorants that
often spilled down irregularly on exterior surfaces. The iron induced, amber colored glaze was far the more common of the two. The increase in number of bacinés in Christian phases at the site as compared to the Muslim phases possibly can be explained by cultural factors. Among these may have been a steadily augmented importance of ceramics for domestic purposes, the decrease in number of community toilet facilities, and changes in social behavior.

Lacking archaeological information to the contrary, one presently can only assume that comparable developments likewise had taken place earlier in Andalusia, as it passed from Muslim to Christian political control in the middle to late 13th century. The work force of the Sevillian potteries remained strongly Muslim in physical composition and in craft orientation. The communal bacin appears to have been abandoned as churches replaced mosques, and many of the public baths with their latrines were demolished.

A possible example of a family size bacin made during the long interval between the mass Muslim exodus from Sevilla following the reconquest in A.D. 1248 and the American adventure at the end of the 15th century is the oldest white maiolica chamber pot so far observed in the Spanish continuum (Lister and Lister, 1982, Fig. 4.15; Fig. 3b herein). It was recovered during some civic repairs in Sevilla and any possible stratigraphic placement was lost. Coated on both the interior and upper half of the exterior with a thin white tin opacified glaze, this specimen is small, straight sided, with two handles on opposing sides attached from beneath the rim to midsection, and a sketchy cobalt blue decoration of spaced parallel brush strokes on the thickened, flattened, wide rim. The dull slate tone of the pigment resulting from unrefined processing of the mineral, as well as the decorative mode, suggest a date anywhere between the late 13th into the 15th centuries (see Ainaud de Lasarte, 1952, Fig. 39; González Martí, 1944, vol. 1, Figs. 108-109, 114, 118, 120, 128, 134, 138, 143, 162; Martínez Caviroté, 1968, Figs. 1, 14, 28 for comparable rim lines on 13th and 14th century Manises models). Its unpretentious shape is
Figure 3. Spanish mudéjar bacín form contours. a - Teruel (Almagro Basch and Llubí Munné, 1962, Fig. XCVII); b - Sevilla (specimen at Museo de Artes y Costumbres Populares, Sevilla); c, e, f, - Manises (Ainaud de Lasarte, 1952, Fig. 97; González Martí, 1944, Vol. 1, Fig. 302-303; 1954, Fig. 45 (5); d - Teruel (Ainaud de Lasarte, 1952, Fig. 500; Almagro Basch and Llubí Munné, 1962, Fig. XCII).
a modest departure from the more graceful profile of the Qsar es Seghir bacin, but the generic relationship with the smaller Islamic examples from that site is obvious. Their contemporaneity is probable.

An unillustrated comment by the Spanish student of ceramics, González Martí (1944, vol. 1, p. 240), implies that the same vessel form was known in the Valencia area during the 14th century. He states that squat, tapered bodied, wide mouthed, unglazed vessels having wide horizontal brims and two handles were found to have been utilized as ballast over vaults of the San Agustín church in Valencia, which was originally erected in the A.D. 1300s. If the pots had been fashioned specifically for this function, there would have been little need for the handles because the vessels apparently were not nested or bound together in any fashion as, for example, were those in the dome of Byzantine San Vitale in Ravenna. Therefore, one can assume either that they were discarded chamber pots for which secondary usage was found or they were seconds sold at a cheaper bulk rate, making them practical for construction purposes.

A more exotic phase of Levantine bacin stylistic evolution demonstrates the burst of ceramic expertise that took place there during the 15th century as a result of a lively fusion of mudéjar and Gothic ceramic traditions that made the Manises artisans the most outstanding and individualistic in Spain at the time. Not content with the un-gainly chunky contour of the older bacin, local potters and ceramic painters turned out richly ornamented, finely modeled versions of the customary bacin form (Ainaud de Lasarte, 1951, Fig. 98; González Martí, 1944, vol. 1, Fig. 98; 1954, Fig. 45 (5); Torres Balbás, 1949, p. 397). They were notably enhanced by densely applied overlays of metallic patterns drawn from the rich regional design vocabulary, some of which included heraldic crests. Elaborate applique or other surface manipulations added to the complexity of vessel configuration. Much of the same mudéjar stylistic dialect and the luster process was available to Andalusian artisans, but the pervasive Gothicizing quality
observable on Levantine pottery after the 13th century was not. Hence historical circumstances in part underlay the distinct regional ceramic statements which evolved.

The characteristic Valencian interpretation of the lusterware bacín varied from very squat to moderately tall, or approximately from 13 to 37 cm. (Fig. 3 c, e, f). The smaller jars quite possibly may have been intended for the use of children. The four prominent arched handles spaced equally around the body that extended from just beneath the rim to the lower body were unique to Valencia and Aragon, though placement on the vessel was the same as that seen at Sevilla. Body walls were pulled in slightly from the flat base to rim, but seemingly were not quite as concave as in the Qsar es Seghir examples. Rims were flattened and slanted very slightly upward. The most typical Valencian characteristic of the vessels was to be found in the intricate lustered patterns applied as over-painting on maiolica grounds on exteriors and upper rim surfaces (Ainaud de Lasarte, 1952, Fig. 97; González Martí, 1944, vol. 1, p. 239, Figs. 302-303; 1954, Figs. 45-46). The luster method was expensive because of inherent technical difficulties and materials utilized but, when successful, represented one of the pinnacle achievements by Spanish Muslim and mudéjar potters. In addition to consumption by Spanish elite, such pots must have found a high priced market in Italy and other countries to which Valencian lustered ceramics customarily were exported. If they actually served as chamber pots, they are part of the large body of ostentatious luxury articles, used in the privacy of bath and bedroom, in which for centuries the world's Sybarites have indulged. They represent in clay the same self indulgence as do the Mameluke bacines in metal.

The Aragonese utilization of the small, low, four handled bacín form developed by Manises craftsmen was continued into the 17th century at Teruel, a center some 75 miles north of Valencia, which for some five centuries shared much of the Levantine ceramic tradition (Ainaud de Lasarte, 1952, Fig. 500; Almagro Basch and Llubia Munné, 1962, Fig. XCII; Fig. 3d herein). In place of the fancy luster patterns, however, the Teruel bacines exhibit the ultimate decadence of a once rich mode. On
their exteriors and upper rim surfaces were the casually applied green and brown decoration over a white maiolica ground typical of other coarse domestic wares of the region at that period. In the 18th century a very tall, straight sided, four handled style with blue designs was popular (Almagro Basch and Llubia Munne, 1962, Fig. XCVII; Fig. 3a herein).

In the dawn of the 16th century, as Spanish galleons plowed the seas toward the Western Hemisphere, the indispensable bacín in its simplest version inevitably was stowed among the cargo, to become just one more cultural item ultimately evolved out of an amorphous antiquity, far removed from Iberia, to diffuse to the new American environment. The earliest surviving reference to its being in the Castilian gear of the explorers came from Columbus himself. In his letter to the Catholic Kings describing his Third Voyage (A.D. 1498), which took him along northern South America, he wrote as a canoe of armed natives came toward his ship, "I showed them bacines and other things with which to lure them to come" (Ballesteros y Beretta, 1945, p. 373). Appropriately, one of the relatively few early 16th century bacines thus far indicated in the archaeological record for Spanish America was recovered at Cubagua off the coast of Venezuela (Cruxent and Rolando, 1961, pp. 15-19). However, without any doubt, bacines had made earlier appearances at Hispaniola, probably from A.D. 1492 onward.

Ongoing ceramic research indicates that the bulk of the pottery with which the invading Spaniards littered Caribbean locales through the first half of the 16th century originated in workshops at Sevilla (Goggin, 1968, pp. 117-148; Lister and Lister, 1974, pp. 19-23; 1978, pp. 1-24; 1982, pp. 45-69). A few pieces of finer wares from other European sources have now been identified, but chamber pots are not among them. Just when local Caribbean industries for the production of everyday sorts of vessels may have begun is unknown, but at least as late as A.D. 1551 basinicas de samara are included on a bill of lading for a ship sailing from Santa Cruz de la Palma in the Canary Islands bound for Santo Domingo (Morales Padron, 1955, p. 321). It is interesting to reflect on priorities when—in this same shipment that included 15
chamber pots—415 botijas peruleras, or jugs for wine, likewise were dispatched. As there never was a wheelmade pottery industry in the Canaries, it is safe to assume both the basinicas and the botijas had been reshipped from Sevilla. There, flourishing locerías dedicated to making a variety of household wares were situated just one block from the Guadalquivir docks.

As yet few bacines from Caribbean sites representing the first Spanish theater of operations have been described precisely, though they have been mentioned in passing along with other common utility objects or included as a typical form of the dominant plain white maiolica type (Goggin, 1968; Nieves Sicart, 1980; Ortega and Cruxent, 1974). There are few distinctive features by which a bacín can be identified readily among assortments of fragments, conceivably from many different kinds of vessels. Nevertheless with further excavation activities, bacines will be encountered in complete or restorable condition and hopefully will be reported in fuller detail.

Two specimens which have received careful consideration come from opposite ends of the Indies, namely Caparra, the first settlement on the island of Puerto Rico, and Nueva Cádiz, the pearling station on Cubagua just off shore from Venezuela (Cruxent and Rolando, 1961, pp. 15-19; Hostos, 1938, p. 83; Fig. 4 a,b herein). Other 16th century specimens are known to exist in Cuba, but literature concerning them is not available for the purposes of this brief survey (Cruxent and Rolando, 1961; National Park Service catalogue records, Castillo de San Marcos National Monument, St. Augustine, Florida). The known Caribbean specimens represent a single homogeneous stylistic interpretation. It was characterized by a flat base, vertically pulled up walls to form a cylinder, a thickened flattened rim, paired heavy strap handles fastened at upper midsection, and comparable dimensions varying between 22 and 29 cm. in height and 20 cm. in diameter. Both examples are covered on the interior with clear melado lead glaze. The Caparra bacín has the same coating over the entire exterior surface; that from Nueva Cádiz is glazed only on its upper exterior walls, the glaze having been allowed to flow irregularly down the body as it melted during firing. The former is also
enriched with two sets of grooved encircling lines, that from Nueva Cádiz with a single incised line at the point of handle attachment. The utter simplicity, straightforward configuration, and partial exterior glazing suggest affiliation with the Andalusian-Moroccan rather than Levantine-Aragonese ceramic format.

Very shortly after the Spaniards settled into the Valley of Mexico, it is now believed they initiated pottery making activities, even though at the same time ceramics continued to be imported from Spain. Recent studies of stratigraphic deposits beneath the Mexico City cathedral confirm the probably local manufacture of stanniferous glazed tableware by about A.D. 1540 (Lister and Lister, 1978, 11.1-24; 1982, p. 9), making it likely that less technically advanced calibers of unglazed or lead glazed objects were coming from colonial workyards by that time or even earlier. Hence the bacín encountered in fill dirt of a 16th century context beneath the Curia of the cathedral probably was a local product (Fig. 5 b). Physical tests could ascertain the correctness of this derivation, as red iron-bearing Mexican clays typically contain volcanic inclusions not present in those found in Spain. The
important consideration for this survey is that, whether made by Spaniards residing in Sevilla or in Mexico City, its style is identical to the Caribbean bacines believed to be Iberian.

Two comparable chamber pots of probable 17th century age confirm the continuation of the colonial mode. Again, they come from the opposite extremities of Nueva España. One was recovered from the moat of the fort of San Marcos at St. Augustine, Florida (Fig. 5a). Because it is covered with cream-white tin glaze, it is suspected to have originated in a shop in highland Mexico, where two maiolica industries, one at Mexico City and one at Puebla de los Angeles, are known to have been functioning. There was no known closer source for maiolica, and furthermore, it is well documented that most supplies for the Florida presidio and town were purchased in the commercial centers of central Mexico, to be shipped annually from Vera Cruz via Havana. The second 17th century (?) bacín was found in the rubble of the Santo Domingo convent in Santiago de los Caballeros (Antigua), Guatemala. It too bears a cream-white tin opacified glaze similar to that on the Florida specimen but is believed to represent a Guatemalan rather than a Mexican product. A small provincial pottery industry operating on the outskirts of Santiago supplied the local citizenry with maiolica domestic goods through the main period of colonial occupation. The brick red paste, thin glaze, and low caliber of workmanship reaffirms its suggested origin. The few differences between these two colonial examples are due to distinct artisans working within the same form vocabulary but who have moved slightly away from the earlier peninsular prototype.

The unadorned lead or tin glazed chamber pot undoubtedly continued to be mass produced throughout the 18th and 19th centuries for the colonial residents of Nueva España and their successors in independent Mexico. However, a higher quality product also appeared. Its elaborated decoration has prompted its acquisition by collectors, some of whom have been unaware of its domestic function. In an interest in embellished bacines the provincial potters were following the lead of contemporary artisans in western Europe. In form the top-of-the-line
Figure 5. Mexican bacín form contours. a - Castillo de San Marcos National Monument, St. Augustine, Florida (National Park Service museum catalogue record, no. 1063; specimen from former Convento de Santo Domingo, Antigua, Guatemala, owned by Edwin and Virginia Shook); b - Mexico City (specimen recovered at Cathedral by Dirección de Restauración de Inmuebles Federales); c-f - central Mexico (c - specimens at Museo de Virreinato, Tepozotlan; d - specimen at Museum of International Folk Art, Santa Fe, New Mexico, and Cervantes, 1939, Vol. 1, 241; e - Cervantes, 1939, Vol. 1, 287; f - Museu de Alhondiga, Guanajuato).
Mexican bacín of the 18th century differed from earlier examples only in often being somewhat taller and sometimes having slightly concave walls and paired handles placed directly beneath the broad everted rims. All were covered on both surfaces with white tin opacified glaze. Exteriors were painted in cobalt blue patterns taken from the typical 18th century Puebla assemblage of floral and bird motifs. Mexican patterning either densely covered the total available field or was confined to the upper two-thirds of the body (Cervantes, 1939, Vol. 1, p. 241; Fig. 6 a, b herein). Frequently a simple fern device was spaced around the upper surface of the flared, slightly upturned brim in a convention also typical of certain coeval floreros. During the 19th century the blue on white palette gave way to vibrant polychromes on white or pale blue grounds which, in addition to narrative scenes, often were used to render nationalistic themes inspired by the new political independence (Cervantes, 1939, Vol. 1, p. 253 bottom right; Fig. 6 c, d herein). There appears to have been considerable variation in vessel height, though more often taller than squat. An average height was about 30 cm. The ribbon handle attached with two or three convolutions elaborating the terminal made an appearance. Somewhat later in the 19th century or perhaps early in the 20th century, Mexican bacines were outfitted with broad knobbed lids (Cervantes, 1939, Vol. 1, p. 287, bottom left and right; Fig. 5e herein).

A final postscript to this review of known bacín remains of the Caribbean and Nueva Espana was provided by the subway excavations beneath Mexico City. From these trenches came several complete chamber pots of a form totally unlike the Spanish-tradition bacín. Very low, round bodied, with a single loop handle near or directly off the rim, they are considered to have derived from English sources. A comparison with comparable specimens recovered in colonial North America reveals their marked similarity, especially to delftware examples dated ca. 1730 (Noel Hume, 1970, Fig. 56; Fig. 7 a, b herein). Noel Hume considers the English chamber pot to have been modeled after silver originals. Whether the delftware chamber pots were imported
Figure 6. Typical Mexican majolica bacines.  a - Puebla Blue on White, 18th century; specimen at Museo de Virreinato, Tepozotlan; b - Puebla Blue on White, 18th century; Carlos de Ovando collection; Mexico City.  c - Unnamed polychrome, 19th century; Carlos de Ovando collection, Mexico City.  d - Unnamed polychrome, 19th century; specimen at Museu de Alhondiga, Guanajuato.
into central Mexico along with other known British wares that found a ready market there in the 19th century, or whether they were copies made locally, remains undetermined. Regardless, the subway specimens do not fit into the Hispanic format.

Although the published record of bacin development in the Spanish Olid and New Worlds still is spotty, it is hoped this cursory examination of the form will help promote an awareness of its distinctiveness and its widespread distribution.

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Tucson, Arizona
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"HANDEDNESS," TECHNOLOGY AND SYMBOLISM IN ANASAZI INDENTED-CORRUGATED WARES

DAVID H. SNOW

INTRODUCTION

In an analysis of indented-corrugated jars and jar sherds from Southwestern Anasazi sites, E. T. Hall (1932) studied the angle of indentation formed by thumb pinching the wet clay during construction of the vessel. He noted that "in some cases the direction of the indentation was at right angles to the average" (Ibid., p. 1) and, from this, he concluded that the variations were produced by pinching with opposite hands:

as a check on the idea that pinching with opposite hands produced an indentation at right angles to each other, it was suggested that the coil of the vessel would be influenced by the type of pinching. Many bottoms of indented [vessels] were examined... and it was noted that clockwise coiling occurs with left-handed pinching and that counter-clockwise coil occurs with right-handed pinching (Ibid., pp. 1-2).

Since the two directions are characteristically opposite, the thumb of the hand rotating the vessel, because it is most conveniently placed on the vessel exterior during this process, is at the correct angle (with the nail face-up, or nearly so) to produce pinches which ascend the vessel wall opposite the direction of coil.

Right moving or clockwise coil results from rotation of the vessel with the left hand; the left thumb, in this case, produces a left moving, or counterclockwise, thumb pinch pattern as it ascends the vessel wall. The reverse is true and, by looking at the direction of thumb pinch pattern on a sherd, one should be able to predict the direction of coil, since they are characteristically opposed (Figs. 1-5).

Hall grouped his data by geographical or cultural districts which, broadly speaking, represent western Anasazi (e.g., "Little Colorado &
Figure 1. The angle of thumb pinch and, therefore, the 'movement' of the resultant pattern, is shown by the superimposed lines. R indicates right moving, right handed pinching, correlated with counterclockwise coil rotation. (Photo by E. T. Hall; sherds unprovenienced.)

