Collected Papers
IN HONOR OF
Marjorie Ferguson Lambert

Bertha P. Dutton
Bruce T. Ellis
Florence Hawley Ellis
Nancy Fox
Alden C. Hayes
Florence C. Lister
Robert H. Lister
Stewart Peckham
David H. Snow
Charlie R. Steen
Joseph H. Toulouse, Jr.
A. H. Warren
Joe Ben Wheat
Arnold M. Withers
Malcolm B. Withers

Edited by
Albert H. Schroeder

Papers of the Archaeological
Society of New Mexico: 3

ALBUQUERQUE ARCHAEOLOGICAL SOCIETY PRESS
ERRATA AND CHANGES REQUESTED BY AUTHORS

Fox Article

P. 1, par. 2, line 6: Glasgow should read Sanquhar
P. 1, par. 3, line 2: high school principal should read Superintendent of Schools in Englewood, Colorado
P. 1, par. 3, line 4: insert after zoology - which led eventually to a Master's Degree in biochemistry.
P. 2, par. 2, line 3: career should read career
P. 2, par. 2, line 4: Postlewaite should read Postlethwaite
P. 2, par. 2, line 5: capitalize M in managing
P. 2, par. 3, line 3: Postlewaite should read Postlethwaite
P. 4, par. 2, line 5: fact should read facet
P. 5, par. 2, line 2: capitalize M in managing
P. 5, par. 3, line 5: of should read to

Steen Article

P. 28, par. 5, line 9: Huary should read Haury
P. 34, par. 5, line 4: Plateu should read Plateau
P. 36, David reference: Date should read Data

Peckham Article

P. 58, second line from bottom: mahogany should read mahogany
P. 48, par. 2, line 8: Feature 26 should read Feature 27
P. 52, par. 3, line 5: unificial should read unifacial
P. 57, par. 2, line 13: insert White Mound Black-on-white, after Late Basket Maker III type
P. 58, par. 1, line 4: sequently should read sequently
P. 61, par. 1, line 5: Hammach should read Hammack
P. 66: Kelley references - Jan should read Jane

Florence Ellis Article

P. 87, par. 3, line 12: nitches should read niches
P. 97, par. 1, line 4: Hope should read Hopi
P. 103, par. 2, line 5: Hammach should read Hammack
P. 107: Ellis and Hammach should read Ellis and Hammack
P. 107: Jacon reference should read Jeancon
P. 108: Marriat should read Marriott

Lister Article

P. 117, par. 2, line 12: delete first "a"
P. 119, line 8: delete first and
P. 121, 6th line from bottom: Dominquez should read Dominguez
P. 123, line 6 from bottom: in the 18th should read in 18th
P. 128, line 7 from bottom: treasurers should read treasures
P. 138, line 3: Dominquez should read Dominguez

Warren Article

P. 145, par. 2, line 2: another should read other

Toulouse Article

P. 155, par. 1, line 4: Majorie should read Marjorie
P. 155, par. 3, line 5: lave should read lava
P. 157, par. 3, line 4: Puebla title should read Puebla tile
Snow Article

P. 167, par. 3, line 6: populus should read populous
P. 172, par. 3 (1739), line 3: Dominquez should read Dominguez
P. 174, par. 4, (1763), lines 8-9: bel-longed should read be-longed
P. 178, par. 2, line 5: unboudtedly should read undoubtedly
P. 178, par. 3, line 1: Christobal should read Cristobal
P. 179, Adams reference: Eleanore should read Eleanor B.

Bruce Ellis Article

P. 183, par. 3, line 8 2nd and should read add
P. 185, par. 1, line 1: entrances should read entrance
P. 185, par. 1, line 2: 1962 should read 1692
P. 185, par. 5, line 1: ordinance should read ordinances
P. 188, par. 4, line 1: San Fransisco should read San Francisco
P. 188, par. 5, line 6: after form, insert because
P. 189, par. 3, line 2: after streets, insert that
P. 189, par. 5, line 2: of 1704 should read of a 1704
P. 190, par. 2, line 5: 1e Calle Real should read 1a Calle Real
P. 190, par. 3, line 4: at end of line add - Palace, between the
P. 192, par. 1, line 8: muddy land should read muddy lane
P. 192, par. 7, line 2: cases reales should read casas reales
P. 193, par. 3, lines 3-4: delete reference in parentheses
P. 194, par. 4, line 2: frenta should read frente
P. 194, par. 4, line 3: local hand should read local land
P. 194, par. 4, line 8: seems should read seem
p. 195, par. 1, line 3: delete in

Wheat Article

P. 201, par. 3, line 2: perstige should read prestige
P. 218, par. 2, line 6: probably should read probable
P. 220, par. 1, line 2: new-famous should read now-famous
P. 220, par. 3, line 4: tapestires should read tapestries

Malcolm Withers Article

P. 228, par. 4, line 3: replace we have used with one can use
P. 228, par. 4, line 4: delete comma after ethers
P. 231, line 2: be should read been

Dutton Article

P. 244, par. 3, line 5: dieties should read deities
P. 244, par. 5, line 2: morning should read evening
P. 244, par. 5, line 5: while cloud should read white cloud
P. 249, par. 2, line 4: extended should read extend
p. 251, par. 2, line 5: intreated should read entreated
P. 253, note 2, line 8: should read - The House of the Sun God
P. 256, first reference: date 1010/1929/ should read 1910/1929
P. 256, Matthews reference: should read Prayer of a Navajo...
P. 257, last line: Language should read Language
COLLECTED PAPERS
IN HONOR OF
MARJORIE FERGUSON LAMBERT

Albert H. Schroeder
Editor

Contributors:

Bertha P. Dutton
Bruce T. Ellis
Florence Hawley Ellis
Nancy Fox
Alden C. Hayes
Florence C. Lister
Robert H. Lister
Stewart Peckham
David H. Snow
Charlie R. Steen
Joseph H. Toulouse, Jr.
A. H. Warren
Joe Ben Wheat
Arnold M. Withers

Malcolm B. Withers

Papers of the Archaeological Society of New Mexico: 3

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

Albuquerque Archaeological Society Press 1976
CONTENTS

Marjorie Ferguson Lambert

Excavations at Pigeon Cliff

NANCY FOX

1

Taylor Draw: A Mogollon-Anasazi Hybrid?

CHARLIE R. STEEN

37

With Appendix "Charred Maize Remains"

STEWART PECKHAM

69

A Cache of Gardening Tools: Chaco Canyon

DAVID M. BRUGGE

73

Datable Ritual Components Proclaiming Mexican Influence in the Upper Rio Grande of New Mexico

ALDEN C. HAYES

FLORENCE HAWLEY ELLIS

85

Some Petroglyphs from Northern Chihuahua

ARNOLD M. WITHERS

109

Distribution of Mexican Maiolica Along the Northern Borderlands

FLORENCE C. and ROBERT H. LISTER

113

Majolica - New World or Old?

A. H. WARREN

141

A Spanish-Colonial Rancho in New Mexico

JOSEPH H. TOULOUSE, Jr.

155

Santiago to Guache: Notes for a Tale of Two (or more) Bernalillos

DAVID H. SNOW

161

Santa Fe's Seventeenth Century Plaza, Parish Church, and Convent Reconsidered

BRUCE T. ELLIS

183

Spanish-American and Navajo Weaving, 1600 to Now

JOE BEN WHEAT

199

Conservation of Basketry in the Southwest

MALCOLM B. WITHERS

227

A Sand Painting for Praying

BERTHA P. DUTTON

241

Povekà, A Signature of Maria Martinez

NANCY FOX

259
# Illustrations

<table>
<thead>
<tr>
<th>Illustrations</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frontispiece</td>
<td>Frontispiece</td>
</tr>
<tr>
<td>MARJORIE FERGUSON LAMBERT AND FRIEND</td>
<td></td>
</tr>
<tr>
<td>STEEN ARTICLE</td>
<td></td>
</tr>
<tr>
<td>Fig. 1. Vicinity of the Pigeon Cliff Site</td>
<td>20</td>
</tr>
<tr>
<td>Fig. 2. Schematic profile of west face of trench</td>
<td>22</td>
</tr>
<tr>
<td>Fig. 3. Stone artifacts from the several horizons at Pigeon Cliff</td>
<td>24</td>
</tr>
<tr>
<td>Plate 1. Incised petroglyph associated with the Recent Horizon</td>
<td>26</td>
</tr>
<tr>
<td>Plate 2. The fossil bison bones on the old ground surface of the Clayton Horizon</td>
<td>27</td>
</tr>
<tr>
<td>Plate 3. Stick figure petroglyph associated with the Clayton Horizon</td>
<td>30</td>
</tr>
<tr>
<td>Plate 4. Grinding slab and mano which are probably of the same age as the Meserve Point</td>
<td>31</td>
</tr>
<tr>
<td>PECKHAM ARTICLE</td>
<td></td>
</tr>
<tr>
<td>Fig. 1. Site map</td>
<td>40</td>
</tr>
<tr>
<td>Fig. 2. Pit houses, plans and profiles</td>
<td>41</td>
</tr>
<tr>
<td>Fig. 3. Comparison of pit house and kiva attributes</td>
<td>43</td>
</tr>
<tr>
<td>Fig. 4. Feature 22, plan and profile</td>
<td>44</td>
</tr>
<tr>
<td>Fig. 5. Southern surface room units</td>
<td>46</td>
</tr>
<tr>
<td>Fig. 6. Northern surface room unit</td>
<td>49</td>
</tr>
<tr>
<td>Fig. 7. Tree-ring dates</td>
<td>50</td>
</tr>
<tr>
<td>Fig. 8. Summary of artifact types by general provenience</td>
<td>53</td>
</tr>
<tr>
<td>BRUGGE (Appendix)</td>
<td></td>
</tr>
<tr>
<td>Fig. 1. Row numbers for 78 cobs</td>
<td>71</td>
</tr>
<tr>
<td>Fig. 2. Average measurements and indices for 14 cobs</td>
<td>71</td>
</tr>
<tr>
<td>HAYES ARTICLE</td>
<td></td>
</tr>
<tr>
<td>Fig. 1. Tool cache</td>
<td>75</td>
</tr>
<tr>
<td>Fig. 2. Scoop</td>
<td>76</td>
</tr>
<tr>
<td>Fig. 3. Hafted hoes</td>
<td>78</td>
</tr>
</tbody>
</table>
Fig. 1. Petroglyph panel with Avanyu
Fig. 2. Petroglyph panel with horned headdresses

LISTER'S ARTICLE
Chart Major Mexican maiolica finds in the northern borderlands

WARREN ARTICLE
Fig. 1. Distinguishing features of five clay-temper categories of Spanish and Mexican majolica

SNOW ARTICLE
Fig. 1. Map of Bernalillo vicinity

WHEAT ARTICLE
Fig. 1. Old Rio Grande blankets
Fig. 2. Old Rio Grande and Navajo blankets
Fig. 3. Navajo blankets
Fig. 4. Navajo blankets and rugs

WITHERS ARTICLE
Fig. 1. Paiute storage basket and lid before cleaning
Fig. 2. Paiute storage basket lid before cleaning
Fig. 3. Basket lid half cleaned
Fig. 4. Basket lid after washing
Fig. 5. Applying glue beads to breaks in basket
Fig. 6. Paiute storage basket lid after conservation

DUTTON ARTICLE
Fig. 1. Sandpainting for Prayer

FOX ARTICLE
Fig. 1. Polychrome bowl with signature "Poh've'ka"
Fig. 2. Polychrome jar signed "Poh've'ha"
Collected Papers in Honor of Lyndon Lane Hargrave  No. 1
10 papers, 170 pages, 1968 ($2.50 to ASNM Members)  $3.00

Collected Papers in Honor of Florence Hawley Ellis  No. 2
20 papers, 489 pages, 1975 ($9.00 to ASNM Members)  $10.00

Collected Papers in Honor of Marjorie Ferguson Lambert  No. 3
15 papers, 264 pages, 1976 ($7.00 to ASNM Members)  $8.00

Postage will be paid on pre-paid orders.
Preface

This, the third in the series of Papers of the Archaeological Society of New Mexico, is dedicated to a special friend of many, Marjorie Ferguson Lambert. Her long association with the society, almost 20 years of which was in the position of secretary, contributed considerably to the affairs of both the society and its affiliates. As a participant in the reorganization of the society in the mid-1950s, she took an active part in developing its programs which continue today.

Since her retirement from the Museum of New Mexico, Marge has maintained her many and varied interests, continues to provide helpful information to her colleagues, is active in several organizations, and maintains her well known brand of humor.

The papers contributed to this volume relate to some of the fields in which Marge took an active part in the course of her long and successful career - archaeology, ethnology, Spanish-Colonial period, arts and crafts, conservation of museum specimens, and interpretation through publication.

We are grateful to the contributors for their excellent and interesting papers concerned with various fields of New Mexicana. Special thanks are expressed to the Albuquerque Archaeological Society for taking on the many printing chores to make this publication possible, and to Richard A. Bice for his guidance in producing the final product. We are particularly indebted to Francis C. Stickney of the Midland Archaeological Society for his generous support in publishing this issue. Our thanks also go to Kay Coen for all the typing chores involved.

Albert H. Schroeder

February 1976
Marjorie Ferguson Lambert and Friend
The widespread affection and esteem in which she is held is but one aspect of Marjorie Lambert's distinguished career. Another is the remarkable range of her achievements within her chosen profession. For many years her primary interest has centered upon the prehistory, history, and ethnology of the Southwest, expanded to incorporate its relationships to Meso-America. However, her contributions to our knowledge of these areas have not been limited to excavation and research, interpreted through voluminous publication. They have also included lectures and exhibits which have carried the story of the Southwest beyond scientific circles to all segments of the public. Her many years of active participation in the Archaeological Society of New Mexico attest to her continuing concern to foster a productive relationship between amateur and professional archaeologists.

Marjorie Elizabeth Ferguson was born in Colorado Springs, Colorado, combining a pioneer background with a Scottish heritage of which she is equally proud. Her mother, also a Colorado native and a charter member of the Daughters of the Colorado Pioneers, participated for many years in the activities of the Pioneer Museum and the Colorado Pioneers Society. Her father, John Ferguson, born in Glasgow, Scotland, arrived in Colorado Springs in 1905. He was the last survivor of the Colorado Springs Chapter of the Caledonian Society and the last Chief of the Colorado Caledonians. Small wonder that his busy years in the mercantile business did not preclude a fervent determination to impart to this offspring his own life-long appreciation of Scottish culture.