Jeddito, "Northern Arizona," "Utah & Nevada," and so on), and the eastern Anasazi and their southerly neighbors (Mimbres, "South East New Mexico, Texas & Mexico," and the Rio Grande and eastern peripheries). He then counted the number of left and right hand indented-corrugated sherds classified according to Pueblo "stage" (i.e., Pueblo I-IV), and created graphs illustrating variability in thumb-pinch direction through time and space. Because most of the sherds emanated from Pueblo III sites, Hall concluded that the
distribution of right and lefthanded pinching according to stage shows little of definite character on which to base conclusions at the present (Ibid., p. 7).

The data do suggest, however, that a significant difference existed, such that Western Anasazi potters overwhelmingly coiled to the left (using their right hand), while sherds from the Mesa Verde, Mimbres, and the Rio Grande (including sites from southeast New Mexico, Texas, and Mexico) show an abnormally high incidence of clockwise, or right moving, or left handed coiling, as indicated by left moving, or counterclockwise thumb pinching. Although these tentative conclusions were derived from a small sample, the fact remains that his data suggest a higher than "normal" frequency of left handed, or right moving coiling, than the occurrence of left hand dominance in human populations would indicate.

Hall did not argue specifically for a biological or genetic basis for his observations, and he was careful to limit his conclusions to the point that direction of thumb pinch patterning on a vessel exterior correlates with coiling in the opposite direction. It is, of course, possible to produce the thumb pinches with the same hand which bonds the coils and, therefore, rotates the vessel. In this case, the coil direction and exterior pattern will, of necessity, be opposed. The implication is that "handedness" in Anasazi potters is registered on thumb pinch corrugated sherds.

The discussion that follows examines the questions of handedness and technology as these might be expected to be reflected in indented-corrugated vessels. My tentative conclusion is that neither is necessarily related to the correlations observed by Hall and, therefore, that cultural behavior may be responsible. I suggest that, if this is true, the directional correlation indicated by thumb pinch and coiling may reflect symbolic behavior on the part of the prehistoric potters—symbolic behavior whose message was to be read within the larger context of Pueblo ritual circuitry.
THE AMBIDEXTEROUS ANASAZI

Data on the expected or "normal" distribution of left versus right handedness in human populations is difficult to come by and is complicated by a variety of factors, both cultural and biological. Statistics generally derive from small sample, special study groups which may or may not be appropriate to the population at large or to particular segments of it in time and space. Nevertheless, all researchers agree that right handedness is preponderant and that left handedness occurs in only about 10-11% of the general population (Hellebrandt and Houtz, 1950; Hardyk and Petrinivich, 1977). One report (Howard, et al., 1982, p. 367) noted that approximately 9% of American women "use their left hand more frequently than their right." Obvious problems in determining the frequency of left handedness include ambidexterity and the widespread culturally conditioned belief that the left is somehow unlucky, sinister, or socially inappropriate (Wilson, 1979, p. 58). One study observed that

a large percentage of left handers were ambidexters...human beings are not divisible into three well defined groups, right, left or ambidexterous, but...there exists a graded series of asymmetry types, ranging from pronounced right-handedness, which is relatively common, through weak right-handedness and ambilaterality to left handedness (Hellebrandt and Houtz, 1950, pp. 231-121).

Furthermore, although a number of ways have been used to determine and evaluate handedness,

it has been pointed out that when a number of manual tasks are employed, handedness can no longer be considered a simple dichotomous trait, but rather is continuously distributed (Jantz et al., 1979, p. 93).

It is clear that dominant handedness is subject to wide physiological variation, but recent studies strengthen the hypothesis that genetic
determination, rather than learning, underlies dominant handedness (e.g., Wilson 1979, p. 243).

The low frequency of left hand coiling (6%) indicated by right moving pinching on sherds from Western Anasazi sites is expected in view of the low percentage of left handedness generally (Tables 1 and 2). On the other hand, the frequency of left handed coiling by Eastern Anasazi potters (31%) indicated by Hall's data is far higher than either the contemporary Western Anasazis or modern left hand frequencies. The percentage of left hand coil exhibited on Mimbres and Mesa Verde sherds certainly indicates significant differences; and the ratio of nearly 13:1 left hand to right hand pinch from western sites (indicating right handedness), compared to only about 2:1

<table>
<thead>
<tr>
<th>Geographic Area(s)</th>
<th>% Left hand coil</th>
<th>% Right hand coil</th>
<th>Total Sherds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mimbres</td>
<td>68% (141)</td>
<td>32% (67)</td>
<td>208</td>
</tr>
<tr>
<td>Mesa Verde</td>
<td>47% (42)</td>
<td>53% (48)</td>
<td>90</td>
</tr>
<tr>
<td>SE New Mexico and Lower Rio Grande</td>
<td>35% (97)</td>
<td>65% (184)</td>
<td>281</td>
</tr>
<tr>
<td>Rio Grande and East peripheries</td>
<td>30% (588)</td>
<td>70% (1352)</td>
<td>1440</td>
</tr>
<tr>
<td>Chaco Canyon</td>
<td>16% (19)</td>
<td>84% (98)</td>
<td>117</td>
</tr>
<tr>
<td>Acoma, Laguna and Grants area</td>
<td>10% (60)</td>
<td>90% (565)</td>
<td>625</td>
</tr>
<tr>
<td>Northeastern Arizona</td>
<td>6% (43)</td>
<td>94% (738)</td>
<td>781</td>
</tr>
<tr>
<td>West Puerco and Upper Little Colorado</td>
<td>5% (37)</td>
<td>95% (658)</td>
<td>695</td>
</tr>
<tr>
<td>Zuni, El Morro Valley</td>
<td>5% (41)</td>
<td>95% (823)</td>
<td>864</td>
</tr>
<tr>
<td>Lower Little Colorado</td>
<td>4% (83)</td>
<td>96% (2014)</td>
<td>2097</td>
</tr>
<tr>
<td><strong>TOTALS:</strong></td>
<td><strong>1151</strong></td>
<td><strong>6547</strong></td>
<td><strong>7698</strong></td>
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Table 1. Geographical distribution and frequency of left and right hand coiled sherds from Hall's data, arranged in descending order of frequency, approximately from east to west. I have grouped several of Hall's original geographical areas into larger units for ease in presentation, except for the first five.
from eastern sites, simply cannot be explained by genetics or "handedness" alone. Either Eastern Anasazi potters represent highly abnormal populations of left handed females, or as yet unsuspected technological or cultural factors operated in the past to differentiate them from their westerly neighbors (Table 2).

Some degree of "ambidexterity," in fact, is recorded on indented-corrugated vessels. For example, Hayes and Lancaster (1975, p. 109) found sherds of Mancos Corrugated in which the ridges made by deep indentations [were] staggered from coil to coil...[in one]...the diagonal ridges changed direction about every 10 coils, when the ambidexterous [sic] potter changed hands to produce a zigzag effect.

In one example they observed that the ridges "run vertically." In the collection of Mesa Verde Corrugated jars from Long House, Cattanach (1980, p. 217) noted a subtle way of introducing a pattern...the potter apparently switched hands used to indent the coils, or in any case changed the angle from which the coils were indented (my emphasis; see also Swannack, 1969, pp. 69-71).

Such reversals are the exception, however, and most indented-corrugated patterns are unidirectional overall on a vessel (Fig. 2).

Intercultural differences in the characteristic direction of coils in basket weaving suggest that "handedness" plays only a minor role in construction. DeWald (1979, p. 34) noted that nearly all Papago baskets are coiled counterclockwise, but remarked that

<table>
<thead>
<tr>
<th>Geographical Area(s)</th>
<th>% Left hand coil</th>
<th>% Right hand coil</th>
<th>Total sherds</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE New Mexico and</td>
<td>31% (685)</td>
<td>69% (1536)</td>
<td>2221</td>
</tr>
<tr>
<td>Rio Grande Anasazi</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western Anasazi*</td>
<td>6% (283)</td>
<td>94% (4896)</td>
<td>5179</td>
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</table>

Table 2. Combined Eastern and Western Anasazi frequency of left and right hand coiled sherds from Hall's data. * indicates that neither the Mimbres nor Mesa Verde data are included, but see Table 1 for those figures.
Figure 2. Note the reversal of thumb pinch patterning on the sherd at the left, and the use of an implement to produce the superimposed incised design on the sherd at the right. In both cases, the patterns were obviously produced independently of the direction of coil. (Photo by E. T. Hall; sherds unprovenienced.)

I know of one woman who weaves clockwise. Knowing that the Chemehuevi Indians have always woven clockwise, I asked her if she had any Chemehuevi blood in her. She looked at me strangely, laughed and said, "no, I'm just left handed and it's easier for me to weave this way."

Unless one assumes that all Chemehuevi basketmakers are left handed, the difference between the two groups may be analogous to the difference in coiling suggested by Hall's data. Vessel type, form, and size are also considerations in determining the direction of coil in basket weaving, as exemplified by Pima and other weavers:

the shape and size were well fixed in the [Pima] weaver's mind before she started work. The shape determined the finish surface, too. A deep, straight sided basket was finished on the outside;
Figure 3.

An unusually clear example illustrating right thumb pinching, moving clockwise; coil, presumably, is counterclockwise, having been produced, as well, with the right hand. The base of this vessel is probably illustrated in Figure 5. (Photo by E. T. Hall; provenience not identified.)

that means all trimming was made on the inside of the basket so as to preserve the smoothest possible effect on the outside that would show. These were made with coiling clockwise. Trays and bowls were woven counter-clockwise with the concave surface the finished one. The reverse method was used in making jars--sewed from the outside, with the opening away from the worker (Cain, 1962, p. 29).

Thus, large jars, like deep baskets, were coiled clockwise; looked at from the interior, the direction of coil is, of course, reversed. Right, or clockwise, coiling in basketry is the rule throughout California, except for globular forms (jars) and flat trays made by the Miwok, where the coil is left moving, or counterclockwise (Douglas, 1937). For Apaches in general, Douglas noted (1934, p. 54) that coiling is also right to left, except for those "made by a left-handed worker." A more significant Apachean exception is discussed later in this paper.

Published descriptions of modern potters' techniques are not
Figure 4.

Left hand pinching and clockwise coiling are evident on the bottom of this vessel. (Photo by E. T. Hall; provenience of sample not identified.)

Figure 5.

Right handed pinching and counterclockwise coiling are illustrated in contrast to Figure 4. This is probably the bottom of the vessel shown in Figure 3. (Photo by E. T. Hall; provenience not identified.)
adequate for determination of traditional coil direction or variations from it. These descriptions suggest that potting may be one of those manual tasks that is not easily or automatically classified according to handedness, a "simple dichotomous trait," but one which is "continuously distributed" from one extreme to the other (Jantz et al. 1979, p. 73).

The manufacture of a coiled pot involves circuitry; the coils must proceed in one direction or the other, either clockwise or counterclockwise, left or right, sunwise or antisunwise (Fig. 6). Characteristically, the coil is "fed" onto the one below it with one hand (e.g., Guthe, 1925, Plate 13a; Underhill, 1944, Plate IV-2; Te Ata, 1943, p. 183; LeFree, 1975, Figs. 14 and 16), while the other hand "receives" the coil and bonds or presses it to the free edge, or rim below. If the thumb of the "receiving" hand is placed on the exterior of the vessel wall, with the four fingers on the inside, and if the right hand is bonding and receiving the coil, the coiling is most likely to be counterclockwise; if the left hand is bonding in this case, coiling will normally be in the opposite direction, or right moving (or clockwise). In both cases, thumb pinching on the exterior may be accomplished during the process of coiling by the bonding hand and will, perforce, be the reverse of the direction of the coil (Figs. 7-8).

LeFree's (1975, pp. 27-37) Santa Clara data suggest that, as in basketry, some variation in coil direction is achieved depending on the size and form of the intended vessel, and on the position of the fingers of the "receiving" hand (that is, whether they are placed inside or outside the vessel as it is turned). Large bowls and jars are apparently rotated with the hand used in pinching the coils to the base—in the cases illustrated by LeFree, the left hand—so that coiling proceeds clockwise, as Hall assumed. Describing the manufacture of a vessel at San Ildefonso, Guthe (1925, pp. 33-34) noted that
the roll is pressed against the edge just enough to hold it in place (pl. 13, a)...[the right hand] thumb is on the exterior, the fingers on the interior of the edge. Then, as the puki is revolved counterclockwise, the rest of the roll is pressed against the edge of the pot (my emphasis).

Clearly, the right hand rotates the puki as it simultaneously bonds and receives the coil from the left hand, as illustrated in the plate referred to (see also, Plate 29b, in Guthe, for illustration of a Zuni potter's hands during this process). Te Ata (1943, p. 183) illustrates Maria of San Ildefonso as she coils; in this instance, her right hand "feeds" the coil to the left, which bonds it to the rim (see also Underhill, 1944). Barry (1981, p. 14) also illustrates Maria coiling, but it is her left hand which "feeds." The extent to which these few illustrations indicate idiosyncracies of individual potters is not known. LeFree's and Guthe's descriptions suggest, however, that vessel type may dictate the positioning of the potter's hands and, thus, the direction of coil.
Nevertheless, there is no compelling reason to assume that handedness, direction of coil and thumb pinching are dependent aspects of a single continuous process. There are, in fact, sufficient reasons to believe that the addition of thumb pinch patterns to the vessel exterior was an independent process with respect to the direction of coil.

1. Guthe's (1925, pp. 42-44) description of the steps in making a jar at San Ildefonso indicates that successive coils are added in stages, with drying time in between to allow the soft clay to harden somewhat before additional coils are welded to the rim. During this drying time, the standing edge or rim is prepared for the addition of the next coil(s). When the growing vessel is firm enough to support the weight of the new coils to be added, the building is continued. The temporary rim has been kept soft by the application of water from time to time. The method of preparing this rim for the application of the rings varies slightly with different potters. The rim may be pinched into scallops between the thumb and forefinger of either hand, usually the right, or it may be roughened by vertical strokes of the kajepe on the exterior. When the kajepe is used, it also destroys the original smoothness of the rim, producing an irregular, broken surface to which the new roll can easily be welded (p. 43, my emphasis).

Obviously, jars are not constructed in a single uninterrupted, continuous process by spiraling a single long coil into the desired shape. Since the coils of Anasazi corrugated pots overlap on the exterior, downward, the weight of additional coils to the soft, malleable rim would cause distortion to that portion if it were not allowed to harden slightly. Continued preparation of the rim for the addition of successive coils, as Guthe noted, involves marring the exterior surface just below and on the rim, making impractical the application of thumb pinch designs in the soft clay bonding the previous coils.2

2. Thumb pinching, in fact, is not the only means of surface embellishment on Anasazi corrugated vessels and, since other implements were evidently used independently of the coiling process (Fig. 2),
Figure 7.

a (above) - Potter's hands positioned such that the bonding hand, the left, rotates the vessel to the left, or counterclockwise. Exterior thumb pinch during this process is not possible until one hand or the other is re-positioned following laying of the coil length. (Drawing by Paul D. Kinslow.)

b (below) - the same hand bonds the coil, but the position of the fingers and thumb, on the edge closest to the potter, creates a clockwise rotation of the vessel, in contrast to (a) above. The left thumb may produce a pinch pattern during this process, in theory, and that pattern will be opposite for the coil rotation unless the thumb is rotated 90-180 degrees for each impression. The result will be a pattern moving in the same direction as the coil rotation. (Drawing by Paul D. Kinslow.)
Figure 8.

a (above) - The potter's hands positioned as in Figure 7a, except that the right hand bonds the coil resulting in clockwise rotation of the coil (Drawing by Paul D. Kinslow.)

b (below) - The same hand bonds, in this case, resulting in a counterclockwise revolution; the thumb pinch pattern will proceed normally clockwise unless the angle of the right thumb is altered 80-190 degrees. (Drawing by Paul D. Kinslow.)
it can be argued that thumbnail impressions might also have been produced in similar sequence: that is, following coil bonding and independently of the direction of coil or of rotation of the vessel. Following the bonding of one or more coils, while the clay was still impressionable, either thumb may have been used to create the continuous thumb pinch pattern by revolving the puki regardless of the direction of the coil. This also allows for the reversal of thumb pinch patterns on a single vessel, as was observed earlier in the Mesa Verde sherds.

3. From the perspective of the potter, the intended direction of thumb pinch pattern on a corrugated jar is dependent, in part, on the method used to start the vessel. If, as it is commonly believed, such vessels are started in a puki, the direction of coil exhibited on the exterior will be the mirror reverse of the direction in which the potter lays the coils on the interior. More important, as seen in Figure 6, such a vessel initiated in a puki will not exhibit the exterior overlap of the coils. Consequently, if thumb pinching is to proceed in the appropriate (or opposite) direction, it must be accomplished after removal of the jar base from the puki (Fig. 6). At this point, however, either thumb may be used to create the desired patterned direction, regardless of the original rotation of the coil. If, on the other hand, the jar is initially started over an inverted mold (e.g., Morris, 1939, p. 199; Snow and Warren, 1979) coiling, since it occurs on the exterior (and is supported by the mold), and thumb pinching may both occur as a single process. However, once the basal portion is finished and can stand alone, upright, preferably inside the puki for ease in rotation as the vessel height grows, the opposite thumb must be used—or the angle of the same thumb altered 90 to 180 degrees—in order to maintain the proper angle of pinch and, thus, the appropriate direction of the resultant exterior pattern. Such a process can also produce pattern reversals between top and bottom on the same jar if desired (e.g., Lister and Lister, 1978, p. 43, Fig. 21, which appears to illustrate such a reversal of pinch pattern from top to bottom).
In view of the possibility that the potter could produce a pattern of thumb pinch independently of the direction of coil, the directional differences between the Western and Eastern Anasazi (including Mesa Verde and Mimbres) areas may be considered cultural rather than the result of a unique genetic phenomenon.

THE ANTITHETICAL ANASAZI

Clockwise rotation is right moving; it is also antisunwise which is, according to Parsons (1939, pp. 99-100), the characteristic ritual movement in the Pueblo world, "although now and again the sunwise circuit is followed." As with coiled pottery, however, there is apparently variation in the ritual circuit. In her analysis of Tewa dance, Kurath (1958a) made the following observation:

in the course of a day the groups of [Tewa] singers and dancers follow a prescribed circuit, theoretically counter-clockwise, and in accordance with the four cardinal directions...the counterclockwise circuits have been frequently mentioned in the copious literature on the Pueblo Indians, but the circuit diversity has, to my knowledge, not been investigated (p. 16, my emphasis).

Describing the movement of a San Juan Deer Dance, Kurath noted that the circuit was, however, clockwise; "this puzzled even a well-informed San Juan native, and has for the present no explanation" (Ibid., p. 18). Again, although "a reliable Santa Clara elder stressed the counter-clockwise theory" for the ritual circuit, Kurath (Ibid., p. 19) observed that it was followed "only within each plaza," while progression of the dancers between plazas "followed a zigzag course, by means of a path which was sometimes counter-clockwise and sometimes clockwise. The only explanation offered was that this was the customary procedure" (Ibid.). Her diagram of Santa Clara performances in the pueblo (1970), however, indicates that the initial movement of the dance groups is from the east into the south plaza, that is, antisunwise, or clockwise. At San Ildefonso, she remarked (1958, p. 21) that the circuit "follows rigidly the theory of
counter-clockwise progression. Even during the exits and re-entrances of the kiva and the migration from location to location, the path remains against the sun. Clearly, she has erred, since movement against the sun is antisuwise, or clockwise. Both clockwise and counterclockwise circuits were in use on the same day at a Tesuque dance seen by Kurath (Ibid.); and Ortiz (1969, p. 143) commented that the San Juan dance circuit is an anti-suwise one, a not infrequent occurrence in Tewa ritual. For instance...I have occasion to note that two circuits are in operation, a sunwise one (NWSE) for the winter half of the year, and an anti-suwise one (SWNE) for the summer half... which always occur in that order...the San Juan adhere relentlessly to the anti-suwise circuit in dances.

In a later work on Tewa dance, Kurath (1970, pp. 50-52) remarked that the public dances performed by Santa Clara at Puye were "in a counterclockwise" or suwise rotation. She suggested that San Juan's clockwise circuit might be the result of its "proximity to the Great Plains," the implication being that the clockwise, or antisuwise circuit is a reversal of the common Pueblo pattern. At both Isleta and Jemez, Parsons (1974, p. 284; 1925, p. 121) observed that the circuit is antisuwise, or clockwise; however, at Taos she noted (1936, pp. 50-52) that

the Round Dance and Scalp Dance circuit is sunwise, as is the Peyote circuit. The circuit formed in a figure in the Saint's Day Dance and the Navajo Dance circuit are anti-suwise. A more significant expression of the customary circuit than the dance circle is the order of calling or announcing. This is east, north, west, south and "again east,"

or counterclockwise, or sunwise. Interestingly, Collins (1968, pp. 438, 445) has stressed the clockwise, or antisuwise prescribed ritual circuit for the peyote ceremonies at Taos, in contrast to Parson's observations.

Ritual or ceremonial circuitry may not be as clear-cut as Parsons
and Kurath would have us believe, and the tendency to attribute a "countersunwise or sinestral" circuit for all the pueblos (Parsons, 1939, p. 100) is clearly an over-generalization. For example, at Cochiti, Lange (1959, pp. 230, 357, 359), noted that the ceremonial circuit is "counterclockwise," although Santiago and his companions reverse this circuit during the course of their performances. Review of the published ethnographic data from the Western Pueblos, including the Rio Grande Keresans, indicates that in those Pueblos the ceremonial circuit is, in fact, sunwise, proceeding from north to west, and south to east; that is, counterclockwise.

At Zia, White (1962, p. 110) observed that the ritual circuit is from north to west to south and thence east, an order "followed in songs and rituals: one addresses the north first, then west, and so on." White's observations at Acoma, similarly, confirm the "counterclockwise circuit of the four directions," north, west, south, east (1932, p. 132), the circuit followed by the kick-ball participants there (1943, p. 318), and at Santa Ana (1942, p. 242). And at Santo Domingo, he noted that "north to west, south to east [is] the order followed" (1935, p. 164; see also Lange, 1954, p. 152).

Early ethnographers at Zuni and Hopi indicate that the characteristic counterclockwise pattern in ritual movement is followed in those pueblos as well (e.g., Frisbie, 1980, p. 314). Stevenson (1904, p. 22) stated that, in Zuni mythology,

the ruler of the North dispatches his courier to the Ku'pishtaya of the West...the ruler of the West transferring the message to the South by his courier; in this way communication is held between the Ku'pishtaya (see also, Stevenson, 1904, pp. 24-27, 90).

Voth (1912, pp. 16, 19, et seq.) described a variety of Hopi ritual activities which proceed always from north to west, thence south and east; and Dorsey and Voth (1902, p. 239), describing the movements of the Snake priests at Mishongnovi, noted their route in the plaza from north to west and south (the same as the Antelope priests in
A potentially significant pattern emerges from these limited data: the Tanoan pueblos seem to maintain an antisunwise or clockwise circuit for sacred or esoteric activities and ritual; the Western Pueblos, including the Rio Grande Keresans, adhere to the opposite directional circuit. Nevertheless, there is apparently variation in the "normal" pattern among the Tewas: the counterclockwise Santa Clara circuit at Puye during public dances, at Taos for some dances, at the Saint's Day (public) procession at Nambe, in which "the group proceeded once around the plaza counterclockwise and returned to the church" (Lewis, 1953, p. 409). While such apparent "reversals" may represent ritual behavior with esoteric symbolism, they may also signal merely the non-sacred or exoteric behavior and context of the performance. Given the pervasiveness of ritual and ceremonial circuits in Pueblo drama and their reversal, it might be argued that this fundamental pattern extends to other aspects of the Pueblo world as well. Unfortunately, I can locate no adequate descriptions of non-sacred or profane dance or ceremony among the Western Pueblos (aside from Lange's observation of the reversal by Santiago), but I suspect that circuit reversal, that is, clockwise rotation, is "characteristic" as well, and denotes de-ritualization of context.

Reversal of circuit to symbolically alter context is not uncommon. Reichard (1950, pp. 181-182), referring to Navajo ritual, noted that

reversal is among the techniques of magical manipulation. Sanction of procedure otherwise forbidden stresses the importance of opposition and enhances compulsion. It has already been illustrated as applying to direction and explained as exorcistic rather than as attracting good...to emphasize exorcism, the sunrise circuit is changed to antisunrise (my emphasis).

The "norm" is emphasized even in winding string, for example, on a stick: the "sunwise motion is carefully adhered to by bringing the string up toward the body of the winder with the end under..."
(Reichard, 1950, pp. 167-168). Goodell (1968, p. 6, et seq.), describing yarn twist in the Cuzco region of Peru, observed that there are many distinctions that clearly govern the direction of the spin or twist of the yarn. These are based on faith in the magical properties of yarn spun "clockwise" (with an S twist), called lloq'e, in contrast to the normal everyday product made with a Z twist. The Quechua word lloq'e means left and also "something different"...in almost every Indian community visited...superstitions pertaining to lloq'e yarn still survive...lloq'e [lore] is rich, diverse, very strong. Z singles when plied are, of course, doubled with an S twist; the lloq'e S-twist yarns, with a Z...any spinner may spin clockwise to make the S twist, but only when he needs lloq'e for a special purpose.4

A recent discussion of "signs of self and other" in the manufacture of Mescalero Apache baskets (Farrer, 1982, p. 7) specifies reversal of the direction of coil as a means of decontextualizing the intended use of the basket:

coiling is done in a sunwise direction for ritual or domestic use. (This is sunwise from the perspective of the weaver: that is, from the back, or inside, of the basket.) When an item is commissioned by an outsider, even when that commission specifies Mescalero designs and aesthetics, it will be constructed counterclockwise. In other words, counterclockwise construction decontextualizes the piece and marks it for the tourist trade. It is a sign of non-Mescaleroness—in use and intended function (my emphasis; quoted with permission of the author).

Returning, for the moment, to Pueblo dance, most dances occur in relation to an annual seasonal rhythm and represent efforts to control or to influence that rhythm for group well being; Roberts (1980, p. 190) noted that "ceremonies which deviate from the above patterns tend to be secular in nature," and include social and borrowed dances. Brown (1960) noted, for example, that Taos dance is divided into "ours" and "not ours." Within the former category are social and ceremonial dances, and the attitude toward the "not ours" category
is "almost diametrically opposed to the attitudes associated with the ceremonial dances" (1960, p. 208). Secularization of the ritual norm might, therefore, be accomplished by circuit reversal in Pueblo dance and other activities (e.g., Parsons, 1939; Ortiz, 1969, pp. 172-173; Hieb, 1972).

DISCUSSION

If handedness is neither a necessary nor sufficient cause of the variation observed by Hall, we must assume that cultural factors are responsible. Coils are visible on corrugated vessels only on the exterior, and the direction of coil, therefore, is readily seen only on the bottom of the pot. Even if the coil pattern is obliterated on the exterior bottom, the direction of the thumb pinch remains visible. If the direction of the thumb pinch pattern characteristically reflects the direction of coil (in the opposite direction), as Hall's data suggest, and if variation in this correlation between Eastern and Western Anasazi potters is culturally significant (rather than genetic), we might assume that the combination carries a "message" which is apparent only (or normally) on the exterior surface where it can be most easily seen and "interpreted." Let us assume for the moment that such a "signal" was intended by the Anasazi potter.

If the antithesis of normal is intended to de-contextualize, as in the case of Mescalero basket coiling, it seems reasonable to consider the possibility that this was the case in coiling Anasazi pottery. If the surface design, in this case indented-corrugations, signals the "correct" direction of coil, we would expect such vessels made by ancestral Tanoans (assuming for the moment their presence in the Rio Grande during the appropriate period), to have been coiled in an anti-sunwise, or clockwise direction according to their ritual circuit. The corresponding thumb pinch pattern, moving in the opposite direction, would signal the correct ritual direction of coil by moving in a counterclockwise, or sunwise direction. The reverse, of course, would carry also the appropriate message, suggesting, by analogy with the
Mescalero case, that the vessel was intended for use by "others," or in non-sacred contexts, as in the case of dance circuit reversal.

Since 31% of the sherds examined by Hall from Eastern Anasazi sites are coiled in the direction of the prescribed Tanoan ritual pattern, we might argue that the sample represents, in part, vessels produced for intravillage use. Compared to the mere 6% coiled in the same direction from Western Anasazi sites examined by Hall, it might be argued that indented-corrugated vessels were seldom exchanged among those pueblos. This, in fact, is just what is commonly believed by archaeologists: painted vessels moved most frequently through the exchange systems, having been produced in relatively few locales, while "culinary" or "utility" vessels were produced at virtually all villages, but for local consumption.

There are, certainly, many other possible combinations and interpretations along these lines; but whether the observed correlation, in fact, carries a signal of any sort, should not be pursued much further into the realm of speculation. Nonetheless, I believe that there is more to prehistoric pottery than we are accustomed to believe or to look for. The ubiquitous Anasazi overall indented-corrugated pottery is a unique patterned decorative tradition, lasting from about A.D. 900-950 to 1200-1250 in most parts of the Anasazi Southwest. Apparently it developed after neck-banded plain wares (see Hall, 1950, p. 69 for an interesting observation on the relationship of neck-banding and thumb pinching). It was ultimately replaced again by plain surfaced vessels; its popularity, interestingly, spans about the same length of time as many other Southwestern ceramic styles, horizons, or traditions (e.g., Schroeder, 1982).

It seems probable that the elaboration of exterior surface texturing on utility vessels conveyed meaning in much the same manner as, I assume, did the painted "styles" on non-utility pottery. What those meanings might have been may never be discovered; but until we begin asking questions about and seeking answers to the socio-cultural role and function of ceramics and their myriad of attributes, we are
doomed to creating an endless supply of pottery types for every occasion.

That ritual circuits serve specific functions in Pueblo society cannot be doubted; and it seems apparent that the Tanoan pueblo circuit is the reverse of the one in use among the Keresans, Zuni and Hopi. If this can be verified, to what extent did those opposing circuits exist in the prehistoric past? Aside from ceramics, what else in the archeological record might provide the thread that links prehistoric and ethnographic ritual circuitry? Ortiz (1969, p. 154) has pointed out that all but two of the current twelve kivas in Tewa villages are aligned east-west, with the entrance at the east. On the contrary, all kivas in Keresan pueblos, at Zuni and Hopi, are aligned north-south, so that upon entering (in all cases still by ladder, I believe) one descends from south to north. I believe these orientations are related to the fact that, as Parsons (1939, p. 367) observed

the north has primacy [at Zuni] when the other points or a circuit are involved...the Tiwa ritual circuit, in fact, starts in the east,

as it does among all Tewas, for whom "the east is the most important direction in daily life" (Ortiz, 1969, p. 154). The consistent references, for example, in Voth (1912) and Dorsey and Voth (1902), to the north as the starting point of Hopi ritual (and, as noted above by White, among the Keresans) may well correlate with the orientation of the kiva. Upon entering a Tanoan kiva one has, by emerging from the east side, "begun" the ritual circuit. Upon entering a kiva at Zuni, Hopi or in the Keresan pueblos, one descends to the north side of the kiva interior, the "beginning" point of their ritual circuit.

Kidder (1958, p. 246) remarked some years ago with regard to Pecos kivas that

in my early days at Pecos, I was much puzzled by the eastward facing of its kivas and almost all others of the Upper Rio Grande, because I then believed that the kiva of that region had been taken over, as undoubtedly
were certain ceramic traits, from the very potent Anasazi culture of the San Juan drainage, where a south or southeasterly opening for kiva ventilators had been customary (see also Smith, 1972; Vivian and Reiter, 1960).

More recent excavations in the Rio Grande confirm the overwhelming easterly orientation of kivas there, particularly since about A.D. 1000 (e.g., Peckham, 1981). Thus, not only is there a distinct difference in kiva orientation between the San Juan and Rio Grande Anasazi, but the latter have assumed their characteristic orientation since about A.D. 1000 (see Wendorf and Reed, 1952).

If, by analogy to the ethnographic observations on kiva orientation, which suggest that kiva alignment is related to ritual circuit, we can assume a similar correlation in the prehistoric past, then we may have isolated some of the threads of an intricate pattern of pueblo behavior that transcends the arbitrary separation of ethnography and archeology.
1. Hall's study was undertaken while he was a student at the University of Denver. Permission to quote and reproduce several photos used by Hall has been provided by E. T. Hall. A copy of the original manuscript is in the possession of the author of this paper. Hall's data consisted of materials in the Laboratory of Anthropology as of the winter of 1932-1933. In addition, whole vessels in the collections at the University of Denver and the University of Colorado were used in examining the bottom for direction of coil. Eventually, 933 sites from most areas of the Southwest were chosen because of the existence of indented-corrugated sherds in the collections. The number of sherds, after re-tabulation of Hall's site identifications in the Laboratory of Anthropology files, is 7698.

2. In fact, Hall's notes compiled during experimentation with pinching indicate that he was aware that pinching and coiling were not simultaneous or continuous operations, as indicated by the following comments from his experimental notes:

In pasting fillets it was found that an overlap of about $\frac{3}{2}$ [of the fillet] was satisfactory (anything less is not enough). A complete circuit of the vessel may be pasted on at once, (it often develops that the fillet breaks due to its necessarily flexible state so that about half a circuit is pasted on) after pasting, pinching is easily accomplished. The vessel may be turned slightly with each pinch but more uniform results occur if it is pinched successively along a short work sector (about 4 cm) and then turned; a longer work sector changes the [angle] of the hand and relation to the pot which alters the pinch. The vessel is constantly turned and manipulated so that it soon becomes more or less symmetrical [sic] and is ready for the next coil. Before adding the next coil the vessel must set until the coil that has just been added and moulded is sufficiently hard to hold its shape... [after about a 3 minute period]. . . . the last coil is dry enough and the new fillet may be added. The moulding and shaping in no way displaced or
distorted the pinches on the outside. So we have a very simple sequence of events which is repeated as each successive layer of the vessel is added namely:
1. Pasting the fillet. 2. Pinching it. 3. Shaping and moulding and obliterating (1 process). 4. Drying. 5. Preparation of new fillet during drying, or possibly work on another pot (my emphasis).

The weight of the roll of clay seems particularly critical if the ethnographic record is considered an appropriate technological model. Guthe (1925, p. 39) and LeFree (1975, p. 29) give the range of roll diameter as varying from about $\frac{1}{2}$-1 1/2 inches, depending on the size of the vessel. Hall measured the thickness of "some two hundred coiled vessels" from the San Juan, Mesa Verde, and Chaco areas, "using 3 cm as a standard of measurement" (1932, p. 28). The average number of coils per 3 cm was 4.8; all measurements were consistently smaller than the roll diameters of ethnographic examples.

3. Kurath, here, is obviously confused, since the circuit is clearly antisunwise, as it should be. Parsons (1936, p. 284) also noted that the Tewa circuit, as reflected in Coyote tales at Taos, is "antisunwise," but lists the direction as NWSE, clearly sunwise. Was she confused, or does Coyote also reverse the ritual circuit in his role of trickster? Parsons clearly confused the direction of a San Felipe Buffalo Dance circuit (1929, p. 205), noting that the performers moved "antisunwise over a square," that is, within the plaza. She listed the order, however, as north, west, south, and east, or sunwise, the characteristic Keresan ritual circuit.