Marjorie was the second of three children. Her younger brother, John Allan Ferguson became an educator and high school principal. Her sister, Helen, later Mrs. Joel Jensen, shared Marjorie's scientific bent, in her case an absorption in zoology. While Helen dissected
frogs, Marjorie--still in high school--was discovering the fascinating world of archaeology.

She majored in social anthropology at Colorado College where she won the Alice Van Diest Award in Social Studies. She also held a part time job at the Colorado College Museum, a prelude to a lifetime career in museology. A friend and mentor at this time was W. W. Postlewaite, Director of the museum and a member of the managing Board of the School of American Research.

Although, upon graduation, she had been offered a fellowship for social studies in New York, her loyalties remained rooted in the Southwest. Her choice to remain was influenced by Postlewaite, as well as by such acquaintances as Edgar Lee Hewett and Sylvanus Morley, already distinguished names in the realm of Southwestern archaeology.

Hewett, as Director of the School of American Research, was also Director of the Museum of New Mexico. In addition, he had founded the Department of Anthropology and Archaeology at the University of New Mexico in Albuquerque. And it was here that Marjorie now accepted a research-teaching fellowship. In the summer of 1931 she received a Master of Arts degree, with a minor in Southwestern history.

Many of her fondest memories hark back to her field experiences of those days, reflected in a store of anecdotes all enlivened by her own inimitable humor. But beyond enjoyment, her activities at this time provided firsthand acquaintance with a variety of prehistoric sites, among them the great Anasazi ruins of Chaco Canyon. Beside the 1932 season at Chaco, her early experiences included attendance at Battleship Rock field camp in the Jemez Mountains and at Tecolote Ruins near Las Vegas.

In succeeding years, while teaching at the University of New Mexico and later, after transfer to the Museum of New Mexico, she took part in excavations at Coronado State Monument, Bandelier's Puaray, and at sites dispersed from the northern Rio Grande as far south as Mexico and Central America. Her 1936-1937 explorations at
Paa-ko near Albuquerque and those in Hidalgo County on the New Mexico-Chihuahua border in 1960, resulted in major publications, each of which shed new light upon widely dissimilar cultural manifestations: Rio Grande Pueblo, Archaic, and Chihuahua-Mogollon.

In 1944, combining archaeological with historical investigation, her search for Oñate's capitol, San Gabriel, led to excavation at the ruins of Yuque Yunque near San Juan. More recent archaeological activities, in addition to the work in Hidalgo County, have ranged from the 1957 excavation and restoration of an old well in the patio of the Palace of the Governors in Santa Fe to work at the Jemez site of Giusewa in 1965 and at Twin Hills Site west of Santa Fe in 1967.

It was in 1937, following Dr. Hewett's retirement from the university, that Marjorie accepted his offer of a post as Chief Preparator in Archaeology at the Museum of New Mexico at Santa Fe. In 1938, she became Curator of Archaeology, and in succeeding years she was to serve as Curator in charge of historical collections, as well as Curator of anthropological exhibits.

In the latter capacity, assisted by artist Mary Spencer, she installed a series of displays at the Palace of the Governors which received widespread acclaim for their fresh and visually exciting approach to the presentation of Southwestern prehistory.

She was indefatigable in building and enhancing the Museum's collections. It was due to her efforts that the School of American Research, in 1954, purchased from the widow of A.M. Thompson of Deming an unparallel collection of Mimbres pottery and artifacts.

Aside from ties with an international circle of anthropologists, residence in Santa Fe brought wide acquaintance among celebrated personalities of the local art colony, as well as enduring friendships among the nearby Indian Pueblos.

Her marriage in October 1950, to Jack (E. V.) Lambert proved a union of kindred spirits. Jack, who came West in his youth and whose experiences as a cowboy provide a fund of anecdotes in their
own right, shared wholeheartedly her enthusiasm for the Southwest, its landscapes, peoples, and traditions.

A vital aspect of her nature is expressed in Marjorie's deep attachment to animals—from a fondly remembered childhood pet (a tomcat called Emma Moss), and the Scotties of her early years in Santa Fe, to the birds and wildlife who today find sanctuary at the Lambert household. Her special partiality for simians is but one fact of this abiding interest.

In the midst of all other activities, it might be noted that she still managed to find time for hobbies such as photography and sewing. Her retirement from the Museum of New Mexico in February of 1969 has simply meant more time for travel throughout the Southwest and Meso-America, for concerns such as conservation and population stabilization, and also for continued research and publication in the field of anthropology. Projects have ranged from an article on Pojoaque Pueblo for the *Handbook of North American Indians* to her most recent undertaking, a study of prehistoric mythology and symbolism.

Her many past contributions to her profession have elicited the respect of colleagues throughout the nation. A member of Phi Gamma Nu, honorary scholastic and social science fraternity, she is listed in *American Men of Science, Who's Who in the West, American Women's Who's Who*, and the *International Directory of Anthropologists*.

In addition to her professional affiliations—member of the American Anthropological Association and Society for American Archaeology—she has always found time for groups serving causes close to her heart. Concern for the preservation of Santa Fe's unique historical and architectural character is expressed through her membership in the Old Santa Fe Association. She was a Trustee of the Indian Arts Fund which, until its dissolution in 1973, was concerned with the collection and preservation of the best Indian crafts. Much the same interest is served as she continues to devote her expertise to the Southwest Association on Indian Affairs and the Picuris
Advisory Board.

Her long association with the School of American Research was reinforced when she became a member of its managing Board. Membership in the Archaeological Society of New Mexico reflects her continuing support for an organization to which she devoted many years as Trustee and Secretary.

By example, as well as through publication and her activities as teacher, lecturer, and exhibit curator, Marjorie has lent inspiration to a generation of young archaeologists. The bibliography which follows provides unique insight into the wide range of her interests and to the extent of her contribution of Southwestern anthropology.

Museum of New Mexico
Santa Fe, N. M.
SELECTED BIBLIOGRAPHY

Ferguson, Marjorie E.

Tichy, Marjorie F.
In the Footsteps of Coronado. New Mexico Magazine, vol. 16, no. 3, pp. 16-17, 35-37.
Landmarks of New Mexico. University of New Mexico Press. (Coronado Monument - Kuaua Ruins, p. 88; the Kuaua Frescoes; pp. 90-91; Purary (Bandelier) Pueblo Ruin, p. 92; Ruins of Paa-ko, p. 100.)


1944  
Archaeology. Annual Report of the School of American Research, pp. 8-10.


1945  


1946  


New Mexico's First Capitol. *New Mexico Historical Review*, vol. XXI, no. 2, April 1946, pp. 140-144 (See also Metallographic Examination of San Gabriel Bell Fragment by Dr. Colin Fink, pp. 145-148).

1947


The SU Site: Excavation of a Mogollon Village, Western New Mexico, Third Season, 1946 (Review). *El Palacio*, vol. 54, pp. 220-222.


1948


Recent Gift to Archaeology Department. *El Palacio*, vol. 55, p. 301.


Valuable Northern Rio Grande Valley Spanish Colonial Colchas Received. *El Palacio*, vol. 55, pp. 331-333.


1949


1950


Lambert, Marjorie F.

1951

Turkey Foot Ridge Site (Review), and Sites of the Reserve Phase (Review). *El Palacio*, vol. 58, pp. 27-30.


Former School of American Research Fellow Tours Europe. *El Palacio*, vol. 60, p. 111.


1954

Kiva Mural Paintings At Awatovi and Kawai-ka-a, with a Summary of other Wall Paintings in the Pueblo Southwest (Review). *El Palacio*, vol. 61, pp. 52-57.

Cammann Lectures on Cambodian Jungle City of Angkor. *El Palacio*, vol. 61, p. 89.

Old Spanish Sword Discovered. *El Palacio*, vol. 61, p. 94.


A Recently Discovered Sword of the Late Seventeenth or Early Eighteenth Century. *El Palacio*, vol. 61, pp. 300-305.


Paa-ko, Archaeological Chronicle of an Indian Village in North Central New Mexico (Parts I-V); The Physical Type of the Paa-ko Population (Part VI), by Spencer Rogers. *School of American Research Monograph* no. 19, Santa Fe.


A Rare Stone Humpbacked Figurine from Pecos Pueblo, New Mexico. *El Palacio*, vol. 64, pp. 93-108.


Harroun Family Memorabilia Received as a Gift. *El Palacio*, vol. 65, pp. 239-240.


1959  Education through Exhibition, Part I.  *Santa Fe Scene*, April 4, p. 12.
     Education through Exhibition, Part II.  *Santa Fe Scene*, April 11, p. 14.

     Man, the Hunter.  Catalogue and text for MOIFA-MNM Traveling Exhibition (September-October).


     *Southwestern Indians Today*.  Museum of New Mexico Press, Santa Fe.
     *San Jose de Los Jemes Mission Church and Monastery*.  Leaflet for distribution at Jemez State Monument.


39th Pecos Conference of Southwestern Anthropologists. *El Palacio*, vol. 73, no. 3, p. 47.


A Unique Prehistoric Anasazi Pipe. *El Palacio*, vol. 74, no. 4, pp. 41-42.


EXCAVATIONS AT PIGEON CLIFF
CHARLIE R. STEEN

INTRODUCTION

In 1955, I published a short, preliminary account of excavations at the Pigeon Cliff Site in Union County, New Mexico (Steen, 1955). The excavations were made during three weeks of March and April 1955 in the construction zone of Clayton Dam which was being built on Cieneguilla Creek by the New Mexico Department of Game and Fish. The site had been discovered by Mr. Paul R. Franke Jr. of Santa Fe in August 1954 as he was surveying the dam site and construction area. A layer of carbon impregnated soil from which a lanceolate point protruded indicated the site.

After a visit to Pigeon Cliff, it was decided that excavations were in order, but it was not until the following spring, when the land had been acquired by the Game and Fish Department, that the digging was done. Funds for the excavation were provided by the Museum of New Mexico, the City of Clayton, and the National Park Service.

This delayed final report of the excavation is published so that all the information collected may be made available and to correct errors which were made in the 1955 paper.

THE SITE

I have referred to the site, orally and in print, as both Pigeon Cliff and Pigeon Cliffs. In this report I shall try to be consistent with Cliff. The name is a locally used one and stems from flocks of band-tailed pigeons which formally frequented the area.

Pigeon Cliff is a low exposure of Dakota Sandstone on the south bank of Cieneguilla Creek. The creek is a permanent stream.
Figure 1. Vicinity of the Pigeon Cliff Site
which heads in the high country around Sierra Grande, flows generally eastward, and joins the North Canadian River a few miles east in Oklahoma (Fig. 1). The valley of the creek is restricted and has a floodplain nowhere more than 200 yards wide. The gradient is gentle, and the small marshes which formerly were characteristic of the stream (and caused its name) are indicated by a number of pond deposits exposed in the vertical sides of the present stream bank.

The site faces north. This is somewhat unusual for an ancient campsite since the elevation of the area is greater than 5000 feet, and for more than half the year the air is uncomfortably chilly, or downright cold, in shaded spots such as Pigeon Cliff. The site probably was never a permanent camp, and the reason for its location was demonstrated several times during the early spring weeks we dug there. Strong, cold southwestern winds blew on those occasions and, whereas it was moderately comfortable in the lee of the low cliff, elsewhere it was miserable. The inference must be that a number of times in the past men made kills of animals in or near the marshes of Cieneguilla Creek and either carried or dragged the carcasses to the shelter of the cliff for butchering or eating.

Probably because it was never a permanent campsite, there was a general paucity of artifacts in the soil. Most classes of artifact were represented by only single specimens, and this leanness extended even to the petroglyphs on the cliff face.

The excavation was carried on in a single wide trench. The trench was originally 10 feet wide but later was increased to 15 feet.

THE RECENT HORIZON

As soon as the surface of the ground was cleared of loose stone, a long, rectangular pattern of imbedded rocks appeared. The rectangle was composed of three somewhat irregular alignments of rock built against the cliff. Excavation revealed a trench (Fig. 2)
Fig. 2. Schematic profile of west face of trench.

B - Recent rock fall.
C - Brown soil, sterile of human and faunal remains.
D - Rock fall which left debris of spalls.
E - Clayton Horizon. Rectangular firepit at cliff face; slope towards the stream with numerous fossil bison bones. Stemmed projectile point.
F - Grey soil, almost sterile with only an occasional stone flake or fragment of bone.
G - Ancient rock fall.
H - Heavy blue clay with ochre. Charcoal and bone fragments to the bottom of 'I' but sterile below that lens.
I - Same soil as H but heavily impregnated with charcoal. Fossil bison, Meserve point, large hand axe or chopper, small scrapers and knives, abaded hematite, possible food grinding stones, and small conical pits.
which had been dug along the cliff, faced with a dry stone wall, then shielded by another dry stone wall which was set about 18 inches beyond the edge of the trench to create a banquette. The latter wall was supported by a double row of stones imbedded in the soil. At the east end of the structure, where the wall had tumbled into the trench, there were rocks enough to carry the wall about three feet above the old ground surface.

Except for hard packed soil on the banquette which adjoined the parapet, there was no prepared floor or other surface in the trench. Neither was there any indication of a fireplace. The fill of the trench was sterile of all artifacts -- the few which were collected from this horizon were taken from the slope in front of the trench where the old ground surface was essentially the same as that of the present.

This unusual structure was almost certainly of aboriginal construction and probably was built as a rather elaborate hunting blind. From the trench one would have had an excellent view of a former marsh not more than 100 yards distant.

Artifacts

From the surface in front of the hunting blind 1 arrow point and 2 broken, ovate, bi-faced blades were recovered (Fig. 3A).

The projectile point is of the type which in Texas has been named Harrell -- small, slender, side-notched and typical of the late pre-Columbian period of the southern plains. Its dates are usually given as A.D. 1100-1500 (Suhm and Jelks, 1962, p. 275).