Kurath is here describing an animal dance, and since she previously pointed to elements of Plains Indian influence ("borrowing") in all but one of the four categories of Rio Grande Pueblo game animal dances (1953b), it would be interesting to know to which category the particular San Ildefonso dance described belongs. That is, if the dance, or many of its elements
are borrowed, it may not represent or require traditional ritual movements.

4. Parsons (1939, p. 462) notes that

inherably the use of left foot or hand is a case of contrary behavior which among Pueblos and elsewhere is associated with the dead. In support of this interpretation it should be noted that at Zuni eating is done as much as possible with the right hand...Hopi observed the same rule, and the right hand was called "the food hand," the hand not sacred (my emphasis).

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Pottery never sprang from the earth by itself. It derives from potters who occupy a specific place in time and events. In other words, a place in local history. I remain skeptical of the possibility of deducing psychology or social organization from it, at least not without first having made careful studies covering distribution of types and design in the small geography of many living pueblos (not only Hopi--to date the repeated favorite for comparisons), and relating it to their known organization and local events. On the other hand, when we do know something of local historic happenings, we can find what appear to be relationships of type development, production and distribution, to the stress factors and outside influences of their day. That provides some added understanding of the people-producers or people-consumers when exigencies, good or bad, have affected production. Here is a dividend other than one's being able to use dated pottery types in tying down the period of sites or objects with which certain pottery is associated. And--not always easy, not always certain, but of major importance where possible--is the identification of ethnic relationships through pottery sequences. Archaeologists already have been able to deduce more from pottery than any potter ever dreamed she was making evident in her work.

The Middle Rio Grande, as I define it, extends from the Socorro district to the base of La Bajada hill, an area known during the Spanish period as the Rio Abajo. Above this was the Rio Arriba or Upper Rio Grande, the plateau country from the top of La Bajada to Taos. In general, one can say that the Rio Arriba has been occupied by

*Presented at the Seminar on Southwest Native American Ceramics, sponsored by the Millicent Rogers Museum, held in Santa Fe, New Mexico, June, 1981.
Tanoan-speaking peoples in the historic period: the two northern Tiwa pueblos of Taos and Picuris, and the Tewa pueblos along the Rio Grande bottoms and in the foothills of the Sangre de Cristo Mountains to the east. Along the southern edge of this plateau, the incoming Spaniards found pueblos of Tanos (southern Tewa) and also some Keresan-speaking peoples (Schroeder and Matson, 1965, pp. 144-145). Here was a border where the two overlapped.

Although we think at present of a single pueblo making its own distinctive types of pottery (with some small exceptions), in the historic past a number of linguistically related peoples comprised a unit which produced a given pottery complex consisting of one or more types of decorated—or at least well finished—ware plus one or more types for culinary use. The latter had to be made in greater amounts than the decorated, because its constant use resulted in frequent breakage. Sherd counts from dumps and house fills characteristically run heavy in culinary and utility types.

It would be nice to think that in the prehistoric past all the people who made the same pottery were of one linguistic category. But the known adoption of Hopi yellow wares by the Tano-speaking group which moved from the Upper Rio Grande to Hopi First Mesa in the early 1700s proves that one dare not totally adopt such a hypothesis. There are other examples, but it is worth noting that during the historic period villages of close linguistic relationship (and certainly their subsidiary villages) almost always have produced a single pottery complex, or at least one of very closely related types. We also know that until recently a woman who married into another pueblo, yet continued to make the pottery of her original home, was condemned as disloyal to her new people. The warning to Monica Silva, a Santa Clara who married into Santo Domingo, that she must henceforth produce Santo Domingo rather than Santa Clara pottery is an outstanding example, because over a long period of later years Monica took most of the prizes for Santo Domingo pottery.
Keresan-speakers occupied most of the Middle Rio Grande. Cochiti, Santo Domingo, and San Felipe made up the eastern Keresan group; Zia and Santa Ana, with their farm villages, filled the Punane district on Jemez Creek.

To the south and east of our Keresan pueblos are those of the southern Tiwa. Only two still exist, of the many which the early Spaniards periodically re-counted and re-named. Sandia lies 10 miles north and Isleta 15 miles south of Albuquerque. Some years back I pried as far as possible into the problem of native Isleta pottery in the post-glaze period, and some of the oldest vessels were brought to me. Almost nothing is known of Isleta's post-glaze pottery and, with no means for close dating, I will call them 18th to late 19th century in type. They were brown to red and undecorated. The red clay, I was told, had come from near the river. The temper was sand and crushed volcanic scoria. Bean pots, wanted by the Isletans themselves and by local Spanish Americans, were finished with an unslipped scraped surface. Undecorated and unslipped jars with wide mouths were made for either storage or cooking. The one I have is of a fairly warm beige color, and dotted around its outer surface are dark gray firing clouds which look as if they might have been intentional. They came when vessels were fired in an oxidizing atmosphere produced by the burning of a tepee-shaped "self-consuming kiln" consisting of sticks of wood three or more feet in length, stacked over a single vessel inverted and supported by stones. When some of the brands touched the sides of the vessel as they burned down, gray circular smudges were left.

Large dough bowls, and presumably also small bowls, were made with the interior and exterior unslipped but polished except for an exterior rim band three or more inches in width. The color ranged from something of a khaki-tan to brownish red. The rim band had been finished with dark brown-red slip-paint and polished, but that band sometimes was difficult to distinguish at first glance from the
darker portions of the lower unslipped area. The most interesting of these bowls were fashioned to flare out from a rather constricted bottom, producing a shape somewhat reminiscent of a morning glory in profile. Large jars of this type, I was told, had been buried out in front of the house of Isleta's last cacique, who died shortly before 1880; the jars held corn to be given to the poor when necessary. As elsewhere, such stores probably also were used for food during the scheduled meetings of Isleta's religious societies. According to tradition, Isleta people used to trade a jar for what could be held in it, a practice carried on in a limited way even into the 1950s.

After the Laguna disruption of 1881, when the conservatives of Old Laguna were driven out of their village, the displaced families accepted Isleta's invitation to settle in the southern and higher section of their town. One hears that thus the Isletas once more had a katsina cult in their village, handled by the newcomers. We do not usually hear that the Laguna women who moved into Isleta continued to make their own pottery and even took it upon themselves to instruct Isleta potters in making polychrome ware. White clay had to be brought from the deposit a short distance west of Laguna Pueblo on what now would be the north side of old Highway 66. Most of the resulting vessels, used or sold to tourists arriving on the Santa Fe railroad in the 1930s, showed only a slight variation from Laguna pottery in design. Clay smoking pipes also were made, often showing heavy crackled paint and crude brush work, including decoration of the sometimes modeled Indian head pipe bowl.

This pottery was gone by 1950. Its saleable replacement consisted of small vessels decorated with bright acrylic paints, in imitation of the pottery then made by Tesuque and Jemez. It sold— to tourists who knew no better. Then it, too, was replaced.

I well recall when one of the Isleta men who had been working for Buildings and Grounds dropped into my office at the University of New Mexico to say that he was about to retire. The plan was that he and his wife would start a business in pottery. Could they examine some of
the designs on the old pieces I had? Of course, I replied, and I com-
plimented their intent—until I discovered that the clay was to be
commercial, the work done on a wheel, and the firing planned for an
electric kiln! So much for acculturation. We still see crockery
coming from Isleta, its surface enlivened by "Indian" designs and
the entire surface covered with commercial glaze, so that the product
is rather reminiscent of the table settings used in the old dining cars
and Harvey Houses of railroad days. But also there is the careful
black-on-white and polychrome of Stella Teller.

One cannot say that Stella Teller's pottery is typical of Isleta,
because it stands alone. It is meticulously fashioned and perfectly
painted and a fine thing in itself. Stella is a craftsman who does not
cut corners. Isleta has had no pottery that could be called typical
since the unpainted red-brown ware. The "Laguna modification," which
passed as Isleta ware during its period, was far more typical of La-
guna (though not quite a duplicate) than of Isleta. Except for the
matter of birth and residence, Stella could be labeled an individualistic
Laguna potter. About all one can really say is that Isleta is the home
of Stella Teller, one of the presently famous potters of the Pueblo area.

One would expect the late 18th-19th century ware of Sandia, the
other southern Tiwa pueblo, to show a heavy Hopi influence because of the
years the people of that pueblo had spent as refugees there in the peri-
od of the Pueblo rebellion. But we do not have data to check such a
hypothesis. Bandelier's brief note on Sandia pottery of 1882 states
that it was "black and very thick," the red clay being "smoothed" with
a fine stone or a spatula and then fired with dung, evidently in a re-
ducing atmosphere, whether by accident or intent (Lange and Riley, 1966,
pp. 312-313). Shortly after his comment that this ware, presumably a
utility type, was the only type made in Sandia, he mentions that the
pottery "is mostly painted inside and outside, but it is coarse, and the
figures very rude and badly done." Evidently some polychrome still was
being made. A small "caxete" (bowl), says he, sold for 10 cents, a
larger one for 15 cents.

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Let us now move to Jemez Pueblo on Jemez Creek, a major tributary which comes into the Rio Grande from the northwest, very near the present three-section farm village of Ranchitos, Santa Ana's modernized extension onto the Rio Grande itself. Jemez is another pueblo which has been without any pottery tradition of its own for many a year—far more years, in fact, than Isleta. The distant background of Jemez pottery actually is better known than some of the details pertaining to Jemez pottery in the historic period.

 Tradition, ceramic sequence, architectural detail, and even physical type point to the ancestors of the Jemez being the Gallina people who lived along the Continental Divide north of Cuba between A.D. 1050 and 1300. The latest date yet obtained from a Gallina structure is 1275vv*. This means that building still was going on north of Cuba two or three years after 1275, but at that point there is evidence of food shortage. Jemez tradition states that their ancestors left the Rio de las Vacas near Cuba after the earth had become so dry that it cracked, and we are reminded that the entire Four Corners area was abandoned by A.D. 1300 because of a long decrease in moisture available for cropping.

 Tradition and archaeology agree that the Gallina people came down the Jemez-Nacimiento Mountains to the general area of La Cueva, where we find widely scattered sites of varied sizes. Their pottery at this time was Vallecitos Black-on-white, which soon changed into Jemez Black-on-white. It was decorated, like the Gallina Black-on-white, with black carbon (plant juice) paint on a well polished white ground. Bowls often were given designs on both interior and exterior surfaces (see Mera, 1939, pp. 44, 46, Plates VII, VIII). Because many vessels were large, designs averaged large.

 At present we have no evidence that the Gallina people joined or

*Date from a tower-house complex being excavated by the Ghost Ranch Seminar crew under direction of F. H. Ellis.
accepted any outside people in their relocation in the Jemez drainage, but legends of both Jemez and Zia say that Zia ancestors came out of the San Juan drainage and into Gallina territory when the Gallinas were deciding they must seek a new home. As the Zias, also, were searching for farmland where there was water, the two peoples came down through the mountains more or less together, making their camps so that each could see the smoke from the other's campfires. Five Zia villages, including Zia itself, settled near each other in the area of present Zia Pueblo during the late 13th or early 14th century, as we know from the presence of Santa Fe Black-on-white potsherds. That type was succeeded in the mid-14th century by the newly popular glaze-paint ware (Ellis, 1956).

In the account of Coronado's expedition into New Mexico between 1540 and 1542 (Winship, 1896, pp. 510, 525) we read that one of his captains, Barrionuevo, found seven Jemez villages in what later came to be known as their eastern or Vallecitos area, and three others at the hot springs which marked their western area. Jemez itself was not among these sites. After the terrible disruption of the Pueblo rebellion of 1680, and its aftermath when the Spaniards made their reconquest in 1692, the people of Jemez still refused to capitulate. Some were killed, some captured, and some joined the Navajo, temporarily or permanently. One of their major religious societies went to live with the Hopi in northern Arizona. Finally the Spaniards ordered that all the Jemez were to be settled in a single new village where they could be under surveillance of Spanish church and state.

With much protest, the tribesmen began to congregate at the site we know as Jemez Pueblo*. Homes were constructed, but after more than a decade of wandering the women still were too distraught or too unaccustomed to local materials to return to production of the old Jemez Black-

*Apparently first established in the 1620s, but first permanently occupied in early 1700s.
on-white ware made in all Jemez villages before the revolt. By 1700 the Middle Rio Grande Pueblos had given up glaze-paint decoration, but Zia and Santa Ana, both only a few miles distant, were producing the matte-paint Puname Polychrome easily obtained by Jemez through trade. Writing in his Journal for October 26, 1887, Bandelier noted that "They made very little pottery at Jemez, only black. Mostly use Cia pottery" (Lange, Riley, and Lange, 1975, p. 225). The black pottery mentioned by Bandelier was much like the cooking ware still being made by a few elderly Jemez women in the 1950s from the fairly porous local clay, but slipped on both sides to make them less pervious to moisture.

In the 20th century these vessels, wide-mouthed if for cooking and sometimes with the lip pressed into rippling scallops, often are set into the shallow bed of a child's discarded toy wagon, supported 8 to 10 inches above ground on tin cans or even the old iron spikes from a now-abandoned narrow gauge railroad. In the old days, the vessels were stacked, mouth down, on stones. Beneath the toy wagon bed, or between the rocks, a pile of small split juniper was placed for tinder. Modern vessels are protected by a covering of opened-out stove pipe sections or thin sheet iron bent to fit. In the past large potsherds provided a cover. Around and above the whole, a tepee-shape of juniper poles was laid up. This and hard wood from the local shrub known as greasewood burned with the highest heat these potters could obtain. The outer surface of the fired vessels ranged from gray to tan.

When the fire had died down and the vessels were removed, the women hastened to rub the interior of each with a chunk of dung. The reducing atmosphere immediately produced on the hot clay surface turned it black by a combination of deposition of carbon in the pores and the changing of what little red iron oxide was present in the clay to black iron oxide. The women explain that the shiny black surface of the vessel makes it less likely to permit the passage of moisture through the walls. Recent experiments indicate that the carbon in such a surface retards spoilage of the vessel's contents. Any organisms which might chance to
be present in the manure are, of course, consumed by the heat of the vessel. The use of wood to fire cooking vessels has continued since pre-Spanish days.

The close of World War II opened what some realistic natives choose to call the Plastic Period, when new plastic garbage cans replaced old storage jars and smaller plastic containers became prominent in kitchen ware. Housewives saw two advantages. Such containers were "more modern" and favored by non-Indians, and the old jars could be sold for high prices. Wage jobs were hard to find, especially for men living 45 miles from the nearest towns.

When Mr. and Mrs. Noble Guthrie came to handle the Jemez Day School, it occurred to them that the families of this pueblo might be able to bring in some cash by making and selling brightly colored small pieces of pottery. Such pottery had been made for several years in Tesuque, north of Santa Fe, and sold to tourists by the piece and to distant wholesalers by the barrel. The Nobles found "Indian designs," though not quite of Pueblo style, in the teachers' magazines of those days, and the Jemez women and girls--and even a few boys--did an admirably neat job of painting, whether with the old yucca leaf brush with chewed tip or a water color brush from some dime store. The local gray clay was tempered with ground volcanic tuff and fired in the low temperature of a self-consuming oven of dried cow dung. The paints were acrylic.

The Jemez product sold well, even if purists tore their hair at this desecration of "Pueblo art." It was not until the mid-1960s that the acrylic-decorated pottery dwindled and largely disappeared. Even today commercial paints in earth colors are used by a few potters in putting designs onto previously fired vessels, but most potters have moved toward more native mediums.

In or about 1911, Benigna Medina, sister of Lorenzo Medina of Zia Pueblo, married a man of the Jemez Madalena family. She continued to produce some pieces of the ware with which she had been familiar since youth. When her five daughters grew old enough to work at pottery, all
married in Jemez and all made Zia Polychrome pottery, typical except for some use of designs from the contemporary acrylic paint ware. When exhibited in fairs, the Zia Polychrome made in Jemez and marked as Jemez pottery brought a rain of protests from Zia potters. The result was gradual slow depletion of its production. The Zia woman's granddaughters also became potters, in some cases excelling their mothers. Now the entire family faced the dilemma of developing a style that would not encroach on that of any other pueblo. Other family lines also have turned their attention to pottery, either as a real vocation or merely an off-and-on attempt to augment finances. The result is considerable diversity in style and color.

One woman specializes in wedding vases, the shape especially typical of Santa Clara but also made in some other pueblos. Another has developed very well made owls and the presently popular story tellers. Hers are done as cleverly fashioned Koshare (figures representing the costumed Pueblo clown-fertility society) with their expressive Pueblo humor. Others have tried their own versions of the story teller. The 15th century mural designs on the wall of a kiva at the ruin of Pottery Mound inspired another husband-wife team. The work of one potter is recognizable through its ever-present trailing feathers, a motif vaguely reminiscent of heavier motifs on pottery from Guadalajara, Mexico. Stella Loreto, who married into Taos and lives there, is much concerned with her personal development as an original artist and does not hesitate to use a commercial kiln for firing, as do some of the others. Experimentation with local clays is going on, even between pueblos, and I understand that at present Jemez is supplying some Santa Claras with red slip material which polishes exceedingly well and fires a good black in the reducing atmosphere characteristic of that pueblo.

The urge to find some alternative to Jemez acrylic decoration appeared in an experiment of the 1950s. More than one pueblo had become interested in the possibility of reintroducing the old glaze-paint which had disappeared from Rio Grande pottery decoration at about 1700. The
formula for its composition had been lost by all the Pueblos, though some elders declared they were sure the secret was no more than a mixture of piñon pitch with earth colors. Not so. Such pitch, boiled and mixed with finely ground copper ore—there is a deposit not far from Jemez Pueblo—occasionally has been used for small, unfired blue additions to the already fired-on designs of vessels for ceremonial use. The most common use of this mixture has been for painting masks and other ceremonial equipment. For pottery, application consists of merely holding a coal close to the vessel surface and using one’s breath to blow its heat toward the already applied blue paint. Actual firing of the mixture would turn the blue color to black and burn out the pitch. Glaze is not produced thus.