Petroglyph

On the cliff above the hunting blind were two petroglyphs, one very close to the ground surface and the other (Plate 1) some 45 inches above it. The latter figure proved to be 68 inches above the floor of the trench. These measurements were made from the ground levels to the center of the figure. Although it cannot
Figure 3. Stone artifacts from the several horizons at Pigeon Cliff. A - Recent; B - Clayton; C - Early
be proved, it seems probable that this figure was carved by a man standing on the floor of the trench. The figure is similar to a Phi with chevron-like attachments at each end. It was incised in the sandstone. Adjacent to the figure was a simple cross.

Associated Bones

In the fill of the trench, but not in any direct association with it, were a maxillary and two fragments of large bones, a rib, and a heavy long bone. Thomas W. Mathews, then of the Southwest Archeological Center, Globe, Arizona, identified the maxillary as being of *Sus scrofa*, domestic swine. The other two specimens were too incomplete for identification, but Mr. Mathews said they were probably of either bison or cattle.

THE CLAYTON HORIZON

Below the uppermost soil, in which the hunting blind was built, was a thick bed of brown alluvium which was almost sterile of bones or human remains. Near the top of the stratum were a few bone fragments which included an astragulus of a bison. Of this bone the late E. H. Sellards wrote, "If this astragalus is from a mature animal it represents a small bison about like modern. However, I cannot tell from this one bone whether or not it is from a mature animal" (letter of July 20, 1955). From its position in the fill, completely dissociated from the material described below, it seems most likely that this single bone was of the modern species of bison.

The brown soil ranged in thickness from 3 feet at the cliff face to slightly more than 5 feet at the stream bank. Shortly after this soil began to form, there was a well defined surface which formed a narrow bench at the cliff, then fell with a fairly steep slope towards the stream. At that time there was a rock fall from the cliff which covered the slope with a thin layer of spalls. Below the rock fall, and on the contact line between the brown soil
Plate 1. Incised petroglyph associated with the Recent Horizon
Plate 2. The fossil bison bones on the old ground surface of the Clayton Horizon
and the soil zone below (a grey soil), was a clearly marked horizon of human use.

On the narrow ledge of soil at the base of the cliff, some men once scooped out a somewhat rectangular, shallow firepit. The hearth lay against the cliff face and was bordered on the west side by a couple of large rocks. The earth scooped from the hearth was piled into an irregular ridge on the north and east sides. The firepit was roughly 25 inches by 17 inches and 4 inches deep; and it was filled with charcoal impregnated soil and small fragments of burned rock. Just outside the northeast corner of the hearth was a stemmed projectile point (Fig. 2 and Fig. 3B).

From the ledge near the cliff, the ground surface of that time sloped rather sharply down towards what was probably an old flood plain of Cieneguilla Creek. Lying on this slope were several dozen cracked and broken bones of fossil bison (Plate 2). As nearly as could be determined the bones represented but a single animal.

Artifacts

Four stone tools were recovered from this horizon; a projectile point, a small slender knife, and two end scrapers.

The projectile point is a rather large, stemmed point of the light grey quartzite which is prevalent over large areas of northeastern New Mexico. Of all the named varieties of points on the southern plains, it is most like the Williams point (Suhm and Jelks, 1962). Few points of this type have been excavated from Southwestern sites, and they all seem to have been later in time or associated with modern fauna. Hughes' (1955) Little Sunday site yielded Ellis points similar to but smaller than Williams, and in the opposite direction, Dick (1965) and Huary (1950) found points at Bat Cave and Ventana Cave which were similar to the one in question and associated with modern fauna.

Near the hearth was half of a slender knife, triangular in cross section and of Alibates flint. The other half lay five feet
away, down the slope and among bones. It seems probable that some Indian bore down a little too hard on this fragile tool (Fig. 3), and it snapped. He must have let the broken piece lie where it fell but flipped the other end away -- quite likely with a prehistoric curse.

One of the end scrapers is of a light brown quartzite and the other of a grey chert. The quartzite scraper is complete and is 2 inches long by 7/8 maximum width. The chert scraper was probably a little longer.

Petroglyph

As we started work at the site, a small incised petroglyph (Plate 3) was noted 13 inches above the ground surface. The figure was 36 inches above the floor of the hunting blind and 6 feet above the hearth of the Clayton Horizon. Between these two levels the soil was sterile of human remains, and it seems most likely that the figure and fireplace were contemporaneous.

The technique of preparing the figure was unusual. Deep parallel lines were incised into the stone and then the intervening surface removed (knocked out?) to create a square-headed anthropomorphic figure.

There is perhaps no need to go into this much detail about a single rather insignificant piece of rock art except that it stands alone on the cliff, is of an usual nature, and can, with some degree of assurance, be linked with a dated horizon.

Associated Bones

The bones lying on this stratum all proved to be bison. The bones were badly broken; some of this may have been done at the time of butchering but other breaks probably were caused either by the rock fall which covered them or by frost action. They were sent to the late E. H. Sellards who said they were of extinct species about the size of the Plainview bison (letter of July 20, 1955).
Plate 3. Stick figure petroglyph associated with the Clayton Horizon
Plate 4. Grinding slab and mano which are probably of the same age as the Meserve Point.
THE EARLY HORIZON

In October 1964, Mr. Franke and I troweled into the level at which he had found the point (Fig. 2) which led to the excavation. We found a band of charcoal impregnated soil, a small fragment of hematite which had a rubbed facet, and the outline of an inverted cone in the soil which I then interpreted as being the base of a large pit.

About 100 feet away from this spot, Mr. Franke had found a small stone grinding slab and a mano (Plate 4) at approximately the same level. Between the time of the original discovery and our visit two months later, a section of the river bank had collapsed and erased all trace of the place where the grinding tools were found. Subsequent testing in this area failed to turn up any evidence of human occupation at this spot, though there was a hint of an old ground surface which extended from the point of one find to the other.

During the course of the excavation the following spring, we worked down to this level to find that because of the curvature of the sandstone cliff and an ancient rock fall (Fig. 2), only a narrow strip of soil remained to hold the oldest trace of human occupation at Pigeon Cliff. This was a stratum a little less than a foot thick and extending from the cut bank no more than 3 to 4 feet into the fill. This band of soil was thickly impregnated with charcoal and scraps of broken bones.

Within the occupation zone was a group of 7 or 8 small pits. These were cone-shaped and ran 10 to 12 inches in diameter and 8 to 10 inches deep. Not one was complete; each had been disturbed by activity or digging of another pit. In the 1955 paper, I termed these firepits. This was certainly a misnomer because, although each was filled with charcoal-stained earth, none had been burned. One, however, had been lined with small spalls of fire-reddened stone. The purpose of these pits was not apparent.
Artifacts

Although the space in which we found the early material was quite restricted, the artifacts were greater in number than in either of the other two strata.

In the 1955 paper, I called the point found at this level a re-worked Clovis Point. Discussion with other archaeologists, however, has since convinced me that the point is of the type known as Meserve (Davis, 1953). Davis spoke of the beveled re-working of his points and suggested that they might have resulted from broken Plainview points being rebuilt for further use. Suhm, Krieger, and Jelks (1954) also remarked that they appear to be re-worked Plainview points. The Pigion Cliff specimen certainly falls within the category of a re-worked point and whether or not a re-worked point rates a name of its own, it appears obvious that here we have a Clovis point which was broken and re-chipped to create a new point.

Scattered through the fill at this horizon were six irregular, small pieces of hematite. They appear to have been broken from two larger pieces of the mineral. Four of the pieces exhibit facets which were caused by abrasion, either to color something directly or to produce powder for pigment.

A discoidal scraper (Fig. 3C) of brown quartzite has a working edge which extends for about one half its perimeter.

Two flake knives are also of quartzite; each has only a short section of an edge retouched to create a tool.

A large chopper of basaltic stone is a crude tool with a short, roughly chipped axe-like edge.

Two fragments of thick sandstone discs are possibly from the same specimen, though this is not likely since they are of different thicknesses. One is approximately 5 1/4 inches in diameter and 1 1/8 inches thick. The other is of about the same diameter but is 1 1/4 inches thick. Each of these was roughly pecked into a disc, but there are no other use marks except that
each has been in or on a fire.

Two irregular flakes of quartzite with no retouching or use marks complete the list of artifacts from this horizon.

Associated Bones

Although there were many bone fragments in the soil of this horizon, only a single bone was complete enough to be identified; it was a bison humerus. Dr. Sellards did not express an opinion as to the species of this specimen.

C 14 DATES

In 1955, two samples of charcoal impregnated soil from Pigeon Cliff were sent to the U. S. Geological Survey Geochemistry and Petrology Branch for Carbon 14 analysis. One of the samples proved to have too little carbon to be dated and the second had enough for only a single run. From the latter a date of 8280 B.P. plus or minus 1000 years was obtained (Rubin and Alexander, 1960). The high margin for error in the date was caused by the small quantity of carbon in the soil submitted. The date found was for a sample of soil taken from the hearth at the Clayton Horizon; the undatable specimen was from the Early Horizon.

The date obtained was disturbing for it was much older than the estimated dates for the type of projectile point which was found in association with the hearth. As was stated before, the point closely resembles the Williams Point, an Edwards Plateau type which Suhm and Jelks (1962) place in the time range of about 4000 B.C. to about 1000 B.C. Even with the fossil fauna found at Pigeon Cliff, a date of + 6000 B.C. seems much too old for this type of stemmed point.

Finally, in 1966, additional samples of Pigeon Cliff soils were sent to the Geochron Laboratories of Cambridge, Mass. Three samples were sent to the Laboratories, two from the Clayton Horizon and one from the Early Horizon. Geochron also had trouble
with an insufficient amount of carbon but produced the following
dates which seem more in line with the generally accepted ages
of the artifact types. The dates are all based on the Libby half
life of 5570 years of C 14.

The provenience of, and the dates obtained from, the three
samples submitted to Geochron were:

1 - From the firepit at the Clayton Horizon.
    Age - 5420± 310 C 14 years B. P.

2 - Charcoal from the lower part of the Clayton
    Horizon slope; it was found in association
    with the bison bones.
    Age - 6070 ± 110 C 14 years B. P.

3 - Charcoal and ash from the Early Horizon
    (with the Meserve point).
    Age - 7840 ± 160 C 14 years B. P.

All these dates must be considered weak ones because of the
small amounts of carbon in the samples submitted to the labora­
tories, but they do make more sense, archaeologically, than the
date reached by the USGS laboratory. No. 1 and No. 2 should have
yielded the same date since they must have been deposited con­
temporaneously, but there is a rather wide divergence between the
two.

Santa Fe, New Mexico
BIBLIOGRAPHY

Davis, E. Mott
1953 Recent Date from Two Palaeo-Indian Sites on Medicine Creek Nebraska. American Antiquity, vol. 18, no. 4, pp. 380-386.

Dick Herbert W.
1965 Bat Cave. School of American Research Monograph No. 27, Santa Fe.

Haury, Emil W.
1950 The Stratigraphy and Archaeology of Ventana Cave, Arizona. The University of New Mexico, Albuquerque.

Hughes, Jack T.

Rubin, Meyer, and Corrinne Alexander

Steen, Charlie R.

Suhm, Dee Ann, and Edward B. Jelks
1962 Handbook of Texas Archaeology: Type Descriptions. Texas Archaeological Society, Special Publication No. 1 and Texas Memorial Museum, Bulletin No. 4, Austin.

Suhm, Dee Ann, Alex D. Krieger with Edward B. Jelks
INTRODUCTION

In 1953, the writer became interested in the Jornada Branch of the Mogollon Culture (Lehmer, 1948), particularly in the fact that so little was known about the Northern Sequence of phases. In hopes of shedding more light on the subject, a limited survey was conducted near the southern end of Chupadera Mesa, along Taylor Draw (Taylor Canyon on USGS maps), in southeastern Socorro County, New Mexico. Twenty-five permanent or seasonal habitation sites were recorded, all sharing the same surface attributes—arcs or straight alignments or contiguous surface rooms outlined with upright sandstone slabs and associated with polished or well-smoothed brownware pottery, occasional sherds of Red Mesa Black-on-white, and chipped limestone lithic debris. Most sites showed little correspondence to attributes postulated by Lehmer (1948, pp. 84-85) for the Capitan Phase of the Northern Sequence. The association of brownware with architectural features and ceramics usually identified with the Anasazi Culture led the writer to select the largest site, LA 6565, for intensive investigation. The site is in the SW 1/4, SW 1/4, Sec. 12, T 6 S, R 7 E, N.M.P.M.

Since 1953-54, when a substantial portion of LA 6565 was excavated, other investigators, Green (1955), Kelley (1966), Jelinek (1967), and Caperton (in press), have reported surveys or excavations of sites in the northern Jornada district similar, though not identical, to those at Taylor Draw. Thus, this short, and tardy report is intended to draw more attention to just one segment of the broad mid-section of New Mexico where Mogollon and Anasazi met, mingled, and produced interesting hybrids. Here, cultural developments took directions somewhat different from those of
their progenitors, periodically returning to their parent strains to either receive or transmit features that perpetuated both the unity and the diversity of New Mexico's prehistoric sedentary cultures.

ENVIRONMENT

Taylor Draw drains approximately 80 km.² of the southern Chupadera Mesa where high, parallel, limestone ridges channel intermittent streams southeastward to the northwestern fringes of the Tularosa Basin. In the study area, the ridge tops are from 2.5 to 3.0 km. apart, with short, generally steep, southwest-facing rocky slopes and long, gentle, northeast-facing slopes with moderate soil depth. The canyon bottom varies from a narrow, moderately dissected, boulder-strewn channel, 10 to 15 m. wide, to a broad, level, stable, sand and silt-filled valley bottom 100 to 150 m. wide. The stream gradient of Taylor Draw varies from 1.5% to 2.6% with the least gradient more or less coinciding with the 2 km. interval along which the valley bottom is broadest and archaeological sites most common.

Shallow, stony to rocky soils of the Deama-Limestone Rock Land Association occur on the slopes of the ridges, and deeper loam or clay-loam Manzano soils comprise the valley fill where bedrock exposures and talus have not constricted the stream channel and encouraged down-cutting. Bedrock of San Andres Limestone crops out extensively in tabular and block form throughout the area, and intrusive rocks occur from 2 to 10 km. distant from the main site concentration.