Finally, discovering that my father, F. G. Hawley, a chemist by profession and responsible for the first considerable studies of prehistoric Southwestern paints and glazes (Hawley and Hawley, 1938), had made analyses of the glaze paints from various Arizona, New Mexico, and Chihuahua pottery types, Popoveda of San Ildefonso and Jose Rey Toledo of Jemez both asked me for the glaze formula. I am quite sure Po never tried out the recipe, but in Jemez an interested group of women gathered for a requested demonstration. I provided the materials and formula, which relied principally on lead, a little copper, flux, and pigments. The data had been worked into teaspoonsfull or fractions of a cupfull. The women came with small vessels they had shaped, dried, and smoothed with sandpaper.

Most of those vessels received almost an overall coating of glaze (we had chosen green for the experiment) rather than glaze-painted designs, because these would have required more time for application. The fired pieces came out well, showing the general fluid effect we have come to associate with Glazes 5 and 6 (E-F), last in the Rio Grande sequence.

And then what happened? I left formula and materials with the women. They reciprocated by making me a gift of their little vessels painted with the glaze. But after I had left they hesitated making
another trial on their own, so I was asked to return and did. We mixed
and they painted, firing to come later. I told them where the ingred-
ients could be purchased. I also explained the possible danger to
health should they use a vessel with interior glaze-paint to hold acid-
bearing food or drink. No licking of brushes. We do not know and
probably never will know what effect the production and use of glaze-
paint pottery had on the Southwesterners of Pueblo IV, but it has been
claimed that lead-glaze may have figured in the fall of the Romans.

Whether because of my cautions, or native hesitation to seek out
the scattered Albuquerque shops for ingredients, our Jemez glaze experi-
ment came to an early close. Just as well, for glaze was not in the
Jemez tradition, important as it was to the Tiwa, Keres, Tano, Piro,
and Pecos peoples. But for the last several years Evelyn Vigil and
Juanita Toya, both of combined Jemez-Pecos descent (Tryk, 1979), have
been making glaze-paint pottery in the old Pecos style and selling it
to tourists visiting the Monument. Lois W. Giles, a volunteer there,
had analyzed the glaze and persuaded Evelyn to try her already expert
hand at use of this paint for design outlining. She and Evelyn both
worked at hunting out the clay beds used by Pecos potters before the
last 18 members of this once great pueblo moved to join their linguis-
tic relatives in Jemez in 1835, and the modern replicas are from the
old materials. It is interesting to note that the glaze mix, as in our
carlier experiment, is compounded by the non-Indian.

At present we can not speak of a Jemez style or type of pottery,
though one often can guess the origin of a vessel by the exactness in
application of geometric designs, almost as if handled by an engineer
and more reminiscent of the teachers' magazine designs than of those
found on prehistoric or modern Pueblo wares. This aptness in using a
brush was apparent in the old days of acrylic decoration. Today we
are watching development of a number of specialized individualistic ar-
tisans. Pottery may be polychrome with varying shades, or black-on-
red, or even black-on-white, but never is there a trace of the old
Gallina-Jemez designs. Contemporary potters would not even recognize them.

Twentieth century Zia Polychrome developed out of the old Puname Polychrome shared by Santa Ana and Zia in the 18th and 19th centuries. In his original definition of that type, Mera (1939, pp. 18, 106-122) emphasized the reduction of jar necks to near-vestigial proportions. Harlow (1967, pp. 16-20) prefers splitting types and cuts Puname off at 1760. By definition it had crushed basaltic temper, which continued in use at Zia to the present day. Arcs were frequent in the simple design. The greatest width of jars was set low, with undercut underbody. This Harlow follows with San Pablo Polychrome (1750-1800) showing elaborate designs in alternating wide and narrow panels and jar shapes ranging from almost spherical to those with short undecorated necks. After 1780 vessel lips were painted black instead of red.

The type made at Zia between 1800 and 1850 he designates Trios Polychrome, its major characteristics being a "relatively sharp curvature at the bottom of the design band" and "relatively crude boldness in design execution." Rims often are slightly flaring. He speaks of "copies" of this type being made even after 1925, though the late pieces show an all-over red underbody rather than the earlier red band which separated the decorated area from the unslipped brownish-red underbody. We would call it a hold-over rather than a copy. Trios jars had a rounded incurved underbody and a higher neck than before, though the neck remained short.

The general effect of the Trios jar is of roundness, in contrast to the later type, Zia Polychrome (1850-present), which in the early 1900s was proportioned to give a taller and more slender appearance, even when height was the same. Some of the recently made jars are of a roundness even more pronounced than that of Trios jars because of lack of more than a hint of neck. Sturdy birds reminiscent of those of Acoma appear on some early jars in combination with geometric designs. The birds so often depicted today are referred to by their makers as "road-runners" when jumping and "chickens" when plumper and merely standing.
Roadrunners commonly wear a fan of clustered feathers for a tail and lines slanting backward for head feathers. The "chickens" have a heavy two-feather tail and what always reminds me of a hairbow on top of the small head. Four birds fitted into the curves of a wide undulating line usually appear on a jar. These birds definitely are the most characteristic of contemporary Zia designs, though this pueblo has produced fine classic geometric designs in all periods and a few semi-realistic depictions of deer and flowers during this century.

Zia's sequence of glaze-paint wares from A through F (or 1-6) all used crushed volcanic scoria for tempering material, and it was this which was largely responsible for other Pueblos' appreciation of Zia pottery as "strong." Probably because the rough edges of the crushed scoria held tightly to the clay, vessel walls were said not to break so readily as those of some other Pueblo wares*. This is, at the same time, one of the main reasons for the weight and cost of the Zia product. Each potter must hunt out her semi-"decayed" black volcanic rock by digging in the sides of washes where it long has lain buried. How does one locate it? By hopeful guesswork. It is heavy to carry home. There it must be pounded "until you have a big basin full." Then it is ground twice, like corn, on a metate, but this grinding is much more difficult than that of corn.

The red-brown pottery clay to which the temper is added has been obtained for as long as anyone can recall from pits across the Jemez River from the volcanic knoll on which the old pueblo sits. Here we find a second reason for the present high price of Zia pottery. Women

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*Laguna used crushed volcanic dyke material (diabase) from a source a short distance east of the pueblo for their culinary and part of their painted ware, from late 17th(?) to 20th centuries, though perhaps in only one-third to one-half the vessels, especially those of larger size. The intent was to make them stronger than the sherd-tempered vessels of Acoma and of their own pueblo. Sherd temper, however, did permit delicate shaping, as of handles (Ellis, 1966a).
no longer can dig their own clay from this pit, 20 feet deep. And, as "no one here does anything now without being paid," the potter must rely on male relatives or hire village boys to get out the heavy material. The potter then cleans her clay, breaks it up, and soaks it, adding the already crushed temper and thoroughly kneading the mass.

Yellowish clay for paint which turns orange in firing (oxidizing atmosphere) is obtained just west of Zia Pueblo. White clay, which is hard to find, is brought from some miles to the south. In the same area the women spend hours searching for the little nodules of manganese always used for the black paint on Puname and succeeding polychromes. These nodules are even more difficult to find than the white clay and, hard as they are, they must be very finely ground. The red clay for paint comes from the red beds flanking the highway near the base of La Bajada hill, which is where the potters of Santo Domingo also find their red clay.

The second source of expense may be found in the fact that horse and cow manure used for fuel now is brought from Farmington at $175 per pick-up load. It has been cut by spade into flat blocks and somewhat dried so that it will not weigh so much when transported. Fifty years ago Jemez women told Odd Halseth (then of the Laboratory of Anthropology) that the council had forbidden manure-burning for firing pottery during the summer. This, it turns out, was merely a temporary ritual prohibition against any burning of dung while the native religious societies were in retreat. There is a prohibition against burning yucca at any time because it would result in terrific storms. In every pueblo, tabus and little rituals are requisite in the production of pottery, including, in the past, a prohibition against speaking during the process (lest the vessels crack) and permitting any outsiders to observe the work. Some but not all of these since have disappeared.

Zia vessels are fired in the old corrals east of the main village. As soon as a vessel is removed from the burned-down self-consuming oven of dung patties, the Zia potter may dip it into a vessel of cold water in order, some claim, to make the paint more permanent. Others say that
the dunking only washes off the ashes. At our astonished question as to why this treatment does not break the hot pots, the potters looked surprised that anyone should ask. It just does not happen. Our guess is that the "properly prepared" and evenly distributed volcanic temper may hold heat enough to resist that temperature shock.

Only about eight Zia women at present make pottery, three at very irregular intervals. The majority are from the Pino and the Gachupin families. As elsewhere, the modern decorated pieces are primarily for sale, but the old large doughbowls (in which bread dough is placed to rise) are cherished and still used. (These formerly also served as babies' bathtubs.) Undecorated, unslipped, and unsanded bean pots which are like the old water jars in shape and give out a wonderful ring when snapped with a finger, actually are intended for use. "They make the beans taste very good" if one can afford from $75 to $200 for the bean pot, "depending on who buys it."

Santa Ana, Zia's Keresan neighbor, like Zia and Jemez consisted of several villages in the 13th-14th centuries. One, Punamesh, was located only slightly west of the Zia group, though the others all were to the east of Zia. Santa Ana's tradition has its Keresan-speaking people coming out of the Galisteo Basin and, after some wandering, settling on lower Jemez Creek and the western edge of the Rio Grande (Ellis, 1956). Their Pueblo IV pottery belonged to the Rio Grande Glazed-paint series, but about A.D. 1700 the Santa Anas, like the Zias, began to make Puname Polychrome. Sometime about 1800 Santa Ana potters began to use sand for much of their tempering material, a trait on which archaeologists have tended to depend in separating Santa Ana ware from that of Zia. The problem here is that Santa Anas today insist that their people sometimes used sand and sometimes the crushed volcanic scoria, a commentary that could be tested only by examination of a great many old sherds for which other criteria indicated origin at the hands of Santa Ana potters.

The early Santa Ana matte-paint polychrome, which Harlow (1967, p. 22) designates "Ranchitos Polychrome" featured a jar shape much like
that made in Zia at the same period, rounded and with very short neck. One characteristic which commonly (but not always!) can be used to separate the Santa Ana Polychrome from Zia Polychrome is the lack of black outlining of some or all of the red design lines on the former. Santa Ana's most common design element was the "rainbow," usually shown with either a downward pointing "dip" at its center or with a terraced geometric element, explained as a symbolic raincloud, beneath it.

By the 1950s Santa Ana pottery had died out except for the work of one elder, Dora Montoya. It was revived on a small scale in the 1960s when a grant was obtained so that Dora could teach a class for some months. The revival of Laguna pottery also took a boost at this time, with attendance of one Laguna woman who already had been trying out what she had learned from older relatives.

Dora who, with husband Porfirio, earlier had been invited to the University of New Mexico to illustrate stages in pottery making for a class studying prehistoric ceramic types, copied designs from old pieces of Santa Ana pottery whenever she could find them in collections such as that of the Laboratory of Anthropology in Santa Fe. Those of the 19th century in general tended to be appreciably more complex than those of the 20th. The older vessel surfaces, also, usually were more finely slipped and smoothly polished. Santa Ana's fine old plain red-brown slipped doughbowls with slightly flaring rims some 1 1/2 inches high were highly polished on the interior, and in color and light refraction were reminiscent of the slipped portions of Isleta's plain red ware.

A very few of the Santa Ana women who took this class continued to make pottery for sale. Their designs definitely are in the old tradition, though simpler, the colors fresh, and the overall effect pleasing enough to have been accepted by their ancestors. These potters are middle aged women; how long the little Santa Ana renaissance in pottery will continue remains to be seen.

Next above Santa Ana--and its once seasonal but now permanently occupied village of Ranchitos on the Rio Grande--is San Felipe, which gave
up the production of painted pottery so long ago that some have wondered whether any of the matte-paint ware that followed glazed types elsewhere ever was produced here. A few vessels marked as having come from that pueblo do exist in collections, but do the listings refer to who made the vessel or merely to the pueblo from which it was purchased?

The general impression resulting from observation of these possible San Felipe vessels is that if San Felipe produced 18th and 19th century pottery it was very similar to that of Santo Domingo in shape and overall appearance. Designs usually show simple geometric figures somewhat loosely organized into a band, but we have one depicting a four-legged bird and a slightly conventionalized flower. It is possible that those few pieces of decorated pottery found in San Felipe by late 19th and 20th century collectors were made by women who married into the pueblo, in the same way that "San Felipe heishi" came into being when two or three Santo Domingos moved into San Felipe some years ago. It is also perfectly possible that San Felipe acquired those vessels through trade.

Warren (1969) believes that her petrographic studies show that Tonque Pueblo (LA 240), a large site no more than eight miles from San Felipe and perhaps 10 from Santo Domingo "dominated the economy of the Middle Rio Grande Pueblos, particularly in the Santo Domingo alley" in the 15th and 16th centuries. Her map shows Santo Domingo and Cochiti in the area which received 75-90% of its pottery from Tonque. San Felipe, she thinks, was getting 50-75% of its decorated ware from the same source. Before A.D. 1450 an extensive trading industry presumably had been centered in the vicinity of today's San Felipe Pueblo, and another in the Galisteo area. Abandonment of Tonque came near the end of the 16th century, and Warren refers to the Santo Domingo story that it was destroyed by other villages envious of its wealth and control of mineral sources. For several years now, archaeologists have been discovering that specialized trade was a great deal more important to the Pueblos than earlier had been guessed.

Why would San Felipe, and possibly Santo Domingo and even Cochiti and some other pueblos, have given up production of pottery for a time?
The tale given a Spanish American trader when he was combing San Felipe for old objects some 20 years back was that their ancestors had made pottery until their village was struck by a disastrous epidemic—then no more. This is an understandable possibility. The Navajo, who borrowed so many ideas from the Pueblos, carry the tradition of having given up the flaking of stone implements in the distant past and the production of baskets in the more recent period because widespread illness struck. In their belief, if one made too much or did too much of anything, illness mechanically resulted. Thus an epidemic was reasonably explained as resulting from overproduction of any craft object. Pueblo reaction, like that of the Navajo, well might be avoidance of the dangerous craft temporarily or forever. We know that smallpox and some other diseases swept through the Pueblo area periodically after introduction by the Spaniards. In 1780-1781, 5025 Pueblo Indians died of smallpox; in 1837 typhoid was followed by smallpox. Smallpox was bad in 1853, especially in the west. Non-Indians recorded such data (Bancroft, 1889, pp. 266, 314, 672; Kessel, 1979, p. 543), but what went on in the minds of natives and how their industries were affected never was investigated.

In the 1940s some University of New Mexico anthropology students tried to encourage a return of decorated pottery making in San Felipe, where they found a little gray-to-red culinary ware still being made. The immediate results, not surprisingly, were somewhat less than inspired. Two San Felipe women are said to be making decorated ware today for sale in Old Town Albuquerque, but the problem of creating a new tradition is hard to solve.

Santo Domingo, next upriver, is one of the largest of all the pueblos today and probably, as they intend, the most conservative. We have an elaborate study of designs from what old pottery Kenneth Chapman (1936) could see or collect, but he believed the type, as he envisioned it, probably dated from, approximately, only the opening of this century. What, then, filled the gap between 1700, when glaze wares disappeared, and 1900?
Santo Domingo has permitted no access to their dumps or, as they would say, more properly, their "ash piles." Why? The Pueblos as a whole believe that the spirit of a person who has used an object continues to be associated with that object. Because the ash piles grew up from deposits of household ashes plus the decomposing remains of household and personal equipment, those mounds represent the ancestors of today's living peoples. Secondly, ash is the symbol of Ash Boy, a beneficent household spirit in all the pueblos. All the Pueblos place prayer plumes on ash piles for ritual occasions.*

Mera (1940, p. 27) wrote of Santo Domingo, "Here too [he has just been discussing the enforced privacy of San Felipe's village ash mounds] investigation is strictly forbidden but in spite of this a few sherds representing Groups A, E, and F have been recovered from the trash deposit from time to time. These are too few to furnish any reliable information..." Neither Chapman (1936), Harlow (1967, pp. 12, 14; 1973, pp. 44-50), nor any other had stratigraphic or even type-association data to cover Santo Domingo's pottery between 1700 and 1850. Harlow speaks of the history of ceramics for the northeastern Keres as "clouded." Too true.

What little data each of the three men had for their comments came almost entirely from Cochiti discussants.

The Keresans originally were one people, Bandelier was told--a statement which duplicates that of all today's Keresan Pueblos including

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*After lengthy debate, Taos, Nambe, and Zia Pueblos did permit our trenching as partial background to their land claims (Ellis, 1956, 1964, 1966b; Ellis and Brody, 1964). That work provided beginning approximate dates on some local pottery types as well as data on site settlement. In contrast, Santa Ana Pueblo, though always most cooperative, explained that even walking across an ash pile was tabu. One might only forage for sherds from their lower peripheries.
Acoma and Laguna to the west. Moving southward from Rito de los Frijoles, in groups, came units (which Bandelier regretted he never was able to define) made up of those who were to establish Cochiti and San Felipe. After living in two other large sites on the route southward, they were at the big site of Kuapa in Cañada de Cochiti when attacked by the Pinini (a Keresan term for all Tewa) and a great many killed. It was said that attacks by these people had been largely responsible for abandonment of the Frijoles.