Vegetation along Taylor Draw is variable. Near the valley bottom, 75% to 80% of the trees are juniper, the remainder are piñon, and cholla and narrow-leaf yucca predominate. Twenty or thirty meters higher on the slopes, the piñon and juniper ratios are almost reversed, and prickly pear, broad-leaf yucca, and beargrass are more common. Other local flora include live-oak, mountain mohogany, hollygrape, mormon tea, occasional sotol, ocotillo, and jimson weed, and various grasses.
Fauna seen or reported in the area include deer, coyote, badger, skunk, porcupine, jackrabbit, cottontail, rock squirrel, woodrat, and pocket gopher. Avifauna seen were turkey vulture, red-tailed hawk, marsh hawk, piñon jay, woodhouse jay, mockingbird, kingbird, raven, scaled quail, great horned owl, junco, titmouse, night hawk, robin, and oriole. Western diamondback and gophersnake, as well as various lizards, were present.

At an elevation of from 1750 to 2025 m. above mean sea level, the climatic regimen of Taylor Draw includes approximately 30 cm. of annual precipitation, most of which falls as rain during July through September; average temperatures range from 0°C in January to 24°C in July. This far south, the frost-free period lasts for 200 to 230 days, allowing for a more than ample growing season that can be timed to take greatest advantage of the summer rainy season.

At the present time there is no permanent, natural surface water supply, though Rocky Arroyo, a southern tributary of Taylor Draw, traps pools of water in its bedrock bottom during periods of even moderate run-off. In the same area, a large deep sinkhole in the limestone of the canyonside shows some evidence of having a seep at its bottom and may have been a prehistoric water source.

LA 6565: THE TAYLOR DRAW SITE

The Taylor Draw Site is on the north bank of Taylor Draw, occupying a long, low narrow ridge of residual soil capping limestone bedrock. The ridge rises 5 to 10 m. above the floodplain and parallels it for about 160 m. The site is about 200 m. downstream from where the drainage emerges from a confining down-cut channel and spreads out over the broad floodplain which continues for about 2 km. down the valley.

When first visited the site consisted of at least seven clusters of slab-lined surface rooms arranged in single-tier, straight, or arced rows with their long axes roughly parallel to the long axis of the ridge. Other surface rooms of unknown configurations were
Figure 1. Site map
Figure 2. Pit houses, plans and profiles
marked by occasional short alignments of upright limestone slabs most of which were in the northern part of the site. A single mound of rubble appeared to have been a masonry room. A large depression near the south end of the site marked the only visible evidence of a subterranean structure. Refuse in the form of sherds and lithic debris was found throughout the site, but was most common on the slopes of the ridge.

Test excavations showed most cultural deposits to be shallow, rarely more than 10 to 20 cm., with deeper fill occurring only in areas of pit houses and semi-subterranean structures. Ultimately, excavations exposed four pit houses, a kiva, and twenty-two surface rooms. The latter accounted for about half the number indicated by slab outlines (Figure 1).

Pit Houses (Figure 2).

No two pit houses were alike, though each had attributes in common with at least one of the other pit houses (Figure 3). Except for those listed, there were no interior architectural features, such as sipapu, sub-floor pits, benches, niches, partitions, ash pits, or deflectors.

Hearth were simple unprepared burned areas near the centers of the rooms. Ventilators were of slightly different constructions, but probably were intended to function identically. A small limestone slab, reddened on one side with hematite and decorated in black with a crude, but recognizable forked-tongued snake, was found on the floor of the ventilator of Feature 17. It may have been a magical attempt to ward off snakes that might try to enter the pit house via the ventilator—a likely danger in the Taylor Draw area. Features 7 and 17 had shaped stone damper slabs closing the inner openings of their ventilators, perhaps suggesting that the rooms were not in use at the time they were destroyed by fire—possibly during the summer or early fall when indoor hearths and ventilators would not have been necessary. A deep slot for a draft-
regulating device was at the inner end of the short ventilator of Feature 3, but no damper slab was found.

![Figure 3](image)

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Feature 3</th>
<th>Feature 7</th>
<th>Feature 15</th>
<th>Feature 17</th>
<th>Feature 22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shape</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Round</td>
<td>-</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Oval or rounded rectangular</td>
<td>x</td>
<td>-</td>
<td>x</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Depth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.5 to 0.75 m.</td>
<td>x</td>
<td>-</td>
<td>x</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1.0 to 1.5 m.</td>
<td>-</td>
<td>x</td>
<td>-</td>
<td>x</td>
<td>-</td>
</tr>
<tr>
<td>over 1.5 m.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>x</td>
</tr>
<tr>
<td>Floor area (m²)</td>
<td>14.2</td>
<td>15.2</td>
<td>11.1</td>
<td>13.2</td>
<td>24.6</td>
</tr>
<tr>
<td>Four-post roof support system</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Supplemental Roof post(s) (no.)</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Bench</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>x</td>
</tr>
<tr>
<td>Central hearth</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x?</td>
</tr>
<tr>
<td>Ventilator to east or southeast</td>
<td>x</td>
<td>x</td>
<td>-</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Damper slab or notch</td>
<td>x</td>
<td>x</td>
<td>-</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Ladder entry</td>
<td>x</td>
<td>-</td>
<td>-</td>
<td>x</td>
<td>?</td>
</tr>
<tr>
<td>Ramp entry--northwest</td>
<td>-</td>
<td>x</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ramp entry--south</td>
<td>-</td>
<td>-</td>
<td>x</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sub-floor storage pits (no.)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5</td>
</tr>
</tbody>
</table>

Paired ladder holes between the hearth and ventilator in Feature 3 and 17 indicate a roof entry for these structures. The ramp entryways in Features 7 and 17, though oriented differently, were essentially of the same design—a passageway whose inner end terminated about 0.5 m. above the floor of the pit house. Apparently, the ramp was reached by means of a truncated log step set at a slight angle into the floor of the pit house just below the inner end of the ramp.
Figure 4. Feature 22, plan and profile
Aside from occasional clusters or short alignments of stones at various points around the perimeters of the pit houses, the structures had no other features. Room contents were few and variable with Features 3 and 7 being most productive. Whole and fragmentary pottery vessels, manos, hammerstones, random flake implements, and worked limestone slabs occurred most commonly. None of the artifact types, frequencies, or proveniences suggested that the rooms were anything but domiciles.

Feature 22 [Kiva] (Figure 4)

Unfortunately, this large structure had been severely damaged by vandals who had dug down to and through its floor. Only a hint of a probable hearth was observable, and if ladder holes and a sipapu had once existed, they had been destroyed also. If one excludes the bench, the basic plan of Feature 22 differed little from that of Feature 17, a pit house about 10 m. to the northwest. However, the greater floor area, encircling bench, more elaborate roof support arrangement, and sub-floor storage pits, suggest that Feature 22 served as a kiva or community ceremonial lodge. No other site along Taylor Draw appeared to have such a structure.

Although no ladder holes were found between the hearth remnant and ventilator, the great depth of the structure would have required a roof entry. The placement of the eastern pair of four main roof supports, in relation to the large posts set into the bench and into the kiva wall below the bench on either side of the ventilator openings, suggest that, together, they may have formed some sort of a partition in a manner similar to that found in Basket Maker III - Pueblo I Anasazi pit houses and kivas.

Very little was found on what remained of the kiva floor. Most conspicuous were clusters of small, naturally-faceted limestone pebbles, each approximating a cube with rounded edges and corners and generally not measuring more than 2 cm. on a side. Whether gaming pieces or ceremonial items, there were no other
Figure 5. Southern surface room units
items associated with them. One other cube was found in Feature 7, again with no indication as to its function.

An interesting occurrence in Feature 22 was a large fragment of a Red Mesa Black-on-white bowl found directly on the roof fall material. Parts of the same vessel were found on roof fall debris in Feature 7, about 75 m. to the north, indicating probably contemporaneity of the kiva and the pit house.

As with all of the pit houses and most of the surface rooms, Feature 22 had burned. Closure of its inner ventilator opening with a shaped stone slab, as in Features 7 and 17, suggests that the kiva was not being used when it burned.

Surface Rooms (Figures 5 and 6)

Slab-lined surface rooms occurred singly and in straight rows, arcs, and possibly L-shaped blocks of up to eight rooms. The longer axis of the room blocks usually paralleled the north-south axis of the ridge, with the shorter arc or ell extending eastward from the north end of the room block. This produced a sheltered patio or outdoor work area on the east, lee, side of the room block. A ramada or portal seems to have been constructed over part of the patio adjacent to Features 8 through 13 (Figure 5), and a more abbreviated sheltered area was just north of Feature 6 (Figure 6). Unlike similar slab-lined structures in the Anasazi area, there was no definite association of a pit house on the patio side of the room blocks in the manner of the "front-oriented" structures elsewhere in the Southwest (Reed, 1965, pp. 11-17), though this may prove to be otherwise as more sites are excavated in the northern Jornada area.

Large quantities of burned clay in the fill of many surface rooms indicate that the superstructures of the shallow rooms were probably constructed of *ja calf*. In many instances, the primary roof and wall supports were located outside the slab outlines, usually close to room corners, though interior roof supports also occurred. Feature 14 was the only room that may have been constructed of
masonry. Its floor was outlined with upright slabs, but the structure contained great quantities or rubble not found in other surface rooms. Its location and orientation suggest that it may have been a seasonally-occupied field house post-dating the principal occupation of the site. On its floor was a flat-bottomed Jornada Brown bowl associated with the fragmentary remains of the only burial found at LA 6565.

Floor areas of probable storage rooms ranged from 2.18 m.\(^2\) (Feature 5) to 5.57 m.\(^2\) (Feature 6) with a mean area of 3.74 m.\(^2\) Features 9 and 27 were especially large, 8.40 and 10.22 m.\(^2\) respectively, had hearths, and very likely served as dwellings. Floors of most surface rooms were of smoothed, unplastered native caliche, though Features 2, 8, and 12 were paved with limestone slabs and cobbles, plastered with adobe. Only Features 6 and 9 had doorways. Separate floor levels in Feature 26 were the only clear indications of architectural stratigraphy at the site.

Features 1, 2, 4, 5, 6, 16, 18, and 20 contained charred remains of maize, both on and off the cob (see David M. Brugge's analysis of the maize in Appendix). Feature 20 also yielded a small quantity of charred piñon nuts. Impressions of maize cobs on a patch of adobe floor plaster in Feature 23 suggest that the structure may have been hastily constructed to accommodate an unanticipated food surplus—or that a leaky roof allowed water to enter and soften the clay floor.

A majority of the surface rooms had been destroyed by fire, though not all of them contained remnants of stored food, perhaps indicating that the rooms had burned before crops had been harvested but while there was still a considerable food reserve. Besides foods, the surface rooms yielded a number of artifacts: manos, choppers, hammerstones, scrapers, polishing stones, bone awls, a pottery pipe, a pottery scoop, and a number of projectile points.
Figure 6. Northern surface room unit
Other Features

Only three external features, aside from post holes, were found outside the principal architectural features: two hearths (one near Feature 6 and the other south of Feature 3) and a straight-sided storage pit (in the patio area south of Feature 9).

DATING

Tree-ring dates from LA 6565 indicate that the site may have been occupied for about 50 years during the late 10th and early 11th centuries (Robinson, Hannah, and Harrill, 1972, p. 90). Lacking the precision of cutting dates (Figure 7), the time range is still within that acceptable for the intrusive pottery type, Red Mesa Black-on-white, and is not substantially at variance with estimated time ranges for the intrusive Mimbres pottery. The surface rooms yielded no suitable tree-ring specimens, and the question of the contemporaneity of these rooms and the pit houses remains unresolved.

Figure 7. LA 6565: Tree ring dates

<table>
<thead>
<tr>
<th>Feature 7</th>
<th>Component</th>
<th>Material</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Roof material on floor</td>
<td>Charcoal</td>
<td>769p - 929++vv</td>
</tr>
<tr>
<td></td>
<td>Roof material on floor</td>
<td>Charcoal</td>
<td>842p - 955++vv</td>
</tr>
<tr>
<td></td>
<td>Northwest roof post</td>
<td>Wood</td>
<td>843p - 967++vv</td>
</tr>
<tr>
<td></td>
<td>Roof material on floor</td>
<td>Charcoal</td>
<td>841p - 979++vv</td>
</tr>
<tr>
<td>Feature 15</td>
<td>Roof material on floor</td>
<td>Charcoal</td>
<td>783p - 919+vv</td>
</tr>
<tr>
<td></td>
<td>Roof material on floor</td>
<td>Charcoal</td>
<td>848p - 939++r</td>
</tr>
<tr>
<td>Feature 17</td>
<td>Southwest roof post</td>
<td>Charcoal</td>
<td>789p - 936++vv</td>
</tr>
<tr>
<td></td>
<td>Roof material on floor</td>
<td>Charcoal</td>
<td>852p - 937++vv</td>
</tr>
<tr>
<td></td>
<td>Northeast roof post</td>
<td>Wood</td>
<td>854p - 941++vv</td>
</tr>
<tr>
<td>Feature 22</td>
<td>Roof material on bench</td>
<td>Charcoal</td>
<td>835p - 926++vv</td>
</tr>
</tbody>
</table>

CERAMICS

Plain brown pottery comprised 90% to 100% of the sherd samples
from the Taylor Draw sites, though sampling error could account for those sites where no smudged, slipped, or painted pottery was found. Little of the utility pottery even resembled the distinctive El Paso brown of the southern Jornada area or the Jornada Brown of the northern Jornada area, but more closely approximates Mera's "Coarse-ned Alma" (1940, p. 9). The local pottery was tempered with fine to only moderately coarse, angular, feldspathic inclusions; vessel walls were commonly about 5mm. thick, and interior and exterior surfaces were either polished or well-smoothed to the point that temper was rarely visible on the surface. Vessel forms included hemispherical bowls, shallow bowls with incurved rims, deep bowls with constructed orifices, and small to large short-necked jars. Vessel rims were uniformly direct and were neither thickened nor everted in the manner of some southern Jornada types. Smudging or red-slipping usually was present in sherd lots with the slipped area usually confined to the bowl interior and for a centimeter or two below the bowl rim on the exterior. Slipped bowls were more common than slipped jars. Broad-line rectilinear decoration in red on bowl interiors seems to have been the local artistic effort, but such decoration was not common. A few sherds at LA 6565 show slight refinement in line width and paste color to the point that they might be classified as San Andres Red-on-terracotta (McCluney, 1962).