Those who managed to escape reached the Potrero Viejo, whence they vanquished and drove away the enemy. Then they established the present site of Cochiti on the western edge of the Rio Grande. Later, during the troubled years of the Pueblo Rebellion, they would return to Potrero Viejo to construct the refuge site of Kotyiti where they could hide and also play host to displaced groups from some of the other pueblos.

Mera (1940, p. 24) reports that sherds from Kuapa, LA 35, run from Glazes A through E. I have found black-on-white on the upper end of the same ridge. This plus Glaze F duplicates the sequence he lists (to which we can add black-on-white for the near vicinity) for Tyuonyi, LA 82, the main large site in Frijoles. The dating for both, then, would cover the 13th to the 16th or 17th century. At Kotyiti, LA 84 and 295, there is only Glaze F (Ibid., p. 25) of the 16th or 17th century.

To return to the Cochiti account. The last three inhabitants left alive in Kuapa, in hiding, were a woman, her son, and a parrot. A bit later they tried for a home in Sandia Pueblo but were refused. They were accepted by Tonque, LA 240 (Glazes A to E: 1300-1500 or 1600s: Ibid.).

During their stay in that pueblo, the son farmed a plot on the east side of the Rio Grande, and after the mother had given birth to another son and three daughters (fathers not identified), the family moved to that farm area. This site, it was claimed, became the original San
Felipe. Later the group (augmented by additions?) would move onto the mesa above and slightly north of present San Felipe Pueblo. Mera (Ibid., p. 26) found only Glaze F (16th-17th centuries) around the middens of the San Felipe site on the mesa, LA 2047.

Santo Domingo, ever conservative and wary of outsiders, held their tongues to most of Bandelier's questions but admitted that their ancestors had come from the Frijoles area.

If the sites in the Frijoles area cover a stretch of time from the mid-1200s to the mid-16th century (Ibid., p. 24) and if one finds sherds of 14th century Glaze A (Ibid.) eroded from the old middens of Cochiti Pueblo, that pueblo could not have been founded by Frijoles people unless they left by the 14th century and did not stop enroute to construct other pueblos. Later additions, of course, could have been made to the Cochiti nucleus, wherever its people had originated. The sherds from Kuapa lead us to the same conclusion.

It appears that Bandelier has left us in mid-air, and Lange and Riley (1966, p. 171 fn 111) summarize the situation as it still exists:

The precise relationship of these [Pajarito Plateau] sites... to present-day Cochiti, to other Keresan tribes, or to other Pueblo tribes, remains to be worked out through careful excavation. Pertinent to the problem of regional cultural history are the large sites of the Bandelier Monument area as well as Kuapa and Pueblo Canada to the south on the Rancho de la Canada. Throughout the same area are innumerable small sites which must also be reckoned with in the reconstruction of the culture history of the Middle Rio Grande.

There also is one further point to be considered. As we all know, in the past the narration of any pueblo's history customarily was begun by native peoples with the emergence of ancestors from an underworld. They came out somewhere to the north or northwest at a specific symbolic shrine spot, differently placed by various Pueblo tribes. Each tribe worked its way southward, stopping at named sites, every ancestral site becoming a shrine in itself. Eventually, with Earth Mother's directions, the groups reached their present locations. How much has
this mythology to do with the account of migration from Frijoles? Some of the most important Pueblo shrines are known to be in the Jemez Mountain-Pajarito Plateau country. Frijoles Canyon was a Keresan center toward the southern end of that plateau; Tewa were living on their northern periphery.

Mera's brief conclusions to his early survey of what he calls "The Keres Division," including the Santa Ana and Zia districts, with those of the three Keresan pueblos on the Rio Grande, are significant. In the period of Glaze A, there were 28 and probably two other settled communities of year-around occupation. By period 2, six had disappeared. By his third period, three highland villages were abandoned. In the fourth period two new sites appear, but in the fifth period only six major sites remain, with several smaller ones apparently breaking away, possibly because of the Rebellion. Only three villages, Zia, Cochiti (Mera, 1940, p. 28), and, as we now know, Santo Domingo, occupied the same location throughout the entire range of glaze-paint pottery types.

Harlow, like everyone else, has been inclined to think that Cochiti and Santo Domingo ceramics were very similar until they "began to diverge significantly" about 1820, give or take 20 years. The question of whether either made decorated wares in the 1700s, however, has arisen.

Harlow found two Laboratory of Anthropology sherd collections, one of which he believed related to the period between 1750 and 1800 in the Cochiti area, and the other covering the period from the 14th century to modern times. In the first, only 5 sherds are said to have been of Cochiti origin, 8 from the Puname (Zia-Santa Ana) district, and 25 of Tewa-made Pohwoge, produced either in a Tewa village to the north or by San Ildefonso potters then living in the northeastern Keresan area. In the second collection, the Tewa and Puname sherds appear to date "well before 1800," which again suggests to him that at that time the Cochiti were obtaining decorated ware by trade (Harlow, 1973, pp. 45-46). The sum of data obviously is far too small and provenience too indefinite to serve as basis for serious conclusions, but it leaves one wondering.
Harlow's interpretation regarding pottery succession, although constructed on a very small data base and hence hypothetical, is that what we know as Cochiti and Santo Domingo Polychrome both split from a common stem which he names Kiua Polychrome. Kiua Polychrome presumably was the first to be made in any amount after an interval of almost no production of decorated ware during more than three-fourths of the 1700s, that very troubled and insecure post-Rebellion period. He gives this ware the astonishingly long lifetime of "1780-1920 (plus occasional recent examples)" at Santo Domingo. It was tempered with crushed crystalline material together with some softer white particles. The creamy white slip used over a rather rosy-tan paste was "polished by rag-wiping," and when cracked it produced "definite scabs with slightly upturned edges." Beneath the band design on the body was "a moderately wide plain red band." After about A.D. 1800, rims were painted black.

What he defines as Santo Domingo Polychrome appeared only after the turn of the 20th century. Santo Domingo jars were made taller, which made them appear more slender. Bowls were somewhat shallower and had walls more flared than in earlier examples. The flowers and birds which came into favor as elements for pottery decoration by definition place vessels as Santo Domingo Polychrome. Vessels of the same period however, which show the heavy geometric designs characteristic of the old Kiua Polychrome are thereby classified as Kiua Polychrome. Harlow comments on the tendency of Santo Domingo Polychrome not to show the "ceremonial line break." but we can quote Santo Domingo friends to the effect that the potters were officially forbidden to use that element on any vessel intended for sale to outsiders.

Santo Domingo presumably continued on with the basic 18th century style Santo Domingo-Cochiti Kiua ware, with its satisfying heavy designs—which have left B. T. Ellis pondering for some years about the possible influence of Spanish tile designs painted on interiors of old churches, etc. (actual tiles not having been brought into New Mexico because of weight). But by 1830, Cochiti was opening a new school of
design. This emphasized delicacy of overall decoration and the common inclusion of such ritual elements as bubbly rainclouds, angled shooting lightning, and the ceremonial break in framing lines. Such designs define Cochiti Polychrome (1830 to present). After the rebellion period, Cochiti experienced enough and sufficiently amiable contacts with Spanish Americans and Anglos, who came into or settled in their district, to permit acculturation and obviate much of the antagonism left from earlier Spanish domination.

For Cochiti Polychrome of the 20th century, potters occasionally appliqued clay lizards or turtles to large storage vessels intended for home use. They had made animal and bird-shaped pitchers, and little animals and human figurines, which toward the end of the 19th century culminated in fun-objects—the hollow pottery caricatures that were representations of human beings, especially Anglos, and a few animals. These, of course, provided the background for the commercially popular "story teller" multi-figurines of today.

What of modern Santo Domingo pottery? Harlow guessed (1973) that perhaps a half-dozen women are making it. My guess would be a little higher, and there is no question that the number is increasing. Santo Domingo, about equally distant from Santa Fe and Albuquerque, has needed what can be managed of cottage industries such as jewelry and pottery to augment farming as their primary economic basis.

In the 1930s and 1940s, definitely there were more Santo Domingo potters than today. Some set up stands where I-25 meets the side road that drops down to Santo Domingo. There was some "polished black," copied from that of the Tewas north of Santa Fe. Most of this was stone polished, but very streakily. Some had been covered with commercial black paint, and crude white designs might appear on either. The polychrome was better, but much of it tended toward hastycrudeness. Prices and quality were equally low. Tourists bought, but there were complaints. According to stories of that day, one native family had been setting its unsold vessels into a hole in the bank of a nearby wash each night rather than packing them to carry home. One morning
they returned, after a rain, to find everything dissolved back into the clay from whence they came. Had the firing been adequate, this could not have happened. A related tale is that of the Santo Domingo governor receiving an angry note stating that when flowers were placed in their "vases" on a table, enough moisture had seeped through to ruin the surface. (Or was it a pottery cream pitcher which dissolved in the cream?)

The result was an order from the governor's office that no more pottery was to be sold by the roadside and that quality must be improved or none was to be sold! That was the end of pottery stands by the roadside until recent years.

Today there are a few small toy shapes representing household utensils, neatly done in the polished black Tewa-type finish. There are Christmas tree pendant decorations cut from clay matrix with commercial cookie cutters but carefully painted with old Santo Domingo designs. There also are the more standardized vessels made by young, middle aged, and gray haired women, and a fair number are used at home.

Cochiti continues to produce a few Cochiti Polychrome vessels as well as the multitude of story tellers. But at present there is something of an impasse over the matter of their creamy slip clay, for generations obtained from deposits on Santo Domingo land to which access is now cut off. Cochiti and Santo Domingo long have nourished a jealousy, unquestionably based in part on Cochiti's numerous breaks with old hard-nosed patterns of conservative tradition. The worst break came a few years ago when Cochiti sold land so that a large dam could be put across the Rio Grande. The dam was intended for flood control, and conservation of irrigation water which also could be used for sports. It happened that the location for this dam was just at the spot where Cochiti and a number of other pueblos believed the katsinas came up from the underworld.

None of the Pueblos wanted that important shrine destroyed. But Cochiti, told by our engineers that if Cochiti did not sell the land
it would be condemned and taken anyway, did as requested. Its own conservatives were appalled. Santo Domingo was appalled. So were other pueblos.

Conservative Santo Domingo retaliated, while the dam was under construction, by cutting off the most direct road to Cochiti, digging a trench across it, and planting a tree in it! The road chanced to be on Santo Domingo's land. Until the state could put in a new highway a short distance to the north, Cochitis, workers on the dam, and non-Indians who were buying houses in a new settlement near the dam had to drive 10 extra miles, taking the Santo Domingo-Peña Blanca road.

Now the Cochitis are desperately seeking a replacement for Santo Domingo slip. Jealousy of the continued sale of high priced story teller figurines, invented by a Cochiti woman, quite certainly is a major factor involved.

Internal Pueblo factionalism and inter-Pueblo feuding are characteristic old patterns of Pueblo culture, at least as important as external aggravated pressures and the Pueblos' overall ideal of harmony and proportion in the specific history of each tribe. Pottery is the product of people who are products of their history as well as of their culture.

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Milling stones which are relatively rectangular and thin, showing little shaping and basining, but frequently artificial pecking and roughening, have been reported from a number of Southwestern archaeological sites. These implements are perhaps an ancestral form of mortar and trough metate. The nether stone is usually a slab of sandstone, either flat or with a shallow basin. This basin was produced by artificial pecking with a harder hammerstone. Manos are usually of the "one-hand" variety, to use the standard archaeological terminology. Manufactured by purposeful abrading, they are often rectangular with rounded corners, less frequently ovaloid, and have slightly convex sides when viewed in cross-section.

Hand stones and slabs conforming to this type have been found in several prehistoric contexts, most notably the Sulphur Springs stage of the Cochise Culture and in other "Cochise-like" manifestations (Sayles and Antevs, 1941, p. 13). On this basis, many archaeologists have tended to equate such implements, usually termed grinding stones or seed slabs, with early preceramic gathering cultures in the Southwest.

We submit that such a hypothesis should be independently verified by stratigraphic position or other evidence and should not be accepted on the basis of typology alone. Some non-Pueblo tribes in the Southwest and neighboring southern Great Basin still employ such tools. Therefore, typology indicates use or function only, and has no implications as to age. Furthermore, among surviving Indians, such stones are used primarily for pounding and crushing and only partially for grinding.

The Walapai and Havasupai are among such groups. For the Walapai, the most detailed account of their material culture has been in Walapai Ethnography (Kroeber, et al., 1935). This presented data gathered by graduate students in 1929. The field party made one
trip down the Big Sandy River and back to Kingman via the road west of the Hualapai Mountains; Kroeber also visited Peach Springs. However, most of the data for the study resulted from interviews with informants in a house rented in Kingman (Kroeber, personal communication, 1956). Lack of opportunities for observation of Walapai behavior by the students apparently resulted in some deficiencies in the final report. An example is the brief comment on food reduction implements: "The loose slab metate seems to have been far more common than the mortar" (Kroeber, et al., 1935, p. 50).

We have observed among the Pai (Walapai and Havasupai) of northwestern Arizona, two general types of milling techniques used with these stones (this is exclusive of their mortar and pestle, used exclusively for reducing mesquite bean pods). When cereals are being reduced to meal, the grains are first pounded with the side of the mano held in one hand. The material is then crushed in the shallow basin. Crushing varies with the stone and the motion of the individual doing the crushing. A rounded, or oval, small mano is rotated with a circular motion. However, when a back and forth movement is utilized in grinding hard substances such as corn, the typical one-hand mano is held in both hands. A field observation of a Walapai woman utilizing this procedure revealed that she cracked kernels of hard food (corn) (Fig. 1) by tapping them with her handstone before crushing them between the handstone and slab. She then held the mano in both hands (Fig. 2), its long axis at right angles to the long axis of the nether stone, precisely in the position of a woman grinding with a mano on a metate. She leaned over the nether stone, supporting her weight on her knees placed behind the upper end of the nether stone elevated on a spare muller. Yet she did not grind the maize between the two; she crushed it by rocking her handstone over the cracked grains while leaning on it. She moved the handstone back and forth along the long axis of the milling stone only a short distance. She did not rock the muller up on the back stroke to catch grains under it and then mill them by rubbing them against the
Figure 1.

Walapai woman beginning to crush corn, tapping the kernels with a one-hand mano on the milling stone. Photo by Robert C. Euler.

Figure 2. Walapai woman crushing corn with "one-hand" mano held in both hands. Photo by Robert C. Euler.
nether stone, as on a metate. Instead, she pushed cracked kernels into position with one hand, placed the muller over them, and rocked it back and forth until they were crushed. The motion employed was that a person uses in making crumbs from dried bread with a rolling pin with stationary handles. One must rotate the crushing surface of the round roller by wrist action, exerting downward force with the arms at both ends of the stroke to crush the bread.

Other Walapai women possess handstones more circular than oblong. One demonstrated her food reduction technique by sitting behind the implement and moving her handstone, held in her right hand, in a complete circle, implying more grinding than crushing. This handstone type and circular rubbing motion probably were used to grind very small seeds which would be difficult to pound. The wear resulting from this rubbing undoubtedly accounts for deep-worn, oval basined milling stones observed on a few prehistoric Pai sites. Among the Havasupai, we have observed the same type of food reduction, using Mentzelia seeds, but with the one-hand mano held in both hands (Fig. 3).

Foods other than cereals are milled primarily by pounding. Such foodstuffs include piñon nuts, jackrabbit meat (the two are often mixed together), the roasted fruit of the yucca and agave, and prickly pear (Opuntia) cactus fruits. In addition, temper for pottery was crushed on these same milling stones. All these materials are uniformly pounded with the side of the mano. With soft foods, the reduced pulp is given a final swirl or two with a circular motion of the mano. In short, this is less a grinding than a pulping. The material is built up around the edges of the pounding area to resemble a small volcanic cone, so the rim helps catch the spatters of soft pulp as the handstone strikes it (Fig. 4).

These implements are not rare in contemporary Pai communities, especially at Peach Springs and Supai. They are an important part of kitchen equipment in many households, except among the youngest couples. We know of slabs so cared for that they have been used in the same family for upwards of half a century. Seeking specimens
Figure 3. Havasupai woman grinding Mentzelia seeds with a one-hand mano in a deeply worn, oval basined milling stone. Photo by Robert C. Euler.
for museum deposit, we found them difficult to obtain. Whole stones were in use, and no one wished to go to the trouble of journeying to sandstone deposits for slabs suitable for shaping new ones, a task reputedly requiring about an hour. (According to respondents, hand-stones require the better part of a day to shape.) Present attitudes probably derive largely from the positive sentiments associated with these implements. Only a few especially relished wild foods are gathered today, and they are regarded as taste treats, not to be consumed every day. Therefore, the native implements required to prepare these festive foods for consumption are associated with special occasions and particularly relished dishes. Women's attitudes toward them are undoubtedly rather different from those of former times, when these stone tools were employed in mashing the bulk of the vegetable food eaten day in and day out, and represented
drudgery. Two mano and milling stone sets were finally collected and deposited in the Museum of Northern Arizona (catalog numbers 1743/E.1271 and 1272), the owners having been persuaded that they were needed as type specimens to identify prehistoric examples which provided evidence of former Walapai territorial distribution.

Portable stone and wooden mortars also were used by many Walapai into historic times. Parents and grandparents of living Walapai pounded mesquite seed pods ("beans") with pestles in such mortars, and several stone mortar users were still living in 1929 (Kroeber, et al., 1935). Mortar distribution coincided with the habitat of the mesquite tree--Bill Williams Fork and its Big Sandy tributary, the Pai (left) side of the Colorado River and the floors of canyons opening into that stream's gorge in western Grand Canyon.
We have recorded portable and bedrock mortars at the large seasonal Walapai village of Metipka in Quartermaster Canyon. Furthermore, a Walapai showed us half of a portable vesicular basalt mortar his grandmother had used near the mound marking the site of her former dwelling in Matawidita Canyon. When this mound was excavated, the other half of the mortar was recovered on the floor of the structure which had been inhabited about 1915 (Dobyns, 1956, p. 220; Euler, 1958, p. 211). The restored specimen (Fig. 5) (Museum of Northern Arizona catalog number 1762/NA3786C.19) probably was broken after the owner had died in keeping with Walapai beliefs about souls of the dead and proper methods for preventing their molesting the living. Because mesquite seed pods are seldom if ever processed by Walapais today, we have not observed these utensils in use and cannot describe motor habits involved in their manipulation. Of wooden mortars, we, like Kroeber's party, have only verbal accounts.

In sum, our field investigations among Walapai Indians have revealed that women of this tribe employed three types of food reduction implements and three reduction techniques:

1) Mortars and pestles of stone (and anciently of wood), the pestle probably wielded with both hands, to mash mesquite seed pods by pounding.

2) Milling slabs and mullers of stone.
   a. Muller wielded in one hand to smash soft foods and to crack grains by pounding or tapping.
   b. Muller rocked in both hands to crush cracked grain by pressure.

3) Oval basined grinding stones with mullers rubbed in a circular motion with one hand, grinding small seeds by friction and pressure.

Classification of milling techniques employed on stone slabs is based on actual observation of milling operations by Walapai women.

The neighboring Havasupai employ milling and pounding stones similar to those of the Walapai, except that they are generally larger (Figs. 6 and 7). Leslie Spier (1928, p. 114) reported:
Figure 6. Havasupai woman reducing food on a milling stone in 1900. Maude photo courtesy Southwest Museum.

Figure 7. Havasupai milling stone and mano in use in 1956. Scale is 25 cm. long. Photo by Robert C. Euler.
The grinding slab, on which nearly all wild and cultivated seeds are ground, is roughly rectangular, 80 by 50 cm., by 10 cm. thick. A smaller slab, carried with a moving camp, is 60 x 30 cm. A shallow oval, but nearly rectangular, depression is pecked in one face with a hammerstone. The mano is roughly a prolate spheroid 17-22 m. long, with short diameters of 7.5 and 10 cm. The woman sits in front of the slab which rests flat on the ground, with its face slightly tilted toward her. The corn, beans, etc., are first pounded with the end of the mano, and then crushed with a pounding, rocking motion of the stone.

The food reduction described is clearly pounding and crushing rather than a grinding operation.

The Yavapai, the third Arizona Upland Yuman-speaking group, apparently used both trough metates and milling stones. The essentially pounding actions used in reducing some foods have been described by Gifford (1936, p. 280) for these people, although labelled as grinding:

NE Yavapai--Metates seen of two types: (1) flat or slightly concave; (2) trough-like. Usually found, rarely made. . . Sometimes muller used for pounding on metate. In grinding lemon berries, muller worked in both hands with rocking or crushing motion away from user. Muller not shoved over face of metate, but given light rolling motion as far as wrists would flex.

The riverine Yumans along the Colorado used different forms of milling stones. Kroeber (1925, p. 736) remarked that:

The Mohave metate for corn, wheat and beans is a rectangular block of lava on which a cylindrical muller is rubbed back and forth. It is therefore the Pueblo type of implement except for not being boxed or set into the ground. . . Mesquite beans are crushed with a stone pestle in a wooden mortar, the hard seeds remaining whole. . .

The entire upper surface of the metate seems to have been used for grinding various foods with the exception of mesquite beans.

The Maricopa, on the Gila River, together with the amalgamated Kaveltcadom and Jalchedun, in modern times have used similar grinding
rather than pounding equipment. Spier's (1933, pp. 127-128) work there showed that:

The metate was a flat slab, roughly rectangular, with one prepared face used for grinding with a handstone or mano. The metate was of a granite-like stone; the mano of a hard, close grained sandstone.

In grinding, the mano

was moved to and fro, perfectly flat for most of its stroke, but rocked, i.e., the near edge raised, at the end of the stroke toward the body to catch more grain under it. When the surface became too smooth to catch the grain, it was roughened by pecking with a fragment of hard stone.

in the manner of the Pai milling stone. The form of muller used by the Jalchedun while on the Colorado River is not known.

According to the ethnographies, some Shoshoneans apparently differed from eastern Upland Yuman tribes in that they reduced hard vegetable foods by grinding, using a backward and forward rubbing motion with the mano held in both hands.

Among the Paviotso, the back of the metate was employed as a base on which to shell seeds, but the actual mealing process was accomplished by grinding. The mano was about as long as the width of the metate, the entire surface of the nether stone being used in grinding. This produced a different surface appearance from that of the artifically pecked basin of the Pai milling stones although both were simple slabs (Lowie, 1924, pp. 204, 215, Fig. 2).

The Surprise Valley Paiute band of Northern Paiutes also used a "flattish, unsquared slab, the face worn evenly and untroughed" (Kelly, 1932, p. 138).

West of Pai territory, the Shoshonean Cahuila Indians also used a slab-shaped nether reducing stone. Kroeber (1908, p. 51) noted that:

The metate is nothing but a flat stone, oval or somewhat rectangular in shape. It is made of granite or metamorphic rock. Very slightly hollowed. Some pieces show hollowing only in that part of their area which is actually rubbed in use.

Grinding is clearly implied in this description.
The Moapa Southern Paiute also ground with a two-handed mano on a slab metate which tended to have a trough worn into it (Lowie, 1924, p. 205, Fig. 3). However, on known Southern Paiute sites in the Virgin River drainage, Euler has observed milling stones and manos identical to those of the Pai. Paiute milling stones in use in the 1950s on the Kaibab Paiute Reservation also were identical.

We already have pointed out the presence of these stones archaeologically in Pai sites. Immediately to the east, the prehistoric Cohonina, who occupied much of later Havasupai territory prior to A.D. 1150, appear not to have employed milling stones or pounding slabs. At some excavated Cohonina sites which have been reported upon by McGregor (1950, p. 73), "Of stone objects, by far the most abundant were metates and manos. The former were of the trough and platform type." The 20 metates recovered had been pecked into shape, and grinding was done with a linear motion. A couple of unshaped "milling bases" upon which grinding was done in a circular manner were also reported. None seems to have resembled the shaped pounding stone of the Walapai and Havasupai.

The prehistoric Prescott tradition Indians of central Arizona also employed milling stones, even during the period when they were living in stone masonry dwellings and subsisting mainly from agricultural produce. At Kings Ruin, for example, besides grooved metates with flat bottoms and straight side walls, upon which food was undoubtedly ground,

The broken parts of eight small sandstone grinding slabs were found in the rooms of the pueblo. These seem to have been irregular in shape and were probably not more than a foot in length in any case. They show shallow depressions of irregular shape in which the grinding had been done. Two of these... show traces of hematite dust and perhaps indicate the chief function of the implements, that is, grinding paint stone (Spicer and Caywood, 1936, p. 54).

An excellent example of a non-pottery site exhibiting pounding stones and "one-hand" manos is one which Euler noted in northern...
Arizona north of the Colorado River and immediately east of Grand Canyon. Cultural material was unstratigraphically located in sand blow-outs and consisted, in addition to the milling equipment, solely of large stemmed projectile points, percussion flaked knives and scrapers. In support of our previous point, archaeologists have often referred to these artifacts as "early man" or "pre-pottery." It may well be, on the contrary, that they are, in reality, "post-pottery" and representative of historic Paiute occupation of the region.

In summary, thin, slab-shaped milling stones, with artificial roughening of the basin, but little wear from grinding, are used by some modern non-Pueblo Southwestern Indians for pounding primarily, and such may be inferred to have been a prehistoric practice as well. These stones should not be termed *metates* if that term is to be uniformly employed to designate grain-grinding stones. The term milling stone is preferred. Further, these stones usually have no temporal significance themselves, based on typology, and temporal placement should be made on other grounds.

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The Center for the History of the American Indian, Newberry Library
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1980: AN ANNIVERSARY YEAR IN SOUTHWESTERN ANTHROPOLOGY
CHARLES H. LANGE

This paper has been somewhat revised from the original version presented April 25, 1980, as a public lecture, "1980--An Anniversary Year." The lecture was sponsored by the Santa Fe, New Mexico, Chapter of the Archaeological Institute of America and by the Archaeological Society of New Mexico, part of the celebration of the 100th Anniversary of AIA research activities in New Mexico, as well as recognition of the 300th Anniversary of the Pueblo Indian Revolt of 1680 in New Mexico.

The paper, as revised for publication, seemed particularly appropriate for inclusion in this volume honoring Charlie R. Steen, since he was the principal in making arrangements for the AIA lecture. Appreciation is here expressed to Mrs. Eugene (Betty) Kingman, Secretary-Treasurer of the Santa Fe Chapter, AIA, for permission to use the lecture material in this way.

Following the usual introductory remarks (typically of no enduring significance), the anniversary theme of 1980, 1880, and 1680 was augmented by a brief discussion of still other century points in time. Beginning somewhat arbitrarily with 1280 A.D., attention was called to this one-time earliest date on the dendrochronological master chart of A. E. Douglass. Compiling his data from living trees and beams from older buildings, his initial chart for the Southwest extended from 1929 back to 1280 (Wormington, 1968, p. 14).

1280 A.D. was approximately the midpoint of the Great Drouth (1276-1299) in the Southwest. From Mesa Verde came a final building date of 1273, and emigration from the area followed soon after that date. This was initially designated the Pueblo IV period, and subsequently termed Regressive Pueblo. However, during the following century or two, embracing our anniversary dates of 1380 and 1480, a cultural renaissance occurred in the northern Rio Grande drainage.
According to Wendorf and Reed (1955, p. 134), this development in northern Rio Grande and its importance first attracted the attention of Bandelier in his *Final Report* (1892).

This northern Rio Grande florescence might well have continued for some time had it not been for one major event in Southwestern culture history—the arrival of the Spanish expedition under Coronado in 1540. In itself, however, this event actually had relatively little lasting impact on the Rio Grande Pueblo tribes.

The next "anniversary date," 1580, was also of little lasting importance in the Southwest, but it was the "eve" of considerable exploratory activity by the Spaniards. In 1581, there was the expedition led by Fr. Agustín Rodríguez and Captain Francisco Chamuscado; in 1582, another expedition was led by Antonio de Espejo and Fray Bernaldino Beltrán. Together, these expeditions set the stage for the large-scale colonization and missionizing efforts headed up by Don Juan de Oñate in 1598. This venture began the Spanish settlement in the vicinity of San Juan Pueblo; the Spanish center was subsequently moved by Pedro de Peralta, Oñate's successor, in 1610 to Santa Fe, the new capital. These final decades of the 16th century and the early decades of the 17th century provide the base for the next leap through time to 1680.

The Pueblo Indian Revolt of 1680 was an important event in Southwestern culture history; it has been termed, "the First American Revolution." Simmons (1979, p. 186) commented, "From a historical view, the Revolt delivered a severe blow to the prestige of the Spanish empire and stands as the most spectacular victory achieved by Indian arms within the present limits of the United States."

While successful in its immediate goals, the Revolt of 1680 was relatively brief, and it was also limited in its long-range consequences. It has been of interest to numerous writers over a considerable period of time: W. H. H. Davis (1869) included a summary of it in his *Spanish Conquest of New Mexico*; Adolph F. Bandelier wrote a series of articles, "Kingdom of New Mexico," for Max Frost and the
In the decades leading up to the Revolt of 1680, the Pueblo Indians had experienced increasing difficulties and problems with the Spaniards; they were invariably caught up in the intense rivalries between the civil and religious authorities. Details of these struggles were well documented in two monographs by Scholes (1937 and 1942); the titles, Church and State in New Mexico, 1610-1650 and Troublous Times in New Mexico, 1659-1670, are indicative of the general situation prevailing through those years. More recent discussions of the Revolt itself have been written by Sando (1976, 1979) and by Simmons (1979).

Harsh measures characterized the rule of the Spaniards in the years prior to the Revolt--tithing, both secular and religious taxes, either in produce or services, was ever more burdensome. Governor Otermin heard rumors of unrest and took stern counter-measures. Tensions mounted, and on the 10th of August, 1680, there was a general outbreak among the Pueblo tribes. Twenty-one of the 33 Franciscan Fathers serving the area were killed, as were some 400 other Spaniards. Survivors began their trek southward, away from the Pueblo villages. Otermin and the Santa Fe garrison held out briefly until the Indians cut off the water supply. Then they too joined the movement southward--first to Isleta Pueblo and then to El Paso.

As Sando (1979, p. 197) commented, it is interesting that the Pueblo Indians merely watched rather than attacking as Otermin's party fled. Victory was theirs!

The immediate results of the Revolt were somewhat varied, but, with few exceptions, the Pueblo Indians were highly pleased with their newly restored freedom from outside interference, pressure,
and abuse. Remains of Spanish culture were obliterated for the most part; churches were destroyed or were allowed to deteriorate through neglect, pilfering, and the cumulative ravages of natural forces.

Alone once again, however, the Pueblo tribes reverted to traditional dissension and old animosities; in addition, intramural conflicts and disputes erupted within a number of the villages. Subsequent generations of Pueblo Indians have shown little disposition for joining sustained collaborative efforts. Nonetheless, some collaboration among the Puebloan tribes has occurred—perhaps especially so in more recent years or decades. The best example, less dramatic but still substantial, has been the work of the All Indian Pueblo Council; delegations have been sent to Washington, and other cooperative enterprises have been supported with varying degrees of success.

All too often, however, these activities have been further demonstrations of the old adage—"In general, things must become worse before they can become better!"

Looking at our next "anniversary" year, 1780, it can be noted that far across the continent, the English colonies were hardly more than midway through the American Revolution. The Massachusetts Constitution of 1780 designated Harvard as a university for the first time. In the American Southwest, people remained essentially unaware of these events!

The Southwest was, in fact, remote from Mexico City and from Spain as well. Kessell (1975), as an illustration of this remoteness, wrote:

New Year's Day, 1779: The citizens of Santa Fe are summoned to the plaza "at the sound of drum and with other customary formalities" to thank God for the birth in Spain of a royal princess. Commenting on the speed of the mails, someone jokes that by now she's an old lady.

In 1780, New Mexico was well into the governorship of Don Juan Bautista de Anza (1778-1788), one of the more able of Spanish
administrators on the Northern Frontier. Since the Pueblo Revolt and
the Reconquest, the returning Spanish settlers and the Pueblo Indians
had achieved some degree of accommodation, joining in mutual defense
arrangements against the raids and attacks of such tribes as the
Apaches, Navajos, and Comanches.

In 1782, in an effort to bolster New Mexico's defenses, everyone
without a firearm was ordered to acquire a bow and 25 arrows--or face
two months in the Santa Fe jail. This decree calls to mind the in-
structions issued by Viceroy Bernardo de Gálvez for the governing of
the provinces of New Spain in 1786. With over 200 numbered paragraphs,
these instructions touched on the advantages of trading intoxicants to
the Indians and also commented that it was "an error to believe that
firearms used by the Indians do us greater harm than the bow and ar-
row." In almost classic Machiavellian terms, de Gálvez went on to
elaborate upon an explanation of his proposals--that muzzle-loading
firearms were much slower for reloading than the bow; that firearms
were no more accurate than bows; that firearms were fragile and very
difficult to keep in good repair; that ammunition had to be obtained
through trade with the Europeans; and finally, that skills acquired
with firearms during peaceful times meant lost skills with the bow
and arrow in times of hostilities (Worcester, 1951, pp. 46-49).

Moving along to the next "anniversary" year, 1880, just a century
ago, New Mexico had experienced some 35 years as a Territory of the
United States. Rutherford B. Hayes was President. The earliest
Anglos had been in New Mexico for several decades. With the acquisi-
tion of the territory by the United States, the importance of the
Santa Fe Trail became increasingly greater.

In 1880, Santa Fe was the largest city in the territory, with a
census count of 6,635 persons. It was said that Santa Fe was the
"capital of a territory just awakening from a sleep of centuries." Rail-
way travel to Santa Fe (from Lamy) was possible for the first
time on February 9, 1880. The municipal gas works became operational
at the end of 1880. A municipal water system did not exist until
1882, and a sewage system and pavements did not appear until considerably later. As Anderson's article on Santa Fe in 1880 noted, "Conditions were primitive" (1947, p. 107).

1880, in addition, was a year of special significance for the Archaeological Institute of America and its work in the American Southwest. On August 23, 1880, Adolph F. Bandelier made his initial appearance in Santa Fe, having made the trip from the east by train. He was beginning his field research in Southwestern culture history (starting at the age of 40!), sponsored by the Archaeological Institute of America. Bandelier was the first Americanist to be sponsored by this newly formed society.

Of particular interest for this present observance of the 100th Anniversary of the Archaeological Institute of America is a consideration of the founding fathers of the AIA and their hopes and aims for their society. Some appreciation of these details may be gained from the daily journals kept by Bandelier, beginning in August, 1880, and continuing through subsequent years until he left the Southwest in the spring of 1892. However, these have been published in edited and annotated form (Lange and Riley, 1966, 1970; Lange, Riley, and Lange, 1975, 1984 ? ) and need no further attention here. The journal entries are revealing for events and conditions noted by him and for his candid reactions and appraisals of the people he met; his entries are also frustrating at times because of his inexplicable omissions!

However, for this paper, the minutes of the AIA Executive Committee meetings and the minutes of the regular and special meetings of the AIA itself are much more relevant. These records are typed but as yet unpublished; they are in the Houghton Library of Harvard University (Archaeological Institute of America, 1879-1897). These two sets of minutes provide first-hand insights into the thinking of the AIA founders. The group included a number of the leading scholars and scientists of the late 19th century. Their perceptions and opinions are, in part, amusing today; often, there is a naïveté
typical of the pioneers in any field of human endeavor. On the other hand, numerous statements by these same individuals reveal an appreciation of the general situation and a grasp of proper approaches and procedures that would be commendable if expressed by present-day scholars, researchers, and academicians.