Intrusive brownware pottery was represented in a few sherds of El Paso Brown, un-named plain corrugated, and Three Circle Red-on-white. Somewhat more common, though still very rare, was Mimbres Black-on-white. Its occurrence, and the absence of Mangus Black-on-white, suggests that it and the plain corrugated may represent a brief re-occupation of the Taylor Draw locality some time after the main habitation sites had been abandoned.

Almost all of the Taylor Draw sites yielded a few sherds of Red Mesa Black-on-white. LA 6565 produced over 100 sherds of the intrusive type, but sherds of it occurred only rarely in the ex-
cavated features. Portions of a single Red Mesa Black-on-white bowl were found on top of roof fall material in Features 7 and 22. Sherds of the type were usually small, and one gets the impression that Taylor Draw Indians were too far from the source of supply, and that once the vessels they had brought had been broken, few of them were replaced. The type was certainly not indigenous to the area, and most likely came from areas producing the type to the northwest, beyond the Rio Grande. Most sherds were decorated in what might be called standard Red Mesa Style (multiple parallel lines, solid triangles with pendant dots, interlocking scrolls, and wavy lines). A later version, with negative zigzags, large solid elements, bold checkerboards, and absence of interlocking scrolls triangles with pendant dots and multiple parallel lines occurred sporadically on a number of Taylor Draw sites. Some sherds with the latter attributes suggest a closer relationship to the successors to Red Mesa Black-on-white in the general Acoma-San José region, Cebolleta Black-on-white and Socorro Black-on-white, though still a far cry from Chupadero Black-on-white which was to become, in the 12th and later centuries, the dominant black-on-white type for much of south-central New Mexico.

Except for an isolated find of an unidentified Rio Grande Glaze sherd, there were no later brownware or whiteware intrusives found at any of the Taylor Draw sites, i.e., El Paso Polychrome, Three Rivers Red-on-terracotta, Lincoln Black-on-red, and Chupadero Black-on-white.

OTHER ARTIFACTS

Aside from pottery vessels, LA 6565 yielded relatively few artifacts that would be considered diagnostic (Figure 8). Shallow trough metates were of one-end-open type, and the two-hand manos for them had almost flat grinding surfaces with slightly up-turned ends. Two forms of unificial manos occurred: thin, tabular with rounded ends and parallel sides, and loaf-shaped, plano-convex, with
Figure 8. LA 6565: Summary of artifact types by general provenience

<table>
<thead>
<tr>
<th></th>
<th>Pit Houses and Kiva</th>
<th>Surface Houses</th>
<th>Surface and Trenches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metates</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Manos</td>
<td>2</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Hammerstones</td>
<td>5</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Rubbing Stones</td>
<td>3</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Anvil</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Paint-grinding stones</td>
<td>9</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Pigment</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Polishing stones</td>
<td>6</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Projectile points</td>
<td>2</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Choppers</td>
<td>9</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Scraper planes</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Side scrapers</td>
<td>8</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>End scrapers</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Hollow-edge scrapers</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Gravers</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Used flakes</td>
<td>6</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Preform</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Cores</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Faceted pebbles</td>
<td>88</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cloud-blower pipes</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Pottery vessels</td>
<td>10</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Bone awls</td>
<td>-</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Shell beads</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>
rounded ends and convex sides. Two one-hand manos were found in Features 1 and 2, but no basin milling stones were recovered.

There is considerable variation in projectile point types—from a Bajada Point to a tiny side-notched specimen, but greatest representation was in what might be considered an early version of the Temporal Point (Brook, 1972). At Taylor Draw sites, this type had an over-all triangular shape, straight-sided blade, slightly convex base, and small, side or slightly diagonal notches. A few points had a second notch along one edge between the paired side notches and the tip. A variation of this point had more convex edges on the blade and had a greater length to width ratio than the more common variant. The materials used for points were clearly not from local sources. White chert was most common; obsidian from Grants, Jemez Mountains, and Polvadera Peak was second in frequency and white chalcedony, third. Some of these may have come from gravels along the Rio Grande; closer sources are not known. Two points were of the distinctive "Chinle chert" most commonly found in the Zuni Mountain area. Some point tips were also needle sharp either from extra fine retouching or wear from serving secondary use as drills.

Pottery pipes were exclusively of the same brownware used in the local utility pottery. All were of the tubular "cloud-blower" type and bore no decoration.

Chipped stone tools were usually of the local San Andres limestone which, with its black or dark gray cherty stringers and nodules, produces creditable conchoidal fractures and durable working edges. Virtually all other stone artifacts were made of materials not immediately available and could have come from outcrops along the western edge of the Chupadera Mesa, volcanics and gravels closer to the Rio Grande, and intrusive rocks 5 to 10 km. north or east of Taylor Draw.

One of the more interesting classes of "artifacts" found at LA 6565 was the faceted pebble. These rounded limestone pebbles rarely were more than 2 cm. in greatest diameter and usually
possessed one or more flattish facets which did not appear to have been produced by grinding. Presumably, they were collected from gravel deposits along the channel of Taylor Draw. One of these pebbles came from the fill in Feature 7, and the remaining 87 were found in clusters on or very near the floor in Feature 22. The latter association suggests that they had some magico-religious function. They were the only "ceremonial" items found in the kiva.

Bone of any kind was rare at LA 6565, and tips of two bone awls were the only bone artifacts recovered. An *olivella* bead and a small disc bead were the only shell ornaments found. Aside from the red pigment used on red-slipped or painted brownware, the only pigments observed were the hematite staining on the pictograph slab in the ventilator of Feature 17 and a lump of malachite from a surface room.

**CONCLUSIONS**

When H. P. Mera published his important synthesis on Northern Rio Grande prehistory (1935), his regional phase sequences were largely based on gross ceramic differences. The Mogollon Culture had not yet been defined (Haury, 1936), but Mera's Southern Division already noted ceramic developments in southern New Mexico markedly different from those of the Anasazi area farther to the north. His "basic Brownware complex" was defined as having plain brown, red-slipped brown, and, occasionally, red-on-brown locally-made pottery associated with lesser amounts of gray or whiteware of apparent Anasazi origin. From his vantage point, LA 6565 and its neighboring sites would best fit into his Abo Phase of the Rio Abajo Branch of the Little Colorado Stem. Though the Gladwins' integrative system of roots, stems, branches, and phases has not fully withstood the tests of time--and they did not expect that it would, Mera's application of it more aptly deals with the area of attribute blending which so affects the range of archaeological materials from sites in central and west-central New Mexico.
In contrast, the southern sites that Mera discussed were located within or near the northern extent of what Lehmer (1948, pp. 84-86), later, was to refer to as the Northern Sequence of the Jornada Branch of the Mogollon. His vantage point was the group of relatively well-documented sites of the classic period of the Southern Sequence of the Jornada, the El Paso Phase, and to a lesser extent, the earliest phase (Mesilla) site, Los Tules, in the same general area. From these bases the Northern Sequence was clearly peripheral, showing greater influence from the Anasazi area in the form of the pottery types, San Marcial Black-on-white, Chupadero Black-on-white, and the earliest Rio Grande glazes.

Lehmer inferred that both northern and southern sequences of the Jornada Branch had their bases in the Mimbres area in view of the associations of Alma Plain and Mogollon Red-on-brown with San Marcial Black-on-white and El Paso Brown in the type locality for Mera’s San Marcial Phase, and some architectural similarities between pit houses in the Mimbres and southern Jornada regions. However, too few early sedentary sites in the southern Jornada area have been studied, and it is entirely possible that its ceramic and architectural foundations lie to the south rather than in the Mimbres region. El Paso Brown appears to share little in common with the Mimbres area ceramic developments, and the successors to El Paso Brown likewise. The absence of Mimbres pottery on many Mesilla Phase sites may indicate not lack of contact, but greater antiquity and a separate cultural basis for the southern Jornada.

On the other hand, Lehmer's northern Jornada region, and the area that he excluded from it, along the Rio Grande between Socorro to perhaps as far south as Truth or Consequences, shows persistent ties to the Mimbres region in the form of the fine paste, polished brownware which carries on the Alma Plain tradition, albeit Mera notes a coarsening of the Alma Series. Even in this area the advent of sedentary, pottery-making, agriculturalists seems to be late compared to the Mimbres area, and that may well be the case. Again,
however, we must predict the occurrence of earlier Mogollon sites along this part of the Rio Grande and its western tributaries, since such a Mogollon presence has been recognized or inferred in the Albuquerque district (Galinat, Reinhart, and Frisbie, 1970), near Laguna (Peckham, 1967), and in the Acoma district (Dittert, 1965, p. 522) at considerably earlier dates than those indicated by the San Marcial Phase sites.

Forty years after Mera's first reference to it, we still know virtually nothing about the San Marcial Phase, though one would expect shallow, round or rounded rectangular pit houses with either short, stepped, or longer, covered, lateral entries; bell-shaped exterior storage pits; basin milling stones and one-hand manos; and probably shallow, one-end-open trough metates and two-hand manos. Mera (1935, p. 26) questioned whether or not San Marcial Black-on-white was indigenous or intrusive at the type locality, and it appears now that the latter is the case, and that at least one source area for the type is near Albuquerque where Frisbie (1967) found the type with pit houses in which Lino Gray predominated and brownwares were minor intrusives. Presumably, San Marcial Black-on-white is a Rio Grande variant of the Late Basket Maker III type, and, to some degree, Kiatuthlanna Black-on-white, probably reaching the Rio Grande from the Chaco region by way of the upper Rio Puerco. So far, few, if any, Basket Maker III sites in the Acoma-San José region have been found, so the introduction of White Mound/San Marcial Black-on-white through that corridor from the west seems unlikely.

The appearance of San Marcial Black-on-white as a common intrusive on brownware sites in the Socorro-San Marcial district is pertinent to the later appearance of Red Mesa Black-on-white at Taylor Draw, since site survey data gathered by H. P. Mera and an unsung amateur archaeologist, Herbert W. Yeo, indicate that this part of the Rio Grande probably served as a springboard to the settlement of the northern Jornada del Muerto and the Chupadera Mesa. San Marcial Black-on-white occurs with brownware sites in the
piñon-juniper uplands that extend southwestward into the Jornada del Muerto from the Chupadera Mesa, and Fenenga (1965, p. 232) notes its presence at LA 2579, near Gran Quivira, on the mesa itself. Subsequently, other sites in the Socorro district, apparently where Mera's "Coarsened Alma" was produced, were the recipients of Red Mesa Black-on-white, and recent surveys by Caperton (in press) in the Chupadera Mesa and Jornada del Muerto areas report the association of the type with upright slab outlines of jacal surface rooms as at Taylor Draw. Although structures of this type are not particularly common in the Middle Grande region, this may be due in part to the lack of suitable stone in most localities. Along the Rio Puerco and westward into the Rio San José Valley such construction is common where the tabular sandstone for jacal wall footings is available. In these areas polished brownware is the intrusive pottery and neckbanded gray utility pottery predominates.

The linkage of Taylor Draw northwestward to the Middle Rio Grande and further west may be further substantiated by the occurrence at LA 6565 of a Rio Grande Style pit house, Feature 17. Without its ramp entry, even Feature 7 would be a close approximation of the type, and the kiva, Feature 22, without its bench, would be also. There are probably no hard and fast distinctions between Rio Grande Style pit houses—which occur as far west as the Acoma district—and the small sample at LA 6565, but a few features are worth noting:

<table>
<thead>
<tr>
<th>Rio Grande Style</th>
<th>Taylor Draw</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Shape</strong></td>
<td>Round</td>
</tr>
<tr>
<td>Usually rounded-</td>
<td></td>
</tr>
<tr>
<td>rectangular or</td>
<td></td>
</tr>
<tr>
<td>oval</td>
<td></td>
</tr>
<tr>
<td><strong>Hearth</strong></td>
<td>Unprepared burned area</td>
</tr>
<tr>
<td>Prepared pit, often</td>
<td></td>
</tr>
<tr>
<td>with a raised rim</td>
<td></td>
</tr>
<tr>
<td><strong>Sipapu</strong></td>
<td>Absent</td>
</tr>
<tr>
<td>Often present</td>
<td></td>
</tr>
</tbody>
</table>

The kiva, Feature 22, at LA 6565 has no known counterpart in the Middle Rio Grande Valley. Fully encircling benches are not recorded for kivas east of the Acoma district. No sipapu was found.
in Feature 22, though vandalism may have destroyed this feature. Subterranean ceremonial chambers, larger than and separate from associated pit houses are not, during the period in question, characteristic of Anasazi pit house sites. On the other hand, this pattern is a common one at most Mogollon sites (Schroeder, 1963) as late as the 12th century. It is difficult to place Feature 22 in the Great Kiva class, though it would appear that it served both intra-site and inter-site functions, since LA 6565 is the largest of the Taylor Draw sites and is the only one in which a large subterranean structure seems to be present. An encircling bench was recorded by Lehmer (1949, p. 23) at the Mesilla Phase site of Los Tules, near Las Cruces, and a full bench was found around the perimeter of a much later rectangular ceremonial structure at the Block Lookout Site, also known as Smokey the Bear Ruin (Kelley, 1966, Map 6).

Other pit houses at LA 6565 do not exactly conform to the known range of Mogollon pit house construction elsewhere, though each new site reported seems to add to the list of features. At Taylor Draw, the ramp entry with the log step at the inner end of the ramp (Features 7 and 15) differs from the usual Mogollon ramp entry which begins with a low step or at floor level. The combination of this feature with a ventilator on the opposite side of the pit house (Feature 7) may be a one-of-a-kind occurrence but amply demonstrates the blending of Mogollon and Anasazi architectural traditions. Similarly, the use of a ventilator in Feature 3 combines that Anasazi attribute with a Mogollon one, shallow depth, in a manner that might be expected when a builder is not fully aware of the apparent relationships: (a) deep pit house/ventilator/roof entry, (b) shallow pit house/lateral ramp entry serves as ventilator.

The arced cluster of rooms (Features 8-13) is of considerable interest in that the floor levels of the individual rooms grade from the present ground level (Feature 8) to almost 0.5 m. below ground level (Feature 9). In essence, the room group illustrates
the shift from an isolated shallow pit house to a shallow pit house incorporated into a arc-shaped grouping of contiguous rooms. Only two steps remain, the slight deepening of the storage rooms to the depth of the main dwelling room, and the arrangement of the rooms into linear or L-shaped blocks, and the result would be very much like the extensive clusters of room blocks that characterize sites of the Corona Phase (circa A.D. 1050-1100) in the Sierra Blanca region 50 km. due east of Taylor Draw (Kelley, 1966, pp. 94-99). The discontinuation of the isolated pit house seems, on the basis of Kelley's data, to take place at about this time, though large depressions suggest that the separate subterranean ceremonial chamber continues a while longer.

Looking at Taylor Draw from slightly different localities, one sees the pervasiveness and/or continuity of features found at LA 6565. Near Gran Quivira, Green (1955) and Fenenga (1956, pp. 266-233) recorded pit houses at LA 2579 not too different from Feature 17, though Green's structure lacked a ventilator. Instead of slab-lined surface granaries, their dwellings were associated with bell-shaped storage pits and an approximate 4:1 brownware to Lino Gray ratio plus San Marcial Black-on-white. These associations suggest that LA 2579 pre-dates LA 6565, perhaps by 100 years or more, though absolute chronology is virtually absent in this part of New Mexico. In ground plan, some of the surface room blocks at Taylor Draw resemble those at Sites P4A and P4B, almost 200 km. to the northeast, in the Pecos Valley, near Fort Sumner (Jelinek, 1967, pp. 119-124). These structures were associated with Jornada Brown, and its derivatives, as well as Red Mesa Black-on-white, suggesting some degree of contemporaneity between them and the surface rooms at LA 6565. Jelinek suggested that his structures were constructed in the Late Eighteen Mile Phase (circa A.D. 900-1000), though in view of the rather late tree-ring dates from Taylor Draw, the dating of this phase may need revision.
There are only three other excavated pit house sites in south-central New Mexico with which LA 6565 may be compared: Los Tules, a Mesilla Phase site southwest of Las Cruces (Lehmer, 1948, pp. 13-34); the Rincon site [LA 5599], a probable Mesilla Phase site 10 km. southeast of Rincon (Hammach, 1962); and the Hatch site [LA 3135], a Mesilla and Doña Ana Phase site 1.6 km. north of Hatch (Schaafsma, 1964; 1974). Round and rectangular pit houses were found at each of these sites, but only at Los Tules did the rectangular pit houses have ramp entries. At the Hatch site, shallow, round rooms predominated, but only two had ramp entries; and the pit houses at the Rincon site showed no evidence of lateral entries. At none of the three sites were there pit houses with ventilators, and except for the deeper rooms at Los Tules, there were no reasons for inferring that ladder entries may have existed at these Lower Rio Grande sites. Only with the Doña Phase component at the Hatch site were there any surface rooms associated with pit houses, and they appeared to have been constructed of coursed adobe rather than jacal. Each of the three sites had at least one large room which may have served a religious function. At the Hatch site, a tiponi was associated with the Doña Ana Phase ceremonial structure. All three sites had extra-mural storage pits or small, round, semi-subterranean rooms which may have been for storage.

Ceramic associations at the three sites were equally variable. The principal utility pottery at Los Tules and the Rincon site was El Paso Brown. At the Hatch site, only 20 km. up the Rio Grande from the Rincon site, Alma Plain predominated. Mimbres pottery was found at all three sites, but at Los Tules most of it was Mimbres Black-on-white or a transitional variant developing out of Mangus Black-on-white; at the Rincon site, Mangus Black-on-white was most frequent; and at the Hatch site almost all of the Mimbres intrusives were utility types. El Paso Polychrome was common with the Doña Ana Phase component at the Hatch site, rare at Los Tules and absent at the Rincon site. Red-slipped brown-
ware was present but not common at all three sites. A single sherd of San Marcial Black-on-white and three unidentified grayware sherds at the Rincon Site were the only early Anasazi intrusives reported at any of the three sites. Sherds classified as Jornada Brown were not common at either the Hatch or Rincon sites, and apparently were absent at Los Tules.

Classes and frequencies of artifacts were not particularly diagnostic at any of the three sites, though roundish, one-hand manos were common at each site, and sherd discs, perforated and unperforated, were relatively numerous at Los Tules and the Rincon site.

East and south of Taylor Draw, sites such as LA 2000, on the Rio Peñasco (Jennings, 1940; Kelley, 1966), at Pueblo Pardo (Toulouse and Stephensen, 1960), the Hatchet site at Three Rivers (McCluney, 1961, 1962), sites near Mayhill (Green, 1956; Kelley, 1966, Kelley and Peckham n.d.), the Bent site (Wiseman, 1973), and the Glencoe sites (Broilo, 1971) are either ceramically later than Taylor Draw or yielded data too fragmentary for comparison, or both.

Thus, limited knowledge of the distribution of sites similar to or contemporary with Taylor Draw precludes determination as to whether or not LA 6565 is an isolated, marginal, or normal development relative to earlier, contemporary, and later sites in south-central New Mexico.

LA 6565 and the other sites along Taylor Draw appear to have focused on the agricultural resources that could be produced by farming the valley bottom with the fields watered and replenished primarily from summer run-off. The numerous surface granaries and their contents imply environmental conditions conducive to the production of grain surplus. Wild game was hunted fairly extensively, as indicated by the frequency of projectile points; and wild plant foods--piñon nuts, yucca fruit, prickly pear pads and fruit--were locally available in quantity, and mesquite was probably easily
harvested in the northern Jornada del Muerto and the nearby Tularosa Basin. Local geological resources were ample though not very varied. Arable soils were generally restricted to the valley bottom, outcrops of tabular limestone were virtually everywhere, and presumably clays and tempering materials were convenient to the settlement areas. Sources of the glassy rocks used for projectile points were often as much as 200 km. distant, suggesting that either the materials or finished points may have reached Taylor Draw through trade. Similar contact is implied by the occurrence of sherds of Red Mesa Black-on-white, Three Circle Red-on-white, and Mimbres Black-on-white, none of which can be shown to have been locally manufactured.

For the population size of Taylor Draw—probably not more than 100—the area was satisfactory for settlement so long as precipitation provided sufficient run-off for the growth and maturation of maize. Exploitation of the environment was limited only by the range of local resources—i.e., area of arable land, availability of a year round water supply. Except for small quantities of ceramics and lithic materials, there seem to have been few introductions from the outside. Many of these materials may have been brought by the Indians when they settled in Taylor Draw and may not have been replaced when the items were worn out and discarded. Brugge (see Appendix) feels that the maize recovered seems not to have been recently cross-bred with varieties from other areas, suggesting that LA 6565 and its neighbors were somewhat isolated from stimuli that led to more rapid growth in the northern Chupadera Mesa and northwestward. If the sites of the Sierra Blanca reported by Kelley (1966) represent descendants of the occupants of Taylor Draw, the pace of cultural development continued to be relatively slow. The absence of either earlier or later sites in the Taylor Draw district suggests that environmental factors may have first permitted settlement of the area and then encouraged its abandonment. However, the destruction of most of the structures at LA 6565 by fire might indicate that cultural factors may also have been involved.
ACKNOWLEDGEMENTS

This paper is unreservedly dedicated to Marjorie F. Lambert, a stimulating co-worker at the Museum of New Mexico and a thoughtful and generous friend. However, this paper probably would not have been possible had it not been for the assistance and encouragement of many others: Dr. Florence Hawley Ellis, whose University of New Mexico seminar in Southwestern Archeology stimulated my interest in the Jornada Branch of the Mogollon; Dr. Frank C. Hibben, who, with members of the 1954 University of New Mexico Archeological Field School, assisted in the excavations of Features 22 and 27; Beth Dickey, William Roosa, Maxine Kleindienst, and William Sundt, who, at various times took part in the excavations; John and Maryanne Danfelser, who, with Maxine Kleindienst, did the plane table map of LA 6565; David M. Brugge, for his analysis of the maize from that site; William J. Robinson and the Laboratory of Tree-Ring Research, University of Arizona, for the tree-ring dates; Louis Nalda, of the Red Canyon Sheep Company, Carrizozo, on whose ranch Taylor Draw sites are located; my wife, Barbara, who continued to urge me to finish this report; and my parents, who, from 2300 miles away, grubstaked me during the course of the excavations.

Field work at Taylor Draw was conducted under an Antiquities Permit issued to the Department of Anthropology, University of New Mexico, and was obtained through the good offices of Dr. Florence Ellis, University of New Mexico, and Dr. Jesse L. Nusbaum, former Departmental Consulting Archeologist, U. S. Department of the Interior. Records and collections are deposited at the Maxwell Museum of Anthropology, University of New Mexico. Copies of the records are also in the Archaeological Survey files of the Museum of New Mexico.

My sincere thanks go to all the above individuals and institutions for their active interest and support.

Museum of New Mexico
Santa Fe, N. M.
BIBLIOGRAPHY

Broilo, Frank J.

Brook, Vernon Ralph

Caperton, Thomas J.

Dittert, Alfred E. Jr.
1959 Cultural Change in the Cebolleta Mesa Region, Central Western New Mexico. Ph.D Dissertation, University of Arizona, Tucson.

Fenenga, Franklin
1956 Excavations at Site LA 2579: A Mogollon Village near Gran Quivira New Mexico. In Pipeline Archaeology, Fred Wendorf, Nancy Fox, and Orian L. Lewis, editors, Santa Fe and Flagstaff.

Frisbie, Theodore F.

Galinat, Walton C., Theodore R. Reinhart, and Theodore R. Frisbie
Green, Earl

Green, Roger C.

Hammack, Laurens C.
1962  LA 5599: A Pit House Village near Rincon, New Mexico. Museum of New Mexico, Laboratory of Anthropology Notes #8, Santa Fe.

Haury, Emil W.
1936  *The Mogollon Culture of Southwestern New Mexico*. Medallion Papers No. 20, Gila Pueblo, Globe.

Jelinek, Arthur J.

Jennings, J. D.
1940  *A Variation of Southwestern Pueblo Culture*. Laboratory of Anthropology Technical Series Bulletin No. 10, Santa Fe.

Kelley, Jan Narcissa Holden

Kelley, Jan Holden, and Stewart Peckham
n.d.  *Two Fragmentary Pit House Sites near Mayhill, New Mexico*. Manuscript, Museum of New Mexico, Division of Anthropology, Santa Fe.

Lehmer, Donald J.

66
McCluney, Eugene B.


1962  A New Name and Revised Description for a Mogollon Pottery Type from Southern New Mexico. *Southwestern Lore*, vol. 27, no. 4, pp. 49-55, Boulder.

Mera, H. P.

1935  *Ceramic Clues to the Prehistory of North Central New Mexico*. Laboratory of Anthropology Technical Series Bulletin No. 8, Santa Fe.

1943  *An Outline of Ceramic Developements in Southern and South-eastern New Mexico*. Laboratory of Anthropology Technical Series Bulletin No. 11, Santa Fe.

Peckham, Stewart


Reed, Erik K.


Robinson, William J., John W. Hannah, and Bruce G. Harrill

1972  *Tree-Ring Dates from New Mexico I,0,0, Central Rio Grande Area*. Laboratory of Tree-Ring Research, Tucson.

Schaafsma, Curtis

1964  *Archeological Salvage Excavation of the Hatch Site, LA 3135*. Museum of New Mexico, Laboratory of Anthropology Notes #30, Santa Fe.

1974  *The Hatch Site: Archeological Salvage Excavations on Interstate Highway 25, Dona Ana County, New Mexico*. (manuscript) Museum of New Mexico, Laboratory of Anthropology Notes #96, Santa Fe.
Schroeder, Albert

Toulouse, Joseph H., and Robert L. Stephenson
1960 *Excavations at Pueblo Pardo*. Museum of New Mexico Papers in Anthropology No. 2, Santa Fe.

Wiseman, Regge N.
1973 *The Bent Highway Salvage Project, Otero County, New Mexico*. Museum of New Mexico, Laboratory of Anthropology Notes #74, Santa Fe.
APPENDIX

Charred Maize Remains from Taylor Draw,
A Pit House Site in Socorro County, New Mexico

DAVID M. BRUGGE

The charred maize remains studied were found in burned granaries, and being fused into masses of carbon, presented difficulties in dissection and accurate observation. Fragile structures such as glumes often fused to adjacent parts of the ear and rarely could be exposed entirely.

Fourteen ears, all from Feature 1, were studied in some detail. The remainder showed no marked differences, and for these only row numbers were recorded. There were 78 ears that were sufficiently well preserved to allow counting of row numbers (Figure 1).

Variation was slight except for obvious nubbins. All cobs had shrunk in the process of charring, but the percentage of loss is proportionate to the length of time of oxidation, and no reliable estimate of original size is possible (Brugge, 1965). Averages for the various measurements, together with relevant indices, were recorded for the specimens studied (Figure 2). The charring caused great distortion in the size and shape of the kernels, and no work was attempted on these, although it may be mentioned that in texture they were definitely not pop corn and more likely were a flour or dent corn than flint.

Rowing was regular to slightly irregular. The upper glumes were short to intermediate in length and exhibited little venation. The highest cob/rachis index was 2.0, and the average only 1.7. Pedicel hairs were present on all or most cobs. The rachis flap was moderately developed on most specimens. The cupules were inclined to be hairy, and most were partially divided in the middle by a slight ridge. Two cobs showed enlarged butts.

Racially, the collection is predominantly derived from the varieties descended from Reventador (Wellhausen, et al 1952,
pp. 90-97; Cutler and Meyer, 1965, p. 138) which are sometimes lumped into the Mexican Narrow Ear race (Anderson 1946), and seems to have spread from northern Mexico into the Southwest. There may be some slight mixture with the varieties derived from Olotón (Wellhausen, et al 1952, pp. 73-77), lumped by Anderson (1942) into the Guatemalan Big Grain race.

The percentage of 12-rowed cobs is very high, and this, together with the limited variability of other characters, suggests an inbreds stock. This might be the result of cultural isolation or a distrust of foreign seed by local farmers, and may even imply some deliberate selection for row numbers.

Most of the maize had been stored on the ear, but with the husks removed. No parts of husks were found in the collection. Part of the material from Feature 18 consisted of shelled kernels, but there was no evidence of any sort of container in which these might have been stored.