The story of the AIA actually had its beginning April 14, 1879, when a circular appeared in the Boston-Cambridge area. In part, it announced "a proposal to establish a Society for the purpose of furthering and directing archaeological and artistic investigation and research." After several paragraphs devoted to a general discussion of goals, suggestions were made as to the structure and organization of the proposed society--officers, dues, membership, and so forth. Also, a response was requested. The circular was signed by 12 individuals: Charles W. Eliot, W. Endicott, Jr., Augustus Lowell, Martin Brimmer, E. W. Gurney, C. C. Perkins, Alexander Agassiz, W. W. Goodwin, F. W. Putnam, T. G. Appleton, Henry P. Kidder, and C. E. Norton. This last individual was Charles Eliot Norton, Harvard Professor of Classical Studies; responses were to be returned to Norton.

There was sufficient response to warrant a follow-up notice of a meeting. This meeting of May 10, 1879, was called to order by Norton; Martin Brimmer was appointed chairman, and George Wigglesworth, secretary. Norton announced that 108 persons had expressed a readiness to join the society. He then proceeded to give the chief aims of the society, as he saw them. At some length he indicated the possibilities in Classical studies--in Greece, Egypt, and the Eastern Mediterranean. He closed with a motion that a committee be appointed by the chair "to draw up a definite scheme for the Society and to nominate officers, such Committee to report not more than a week later."

In the ensuing discussion, Francis Parkman was the next speaker. He had supposed that the "main purpose of the Society would be to promote the study of American Archaeology." Little had been done as yet by Americans and "every year would make such a study more
difficult by removing the old marks." Parkman endorsed the remarks by Norton vis-à-vis Classical studies, but he hoped the AIA would at some future time turn its attention to American archaeology.

Others offered comments as the discussion continued. The value of overseas interests for young Americans was noted. Subscriptions should be less than $20 annually. Putnam voiced agreement with Parkman that American archaeology "offered an immense field for profitable research and he hoped that the Society would include in its work America as well as other countries." After still other speakers, Parkman spoke again, "It is not important where we begin, but we must embrace all." Goodwin agreed. Chairman Brimmer observed that a large society was needed, and subscriptions should be low enough to make that possible. Merrill suggested $10.

Norton's motion was voted on and passed. Accordingly, a constitution and nominating committee was appointed by the chair: Professor C. E. Norton, Mr. W. W. Greenough, Dr. S. A. Green, Mr. H. W. Haynes, and Dr. W. S. Bigelow.

More discussion followed; it was suggested that liaison with societies abroad should be established. The meeting then adjourned until the following Saturday, same time and place, to receive and act upon the report of the committee just appointed.

At the reconvened meeting of May 17, 1879, Norton explained, for the committee, a scheme of organization under the name of "Archaeological Institute of America." An annual subscription of $10 was proposed, with additional funds coming from larger subscriptions. A motion to add a tenth article regarding amendments was adopted; other proposed amendments were voted down. It was agreed that after 350 members were obtained, no more would be accepted, other than by election by the executive committee.

An Executive Committee of seven members was nominated and elected; C. E. Norton, President; Martin Brimmer, Vice-president; and ordinary members Francis Parkman, H. W. Haynes, W. W. Goodwin, Alexander Agassiz, and Wm. R. Ware. A treasurer and secretary were
to be elected by the Executive Committee from the AIA membership.
Annual meetings were to be held in Boston on the third Saturday of
May at 11 a.m. The Executive Committee, given the chief responsi­
bility for the society's business, would meet as necessary in addition
to its regular meetings which were to be on the first Saturday of
October, January, March, and May. Five members were to constitute
a quorum for conducting business.

At the Executive Committee meeting of October 4, 1879, a note was
received from Stephen Salisbury, Jr., of Worcester; he was sending
$100 and expressed the wish that some attention could be given
American archaeology, as he was especially interested in that. Norton
then discussed further possibilities for studies and activities in
Greece. It was agreed that additional members were needed for aug­
menting the society's support funds. Norton said he would be happy
if something could be done also for American archaeology, and asked
what work could be done for $300 still available in the treasury.
Parkman knew of nothing but advised that watch must be kept for the
right man to work in any direction. He should begin as soon as he
was identified, as "good chances were rapidly disappearing"!

Peabody stated there was "a vast deal to be done in the South­
west" and that extension of railways into New Mexico and the South­
west would facilitate important research work. He believed a person
should have been there a length of time to become acquainted and to
know "what it was desirable for us to undertake." There was inform­
ation to be gained from engineers and surveyors.

Norton responded that the AIA should not do the work of museums
and other institutions such as the recently formed Bureau of Ethnology.
The AIA should try for "definite, original work." In New Mexico, for
instance, it would be a very desirable attainment if it could be said,
with a map, what was there and how much promise there was for in­
vestigation. Parkman was of the opinion that work in the south, in
Florida, for example, could be of interest, possibly linking the Mound
Builders and modern Indians. The meeting then adjourned.
At the January 3, 1980, meeting of the Executive Committee, there was an initial discussion of work by AIA in Greece. Then Norton read a note from Lewis Henry Morgan, dated October 25, 1879, which Norton had answered, saying that the AIA wanted to help with American studies but did not want to duplicate what was already being done by the Smithsonian or by Peabody Museum in New Mexico and in Mexico, respectively. Norton then suggested asking Morgan for his opinion as to what would be the best project for the AIA; Morgan could summarize progress to date and also indicate what was most important to do.

Parkman commented that "Mr. Putnam was the only man in the country able to do the work--that it was not desirable to have a new hand--could not Mr. Putnam be employed?"

At a special meeting of the Executive Committee, January 17, 1880, a letter from Morgan was received; it was in response to Norton's letter, written as directed at the January 3 meeting. Norton read Morgan's suggestions for work by the AIA in the Southwest for the coming spring and summer. Norton supported Morgan, pointing out that the indicated work could best be done "presently, before railroads have made too many changes in the manners and customs of the native tribes."

Parkman responded at some length; briefly summarized here, his comments were generally supportive. He believed that Morgan was undoubtedly right in thinking the communistic institutions of former inhabitants was the important thing to study. This was best done through the study of existing customs. Opportunities to study were fleeting, yet there was no immediate hurry. A year probably would not make any difference. "The main thing is to get the right man; a man of 25 rather than a man of 45, who knows what to look for, what points to observe. White men are unreliable channels of information, and the best and only safe results are to be got by a hardy, daring young fellow who would go out alone and live long enough on the spot to study the principles of relationship and inheritance and the communistic institutions of the societies still
existing."

Further, Parkman suggested that the seven Chaco ruins were the seven cities mentioned by Coronado as inhabited in 1541.

Haynes then commented that the cliff dwellings, models of which were shown in the government building at the Centennial in Philadelphia in 1876 "had already been sufficiently explored and that it would be better perhaps to work in a narrower field than that indicated by Mr. Morgan."

Norton replied that it was important to learn about the number as well as the character of the architectural remains. As for personnel, the person sent by AIA should be a young man of intelligence and education with a natural turn for scientific investigation and with scientific training. Such young men could be found, men who would give themselves with devotion to such work--he had in mind such a person who had studied in the Hebrides for two seasons, had scientific training, a ready acquirer of knowledge, "and used to roughing it."

Haynes moved that correspondence be started with the Bureau of Ethnology and U. S. Army officers to learn what aid and cooperation could be expected from persons already in the field.

A special meeting of the Executive Committee, February 28, 1880, was called to consider various items of business and some matters pertaining to AIA efforts in the Mediterranean. Also, at this same meeting, a portion of a letter from Morgan was read; it was in regard to AIA work in the Southwest. For the first time and on the recommendation of Morgan, Norton spoke of Mr. Adolph F. Bandelier as a gentleman who might be employed to go to the west for archaeological investigations. "He [Bandelier] is the first Spanish American student here [in the United States], has had two essays in the reports of the Peabody Museum--both very learned essays, showing marked ability." Norton also mentioned Mr. Wheeler (who had done work in the Hebrides) and who would be pleased to go with Bandelier, or alone, to make a thorough study of the Indian tribes in New Mexico, should the
Institute so employ him.

Haynes reported on a letter from Dr. DeHaas of the Washington Ethnological Society, who had referred to Major J. W. Powell of the Bureau of Ethnology. Powell had, in turn, replied, asking for more time to consider. Some discussion of Ohio mounds followed. Norton offered the opinion that probably no additional sites would be found in the Ohio valley and nothing but pottery, "of which so much had already been found." He concluded, "It is plain that the field of work for this year and next is New Mexico and that vicinity--the territory occupied by the Aborigines and about to be occupied by the whites--if we miss this opportunity now we shall never have it again."

A special meeting was subsequently called for April 22, 1880, primarily concerned with Greece and Crete. Regarding American archaeology, however, Norton reported considerable correspondence with Morgan and others. Morgan was continuing to urge very strongly the employment of Bandelier, but Norton thought Bandelier to be "more a closet [armchair] scholar than a man for active undertakings [fieldwork]." Norton also noted that Bandelier had a chance to go to Central America with the Lorillard Expedition, and it would be too bad if he should miss this chance on the slim possibility of something with the AIA.

Norton revealed that he was ready to propose at the annual meeting that $3,500 - $4,000 be authorized for an expedition to Colorado and New Mexico; autumn would be the proper time as the summer was too hot! Mr. Wheeler had gone over all the ground on maps and had made a plan for a man starting from Santa Fe.

... there are three main fields in Colorado and New Mexico and for a person to visit all the remains, make a conspectus of all and reside with the Indians long enough to learn what they had to tell, would require hardly less than 8 months; if he were to start in September or October, he could do all that it would be worth while to do before the hot weather of the following year. It is plain that
if this work is to be done at all, it ought to be done immediately.

Norton continued, saying that Mr. Wentworth, who had visited this country in 1873 and again in 1878, reported a marked change in that interval in the numbers and condition of the Indians, and this change would be greater now on account of the inroads of civilization made by the railroads.

The special meeting of April 22 ended with a proposal for the annual meeting in May. Hoping for 1,000 members, at $10 each, there would be a treasury of $10,000. Of this, $5,000 could be allocated for Crete or for Greece and $4,000 for Colorado and New Mexico. If there were to be good fortune in excavating, gifts of large sums could be stimulated—it should be easy to find many to give from $50 to $250.

The regular meeting of the Executive Committee, May 1, 1880, was mainly concerned with Greece. The AIA did not intend to make collections; anything obtained would be placed permanently with the Museum of Fine Arts, Harvard, or with other institutions that had financially assisted with the work of the AIA.

Parkman reported that the Peabody Museum work in Arkansas had been halted for lack of funds. Norton commented that it was just as well, as the AIA would do better to work in a new line, "the far higher field of the history of the civilization of the aborigines."

On May 15, 1880, the second annual meeting of the AIA took place, with 26 members and the President present. It was reported that the Executive Committee had carefully considered various fields of archaeological work—the New World and the Old were both of interest. The choice of officers for the coming year was next on the agenda. A nominating committee was named. They retired and then returned with the same slate, which was unanimously elected for the coming year. Norton then introduced "one of the chief contributors to American archaeology of late years," Major Powell, of the Bureau of Ethnology, Washington, to discuss work there.
Powell reported that ethnological work had begun 10 years earlier with an expedition to the Rocky Mountains led by Powell. This previous work was reported on in publications and reports of the Smithsonian. Reorganization into geographical and ethnological branches had been finished now, and there was a sum of $20,000 for archaeological work, including studies in North American linguistics and studies of social and governmental institutions. Emphasis was shifting to studies of institutions rather than arts or material culture. A party was at the moment studying the pueblos of New Mexico—their architecture and home life. Upon its return, plans and models were to be made of 31 pueblos (2 Mexican) of the 61 discovered by the Spaniards.

In answer to a question about how long languages and institutions would last, Powell said that pueblo life would not be changed greatly for several more years. Habits, customs, and languages changed very slowly and probably no linguistic stock had been lost. Changes could reasonably be expected with the three railroads that soon would be entering the area.

Powell went on to say that we have no clear idea of Indian life. He characterized the literature, in general, on North American anthropology as almost worthless. Travelers, he said, are dishonest and incompetent, and their records as a rule are a mass of incoherent nonsense. Even the best English writers quote very foolish things about our Indians—a vast field remains on which there is little known!!!

After Powell's remarks, a general, lengthy, and sometimes heated, discussion followed. Perkins stated that American archaeology was fine, but it was more important to acquire objects from the Old World for our museums before these objects were gone. Parkman said the object of the AIA was to acquire knowledge, not objects or works of art. Its duty rested in American studies, relatively neglected to date. The chances of the AIA's gaining recognition were far better in the Americas. "American archaeology is in a state of transition;
the old chronicles are false and rotten, and new investigations are needed to substitute truth in their place."

Parker agreed with Perkins' advocacy of collections from the Old World. If knowledge was the true aim of the AIA, then this knowledge "should be useful and not simply curious; and the knowledge which was useful to us was not that of barbarians but that of cultivated races that preceded us. The Indians were low in the scale of civilization. Mr. Parkman's books showed us this. For us to form here in Boston a society of ladies and gentlemen to learn about the red Indians seemed to him absurd; they were interesting certainly, but when we have learned all about them, what have we?"

Parkman followed, saying there were two points in Parker's remarks he wished to respond to. Casts could be made of all objects excavated in the Old World. Further, Parker failed to comprehend the nature of ethnological investigation. Objects were in themselves interesting, but the study of tribes involved questions of the greatest importance—the evolution of the human race, its civilization, and many questions of the greatest interest. It was by no means a matter of such small interest as had been represented.

Powell concurred with Parkman, expanding upon the great need to learn more of North American tribes. Parker replied that he saw no need for beginning work of the AIA at a point "where the civilization was inferior to our own instead of superior." Also, if so many institutions were now active in North America, as Powell had claimed, why should the AIA enter this field?

More discussion followed, leading to a motion that subdivisions of the AIA be formed, one for each of the Old and New Worlds. The motion was subsequently withdrawn.

The adjourned meeting of May 22, 1880, was a carry-over from the meeting of May 15; the primary concern was with expanding the membership and/or the raising of funds. The desirability of expanding to New York City, the financial center, and elsewhere across the country was discussed. Honorary and foreign members were also considered, but no tangible action was taken.
A special meeting of the Executive Committee was called for June 3, 1880. A quorum was lacking, but there was some discussion nonetheless. Norton said sufficient funds were available for both the Old and New World activities. He proposed $2,500 or $3,000 for the work in Asia Minor, and "$1,500 for the expenses of an expedition to New Mexico and the Southwest to be arranged by consultation with Major Powell." His proposals were approved by those present.

The Executive Committee met in regular session on October 2, 1880. Norton reported that over the summer it had been necessary to organize the expeditions agreed to earlier. After taking additional advice, Norton had acted. "Mr. Bandelier had been appointed as an agent of the Institute to go to New Mexico at a salary of $100 per month, which for a year, the time for which he was engaged, would be $1,200." The Turkish work had also begun. Mr. Bandelier was already sending home valuable ethnological collections to the Peabody Museum.

At the regular meeting of the Executive Committee, October 2, 1880, a sum of $100 was appropriated in addition to Bandelier's salary, "for purposes of excavation alone." The money would be paid on demand.

A special meeting of the Executive Committee was called December 28, 1880, for discussion of the AIA's work in Greece. At the conclusion of that business, Norton

... gave an account of the excellent work which Mr. Bandelier was doing. His paper upon the pueblo of Pecos would be printed as soon as the illustrations could be got in order. Notwithstanding the hardship and discipline to which he was subjected his zeal and enthusiasm were remarkable and he had entered into such relations with the Institute that he was learning everything; his first report upon Pecos was the best bit of scientific work with which Norton was acquainted. ...

[Bandelier] was doing his work according to his plan which was to work from the north towards the south into Mexico. He had made an interesting discovery of two lions (pumas) carved in stone, which ought to be printed at once, to show the grade of civilization reached by the Indians of that region.
An important question was that of the preservation of the pueblos--some important steps ought to be taken to preserve them from ravages--also a Government official should be appointed who should be Inspector of ruins over which he should exercise control for their preservation.

This concludes the selected excerpts from the minutes of the 1879-1880 meetings of the Archaeological Institute of America and of the AIA Executive Committee. Over the past century, the AIA has evolved into the broadly based and widely supported scientific organization fondly envisioned by the founding fathers. Numerous local chapters exist across the country. The original aims of scholarly pursuits in both the Old and the New Worlds remain very much alive! Here, in the American Southwest, there is an on-going debt to the AIA as its research activities have continued to contribute to our knowledge of culture history.

Santa Fe, New Mexico
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The Archaeological Society of New Mexico, the oldest of its type in the Southwest, was organized on September 14, 1900, as the Santa Fe Archaeological Society. By 1906, its interests had expanded, and it became a statewide organization.

In 1908, it cooperated with the Peabody Museum of Harvard and the Southwest Society (later Southwest Museum) in aiding the Archaeological Institute of America in its New Mexico expeditions. In November of the same year, the School of American Archaeology, an arm of the institute, accepted a tentative proposition of the society to locate in Santa Fe, provided that a need for a museum was met. On February 19, 1909, the legislature established the Museum of New Mexico. By 1913, the first publication for the society, *El Palacio*, appeared.

Over the following years, the society's activities decreased until the reorganization of 1956, when the first annual meeting of all local societies convened in Santa Fe. The idea of a Bandelier Lecture was conceived at the time, and an Amateur Achievement Award was inaugurated the following year. Annual meetings since have been held throughout the state, sponsored by local societies. The lectures and awards have continued. Other programs initiated include scholarships, periodic publication of *Papers of the Archaeological Society of New Mexico*, field schools, a statewide rock art survey, and a certification program. The society today has a number of affiliated societies, including two in Texas and one in Arizona.