Chaco Center
National Park Service
Albuquerque, N. M.
Figure 1. Row Numbers for 78 Cobs from Features 1, 2, 18, and 20, LA 6565

<table>
<thead>
<tr>
<th>Percentages:</th>
<th>8-row</th>
<th>10-row</th>
<th>12-row</th>
<th>14-row</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5%</td>
<td>13%</td>
<td>72%</td>
<td>10%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Averages:</th>
<th>Feature 1</th>
<th>Feature 2</th>
<th>Feature 18</th>
<th>Feature 20</th>
<th>All Features</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12</td>
<td>11.7</td>
<td>11.5</td>
<td>12</td>
<td>11.7</td>
</tr>
</tbody>
</table>

Figure 2. Average Measurements and Indices for 14 Cobs from Feature 1 at LA 6565

<table>
<thead>
<tr>
<th>Diameters (cm)</th>
<th>Cob/Kernel: Thickness (mm)</th>
<th>Cob/Rachis Index</th>
<th>Rachis/Pith Index</th>
<th>Rachilla Length (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pitch Rachis Cob Shank</td>
<td>4.0 5.0</td>
<td>1.7</td>
<td>2.2</td>
<td>2.0</td>
</tr>
<tr>
<td>Cupules Depth Width Thickness (absolute)</td>
<td>1.5 3.4 1.3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
BIBLIOGRAPHY

Anderson, Edgar

Brugge, David M.

Cutler, Hugh C., and Winton Meyer

A CACHE OF GARDENING TOOLS: CHACO CANYON*

ALDEN C. HAYES

It was late summer in Chaco Canyon, and late in the 13th century. The ears on the yellowing waist-high corn were maturing. Weed growth had ceased and irrigation was no longer necessary. No matter what he did now, the crop would make it or it wouldn't. The farmer gathered up his tools to carry them from his field toward his home built against the boulders on the talus fifty feet above the floodplain. A hundred feet short of the house he paused where two colluvial stones, fallen from the cliff above, had come to rest on the slope. He stopped and looked back across his corn and the willows lining the creek bed beyond to where the high walls of Wijiji Pueblo a mile away reflected the light of the western sun. He stopped to thrust the tools between the boulders to store them until it was time for planting the following spring. He never returned. The field grew no corn the next season or ever again, for the farmer and his family that winter made their way up the canyon, over the divide, and into the valleys to the east to make a new home.

A woodrat sought the shelter under the rocks and built his nest over the digging sticks. This home in time was also abandoned, and the debris of twigs, grass, cobs, and small stones that made it trapped wind-blown sand through many springs. By the time the little rincon on Chacra Mesa's northwest corner was reoccupied by an extended family of Navajos in the late 1700s, the stored tools were buried and totally concealed. The seven hogans built by the Dineh were, in turn, deserted, and the vagaries of wind that buried

*This is Contribution No. 12 of the Chaco Center, National Park Service and the University of New Mexico.
the cache then partly exposed it.

We can be more precise about the next date. On the 27th of July 1972 another sweaty palm grasped one of the hand-polished shafts. A National Park Service archaeological survey crew recorded the small Anasazi house, sketched in the presence of hogans, noted a petroglyph, and with commendable thoroughness, checked out the cranny under the boulders to see the ends of the worked sticks protruding from the sand.

In the assortment were a wood scoop, five dibble sticks, three wooden hoes, and two hoe handles, one hafted to a tcamahia and the other to a broad, flattened blade of mountain sheep horn (Fig. 1). It is the cache itself that is unusual, none of the individual specimens being unique. Dibbles, wooden hoes, and tcamahias were found at Pueblo Bonito (Judd, 1954), scoops and horn-tipped hoes at other districts within the San Juan drainage.

The scoop, subrectangular and measuring 14 by 38 cm., was made of a cottonwood board 8 cm. thick (Identified as Populus sp. by Loren D. Potter, University of New Mexico, who also made the following identifications). The concave dished face has a maximum depth of 1.3 cm. Low on one edge is a gently curved notch 1.7 cm. deep. The wood in the area of the notch is lightly stained, as though from oil, and highly polished. There can be little doubt that it was notched for handling as is shown by Figure 2. Substantiating evidence is the fact that the opposite edge is steeply beveled by wear, the bevel bearing transverse use-scratches. There are other areas of oily polish at the two ends of the tool. They may have resulted from wielding it with both hands. Kidder and Guernsey (1921) illustrate three wooden scoops from White Dog Cave and reported them to be regular finds in the Basketmaker sites of northeastern Arizona. From the wear patterns they were assumed to be implements for digging cists. Three similar artifacts found in cliff-dwellings on Mesa Verde had about the same shape and dimen-
Figure 1. Tool cache
sions but lacked the side-notch and evidence of wear. One of them found in a metate bin was judged to have been used to collect the ground meal at the foot of the grinding stone, and probably all of these were receptacles rather than tools (Hayes, 1964).

Five dibble sticks in the collection are willow wands from 109 to 119 cm. long. Apparently all that was necessary was that the two ends be more or less in the same thrust line and that minor deviations from the axis were unimportant. They are all somewhat crooked. There was little modification of the cut sticks. All the bark was removed from three of them, the outer bark was removed from one leaving most of the cambium, and the bark was left intact on one specimen. The proximal ends were rounded off by grinding. About 20 cm. of the outer ends were ground flat, pointed, and showed use-polish. The shortest and stoutest of the dibbles (Fig. 1, 4th from right) was double-ended, a flattened point at one end and a more rounded blade at the other. This tool was used for loosening the soil as well as for poking a planting hole. A photograph in Kluckhohn, Hill, and Kluckhohn (1971) shows such an implement being used from a kneeling position with the point pulled toward the body, and a drawing by the Hopi artist, Charles Loloma, confirms it (Thompson and Joseph, 1944). The former reference contains an excellent account of the use of both dibbles and hoes.

Three hoes made of Gambel oak are scimitar-shaped and range from 97 to 129 cm. long with maximum widths of 7 to 8 cm. (Fig. 1, right). These were lovingly fashioned to a sandpaper smoothness and each has a carved knob at the upper end. The edges are gently rounded except the last 10 to 20 cm. at the point where the convex side is sharply beveled to a cutting edge. References to the use of the curved bladed hoes as cultivators are too numerous to require citation. They were used with a thrusting or slicing motion for chopping weeds.

Two hafted hoes were probably used in the same way as the wooden ones. The handles, with their hard, inserted bits, did not come in
Figure 3. Hafted hoes
contact with the soil and were made of soft cottonwood. The resistant oak was not needed. The distal end of one of the handles was chamfered at one side and carefully shaped to receive the narrow end of a wedge-shaped, flattened blade of mountain sheep horn (Fig. 3, left). The blade was badly chewed by pack rats and little could be determined of the original craftsmanship but overall length of the implement was about 112 cm. It was secured in the groove with approximately 3.9 m. of two-ply, S-twist sinew cordage. The sinew was initially split into strips about 1.5 mm. thick which were doubled and twisted into cords from 25 to 35 cm. long -- probably the maximum length possible with sinew from a large animal -- and then joined with square knots. The wrapping is in two sections. Near the outer end of the handle are 13 wraps covering 4 cm. of shaft and using 156 cm. of cord. Skipping 6 cm. of unwrapped shaft is another section wrapped for 8 cm. with 22 turns of 264 cm. of cord. The circumference of the shaft was recessed to hold the bindings in place flush with the surface. Over the wrapping was an outer binding of thin rawhide, possibly pronghorn. This was done with two pieces of skin, each 7 cm. wide, placed flesh side down. The ends were cut to join on a bias and were sewn together with sinew in a simple whip stitch. The same stitch was used to reinforce the four "selvage" ends of the two pieces. The rawhide sleeves covered the lower wrappings, the unwrapped area, and about two-thirds of the upper wrappings.

Twisted sinew string is not a common item of Anasazi technology which made great use of yucca fiber cordage, but it is not unknown and was used for bow strings (e.g., Hough, 1918).

The second hafted specimen is a little stouter and longer. The knobbed handle is 4 cm. thick and 104 cm. long, and, with the blade in place, the tool has an overall length of 113 cm. The bit is a wedge-shaped teamahia, 171. by 5.5 cm., of dove gray, banded hornfels with a splash of greenish yellow on one side. The tang end is scarred by deep flakes of the initial roughing out, but the ex-
posed part is relatively unblemished. The entire surface is highly polished, and the somewhat oblique end is bilaterally beveled. The end of the cottonwood shaft was notched 8.5 cm. deep for hafting. The shaft was parallel-sided, whereas the tang of the stone tapered, and to make a tight fit under the bindings, a strip of leather 1.4 cm. wide was laid around the outside edge of the bottom of the tang. The leather not only took up the slack but cushioned the impact at the bottom of the notch. A channel 7 cm. long was cut 5 mm. deep around the circumference of the shaft so that the bindings would be flush, and the tcamahia was then lashed with strips of sinew cut from 0.4 to 1.1 cm. wide. These wrappings were also covered with a rawhide sleeve, stitched and edge-bound with sinew thread, but unlike the other, this skin was not dehaired. Finally, a thin wooden wedge was driven into the end of the notch between the wood and the stone.

Though broad-bladed digging sticks have a wider distribution, tcamahias of hornfels (also known as hornstone, silicious slate, silicified chert or jasper, banded siltstone) in archaeological contexts are confined to the San Juan and its tributaries. Perhaps the first one to be reported was found in Mancos Canyon, Colorado, with marks of bindings still present (Holmes, 1878). Earl Morris, who had also seen tcamahias with stains of rotted wood and cordage, and noting the similarity of shape to the hafted sheephorn implements he had excavated at Aztec Ruins, and others seen in John Wetherill's collection at Kayenta, believed them to have been unquestionably hafted, and he referred to them as hoes (Morris, 1919). In discussing specimens from Pueblo Bonito, Judd mentions having seen like markings, including one preserving the outline of the rounded end of the shaft, and he had no doubt that they were substitutes for the mountain sheep horn blades of "shovel-hoes" (Judd, 1954). The Chaco survey find bears him out. Horn-tipped hoes seem to have a better preservation record, another hafted specimen having been found also in southeastern Utah (Guernsey, 1931).

Morris located the hornfels, the stone most commonly used for
tcamahias, in the north end of the Carrizo Mountains, south of Teecnos-poss, Arizona, near the Four Corners. His finding of a cache of roughly shaped but unpolished blanks in a pueblo ruin in the vicinity led him to believe that they were also manufactured in that area for trade (Morris, 1939).

Jesse Walter Fewkes, describing tcamahias from his excavations on Mesa Verde, referred to them as "axes or planting implements" (Fewkes, 1909), but his account of their use as altar paraphernalia in the Hopi Flute and Snake Society ceremonies is evidence that their function was not entirely utilitarian (ibid., 1900). According to Fewkes, the Hopis identified "tcamahia" as a Keresan word referring to a war deity. Florence Ellis (1967) corroborates this from Rio Grande sources and tells of the hornfels tools, suspected of having been brought from the San Juan in age-old migrations, and of similar artifacts of other kinds of stone being used as war and hunting fetishes in the eastern pueblos. Although granting that some may have been hafted for cultivating, she believes that they were primarily hand-held skinning knives. Except for a limited and specialized use in "beating the fell" from the back of large animals, it is difficult to see such a gross implement as anything but an encumbrance to skinning. It seems more probably that what was once strictly an agriculture tool, albeit a particularly fine and treasured one, gradually acquired a wholly religious significance which, to the Keres with their orientation toward war and hunting, assumed a different character. There are parallels to such shifts in concept. The medieval shield, an accoutrement of bloody and brutal combat, has become no more than a shape on which to emblazon a coat of arms, the symbol of gentility.

The Chaco tool cache contained all the tools necessary for gardening. The soil could be loosened with the dibbles and tipped hoes, and scraped into hills with the scoop. Planting holes were made in the hills with the dibbles, and as the season wore on, the oak cultivators were used to re-loosen the rain-compacted soil
and to cut out the weeds.

The house nearby, with which the cache was presumably associated, contained five rooms and a kiva. The thin, scattered trash on the slope below it produced Mesa Verde Black-on-white and St. Johns Polychrome sherds, dating the site in the mid-to late 1200s.

Chaco Center
National Park Service
Albuquerque, N.M.
BIBLIOGRAPHY

Ellis, Florence Hawley

Fewkes, Jesse Walter

Guernsey, Samuel J.

Hayes, Alden C.

Holmes, William H.

Hough, Walter

Judd, Neil M.

Kidder, Alfred V., and Samuel J. Guernsey
Kluckhohn, Clyde, W. W. Hill, and Lucy Wales Kluckhohn

Morris, Earl H.

Thompson, Laura, and Alice Joseph
DATABLE RITUAL COMPONENTS PROCLAIMING MEXICAN INFLUENCE IN THE UPPER RIO GRANDE OF NEW MEXICO

FLORENCE HAWLEY ELLIS

Let us first set the scene of our inquiry. Date: early 1400s, Pueblo IV. Location: Upper Rio Grande, north of Santa Fe. Actually Tewa country, between the opening of Taos Canyon on the north and Tesuque on the south, and from Abiquiu on the west to the foothills of the Sangre de Cristo Mountains on the east. Weather: fairly dry, becoming pretty darned dry, and then dryer than that, with scattered years of real disaster. People expected to go hungry in spring because foods stored at the end of the previous harvest had been consumed and most of what one put into his stomach now had to come from hurried hunting and gathering. In the years after the Spanish settlers arrived, the Pueblos would hire themselves out each spring for a pittance in food.

Nothing was new about getting thin in spring, but the winters for some centuries had been short and dry and most of the rain which fell in the heavy summer storms ran off too fast to dampen the soil deeply. Dry farming was increasingly undependable. Some irrigation by ditches was begun in the Upper Rio Grande in the 1200s. Within the next two centuries most of the medium-sized pueblos either had been abandoned or engulfed in a general move to establish a new settlement pattern based on ditch irrigation. Large pueblos grew from the consolidation of several smaller villages. This meant that by 1400 all except the peoples of the Pajarito Plateau, who managed to hold out until the mid 1500s, were located on living streams, the Rio Grande itself and its tributaries, the Chama, the Ojo Caliente, the Rio del Oso, El Rito, Santa Clara Creek, the Santa Cruz, the Nambe-Pojoaque, and the Tesuque (Ellis, 1966). In summer, much of the population of each large pueblo (as we know both from archaeological surveys and from tradition) moved out to

85
small jacal one or two room field houses where the people could enjoy the cooler air away from the main village and would be nearer to the fields they irrigated and the many waffle gardens. Waffle gardens almost always were on buttes, mesas, or slopes above the pueblo and its fields, presumably because high places were observed to receive more rainfall. In some districts the surface of gardens commonly was covered with gravel dug from a nearby pit or carried in to serve as a moisture-retaining mulch, a very efficient arrangement providing the mulch was not unduly deep, as proven by Flagstaff experiments with black sand some years ago. In the Rio Grande each plot was edged with rocks or a soil ridge to aid in conserving both mulch and moisture. Such gardens are well known for the Chama drainage, but they also existed on hills near pueblos down in the Rio Grande itself and can be found in profusion on the higher land north of Zia pueblo and on slopes near Jemez and its ancestral villages.

In the historic period, Pueblo gardens were owned and worked by individuals and inherited within families. Irrigable lands were distributed to family heads and might be inherited within the family if they continued in use. Small irrigation ditches constructed by a family head could belong to those individuals, but main ditches were kept in repair by representatives of all the families of a pueblo under direction of an officer appointed by the Summer cacique or by both caciques. This was community work from which no one was excused, even, as in the late historic period, should he not be a ditch-user. Santa Clara Pueblo tells of their religious leaders calling the people together for periodic ritual requirements at their relatively small ceremonial center on a white knoll above the Pajarito Plateau when most of those people actually were living in a number of small cavate communities distributed within a radius of 5 miles. Later, when Santa Clara had established its village on the Rio Grande, its people, like those of the other big irrigating pueblos, kept permanent homes in the pueblos to which they returned from summer field houses for observances scheduled by their own religious soci-
eties or by the entire tribe (Ellis, water claim field notes). Ceremonies were believed requisite if seasons were to follow in succession, crops to mature, animals to propagate, and the tribe to retain relatively good health and adequate numbers. Everyone was required to participate; those physically unable to dance must do their stint with concentrated good thoughts (Dozier, 1966).

Whence came the gods with whom the Pueblos cooperated via their rituals? And when?

Over the years we have learned of successive waves of influence out of Mexico which affected people of the American Southwest through introduction of corn, pottery-making, and broad religious concepts, but new details are coming to light. The three great gods of the Aztec pantheon were Tezcatlipoca, Quetzalcoatl, and Huitzilopochtli, explained in mythology as three of the four sons of Ometeotl, the supreme god-goddess figure, but all had been conceived and slowly nurtured in Mexico’s earlier cultures. Each was credited with having served as Sun god during one of the five mythological ages of existence (Leon-Portilla, 1963, pp. 33, 35, 37-45, 90-92), though in this the Aztec philosophers who had moved some other gods into new nitches were substituting the name of their own deity, Huitzilopochtli, for the comparable god of Classic Mexico. Di Peso (1973, p. 6; 1974, pp. 140-142) speaks of the cult of Tezcatlipoca having entered the American Southwest in the 10th century. Tezcatlipoca, Sun during the first age, usually is described as a young war god with a manifestation existent in the symbolic color of each direction, though the black Tezcatlipoca of the north stood as his overall epitome. Actually he was much more than a war god. One reads of his association with the night sky, the moon, cold, darkness, death, and caves, but also with bestowal of honor, dignity, and riches. More important is his personification as an omnipotent deity whose independable and eccentric personal disposition could explain the otherwise inexplicable shifts from good to bad in the fates of men and tribal-nations. Though he could achieve great benefits for
human beings, he also was responsible for their vices and ills and for causing dissent. He punished crime but took offense easily and then might throw a tantrum of evil and destruction. In contrast, his cult provided for periodic forgiveness of sins. Tezcatlipoca was, in toto, a deity of contrasts and was considered to be a mischievous magician (Sahagun, 1950, p. 2; 1952, pp. 11-12; Leon-Portilla, 1963; Horcasitas and Heyden, 1971).

The people of Mexico believed that the distinctive black obsidian mirror which this god carried enabled him to see all that occurred in the world and also to bring rain. Like Di Peso, I (Ellis, 1968 ms. briefed for reading at the SAA meeting in Santa Fe and languishing since in press) would accept the Mexican mosaic mirrors of cut iron pyrite crystals which were traded into several Southwestern sites (Snaketown, Tempe, the Grewe Site, Valshni Village, and San Cayetano in southern Arizona, Pueblo Bonito in northwest New Mexico, and Casas Grandes in Chihuahua) as probable evidence of local existence of this cult. But I would suggest adding to that evidence the polished black jet "buttons", which could have been locally-made substitutes for such mirrors in the 10th to 12th century sites of Chaco Canyon and related areas in which they have appeared (probably jet from the fine deposit on Acoma land, with a pierced shank for attachment which does not duplicate but is very reminiscent of that in the back of the stone base of the pyrite mirrors). When new, these "buttons" similarly would have refracted light and reflected images and no more darkly or vaguely than the mirrors of pyrite mosaic.

Pertinent to our thinking is the tradition, more or less supported by archaeology, that the Keresan pueblos of Acoma and Laguna each derived a portion of their population from the Mesa Verde area. According to their mythology, the "Great Magician" who shook rain from his rattle, and hence kept the country around him green, had persuaded those ancestors to tarry there in his territory despite Mother Earth's initial instructions that they should move south-
ward. Over some years all went well for the peoples but finally she became so angered at their devotion to him rather than to herself that she took away his rain-making power. The Magician then "flew through the sky back to Mexico". At this point the people, almost dead from starvation and illness, and hence submissive and penitent but still quarreling as to which of the native cult societies (for changes had been introduced into religious matters) was primarily responsible for the debacle, reaffirmed their loyalty to Mother Earth. Abandoning their old homes, they started on the search for those to which she had given directions. It seems reasonable to surmise that the culprit of this tale was Tezcatlipoca.

It is quite clear that the Tezcatlipoca cult (perhaps with an involvement of that of his opponent, Quetzalcoatl) still is being celebrated each spring in the rites of the Tovahesh-Bataash-Alahoyish society complex of Jemez Pueblo (see Ellis, 1952; 1964; 1968) which are explained as honoring "the Great Magician". One has but to experience a Southwestern spring with its innumerable shifts from cold to warm and sun to clouds, all interspersed with a frenzy of high winds, to appreciate how appropriate a cult with emphasis on contrasts might appear at this season. The triply divided Jemez religious unit responsible for this Tezcatlipoca celebration is said to be approximately paralleled in the little known Kabina (Kapina) society of Keresan neighbors which concentrates on war and winds. Moreover, I am rather of the opinion that the dual moiety system of the Tanoans which contrasts summer, warmth, and agriculture with winter, cold, and hunting may have originated in implementation of the Tezcatlipoca cult during Pueblo III. And were the turkey burials in late (Pueblo IV) fill in early rooms at one corner of Sapawe in the Chama an evidence of ceremonial sacrifice as in Central America and Mexico in the Tezcatlipoca cult?

The Quetzalcoatl cult as such, according to Di Peso's hypothesis, penetrated the American Southwest in the 11th century, the great period of Chaco Canyon. Quetzalcoatl, said to have ruled as Sun
during the second of Mexico's mythological ages, was delineated as a kindly god, obviously born of the hopes of mankind. During the 10th century in Mexico, the ruler Topilzin Quetzalcoatl, who had added the name of that god to his own in becoming one of his priests (a custom reflected in Pueblo mythology and in the native titling of their religious officials), had attempted to spread the cult of his patron among the Toltec people when he took over their throne. In place of the blood required as a sacrifice to Tezcatlipoca if crops were to prosper, Quetzalcoatl received offerings of incense, flowers, foods, snakes, and butterflies. In A.D. 999 Topilzin gave up his throne and went into exile as the humiliated victim of a combination of the jealousy of Toltec Tezcatlipoca priests and military leaders and their fear of offending that temperamental deity. According to one legend, Topilzin died by fire and his spirit ascended into the heavens to be seen as the bright Morning Star. That star long has symbolized the more important of the Pueblo War Gods, a supernatural being closely associated with Sun and believed to have led the original people out from the underworld and then to have continued as their ever-reliable aid. Mexican legend similarly gives Quetzalcoatl a twin of lesser importance. The conical caps in the style of that described by Duran (Horcasitas and Heyden, 1971, p. 131) for the major Mexican image of Quetzalcoatl and characteristically worn by the War God images carved by Pueblo peoples should be remembered in controversies as to whether the Pueblo War God concept actually stems from the Quetzalcoatl or from the Tezcatlipoca cult. We have evidence of the importance of the Morning or Great Star during the period of Chaco culture in its inclusion in the combination of four symbols marking a sun shrine of the type Frank Cushing saw used for solar dating in 1880 or '81 (Cushing, 1967; Ellis, 1973).

Topilzin's acts as ruler included bringing into the Toltec populace some artisans and architects thought to have been descendants of his mother's conquered ancestors from Classic Period Mexico. A portion of these may have been organized into puchteca, that impor-
tant guild of distance-traders of whom we hear more in the later Aztec period. The deity favored by this outside group was Quetzalcoatl, and it is quite possible that trading activities may have included some missionary efforts.

One point which related to the Quetzalcoatl cult in the American Southwest is the fact that the Pueblos, like the people of Mexico, at first believed the incoming Spaniards to be a culture hero-leader and his followers who once had lived among them and had promised an eventual return (Ellis, Field Notes). This is but a re-run of the Mexican Quetzalcoatl legend of Topilzin's leaving his own people by means of a serpent raft on the ocean but promising to return four or five generations hence.

The hypothesized third religious intrusion into the Southwest is that of the Huitzilopochtli cult, placed by Di Peso in the 14th century, a hundred years after that cult became dominant in the late Post Classic period in Mexico. Huitzilopochtli was described as the offspring of Mother Earth (Coatlique) and pictured as a war and hunt god, deity of the day, but also as the young sun god, in which guise he was symbolized by the eagle. The Pueblo Sun cult depicting him as the male spirit of fertility, to be celebrated with eagle dances and use of eagle plumes in prayer offerings and other religious paraphernalia, unquestionably was of tremendous importance in the Southwest. Under the stress of national catastrophes such as drought and famine, mass sacrifices of human beings were made in Mexico in order to supply Huitzilopochtli and other gods with blood sufficient to propitiate their supposed anger and thus to attempt alleviation of man's distress (Peterson, 1962; Heyden, 1972). A number of legends fairly well authenticates the same thing having taken place under similar circumstances in the Southwest but on a very small scale.

Although the most obvious aura of Pueblo religion is one of Quetzalcoatl-type idealism and general good (such as described by Bunzel and others), all three of the cults have left distinct
traces in the Mogollon-Anasazi archaeology and ethnology of New Mexico. The problem with which we are concerned at the moment is the appearance of heavy religious acculturation, especially in relation to the Quetzalcoatl cult, not during the 11th century as expected, but 300 years later in the time of Pueblo IV fluorescence, A.D. 1350-1540.

These dates overlap those of the Mexican Late Post Classic or Aztec period (A.D. 1250-1521).

Though not the only source, Casas Grandes in northern Chihuahua was the nearest center from which Mexican cults could have diffused or been directly carried into the American Southwest. The culture of the Casas Grandes Valley in its early or Viejo period (A.D. 700±50 to A.D. 1060) approximated the small-village Mogollon culture of what now is southern New Mexico. Trade wares indicate that before the end of the period the Casas Grandes sites were commercially involved with peoples as far north as Santa Fe in New Mexico and the Little Colorado in Arizona, as well as with peoples nearer to them and as far south as Durango and Culiacan in Mexico. Whether such trade was handled on an individual basis or through organized puchteca is impossible to know.

At about A.D. 1060 a handful of Mesoamerican merchants, possibly from the Pacific coast, moved into the Casas Grandes Valley and ordered or persuaded local people to construct what really can be called a prehistoric city on the site of one of the older villages. The sophisticated outsiders introduced elaborate town planning, architecture which included pyramids, and rituals which apparently were based on observances in Mesoamerica. Their trade was widespread, including shell from the Gulf of California, scarlet macaws from Vera Cruz, obsidian from Durango, Mexico, copper work from West Mexico, green serpentine and turquoise from New Mexico, and other items from Arizona and Texas. This period is believed to have closed with social problems existent within the populace and finally an attack by outsiders who burned the city in or about A.D. 1350.

During the first part of the succeeding final or Tardio period (A.D. 1250-1521),
1350-1660) some of the survivors moved to small settlements along the fringes of the mountains, where their pottery duplicated that of the Medio period. Others, Di Peso suggests, quite possibly came up the Rio Grande Valley to join already established Pueblo groups. The principal trade routes of the Spanish period which brought parrots and their feathers to the Pueblos passed through Opataria west of Casas Grandes (Johnson, 1950, p. 46). Casas Grandes descendants now were too few and too poor for involvement in puchteca activities such as those of the Medio period. The fine turquoise of mines in the Cerrillos Hills 20 miles south of Santa Fe would have been reason enough for Mexican traders to deal that far north, as this commodity was of top value.

In considering possibilities for introduction of the traits which have caught our attention, we should think in terms of four possibilities. (1) Were these brought into the Upper Rio Grande at the time they appear, their carriers being individual traders going to or from Casas Grandes? (2) Did the introductions result from contact with Mexican traders from farther south? Or (3) did the traits and the complexes in which the traits functioned arrive earlier but become emphasized only when specific needs appropriate to their use called them to the fore? Finally (4), could a group of displaced Casas Grandians have merged with our northern Tewas in the late 14th or the 15th century?

Our first set of puzzles impinges on the cult of Quetzalcoatl. Among the somewhat carelessly applied geometric designs on the 15th century pottery of the Upper Rio Grande, primarily Biscuit ware, we find one overwhelmingly popular motif, the avanyu, or awanyu, a conventionalization of the plumed serpent. Although Charlie Steen of the National Park Service discovered a fine painting of this serpent about 2 1/2 ft. long beneath a painted corn plant on the interior wall of a two story Pueblo III cliff dwelling in the McElmo drainage of the Four Corners area (personal communication) with associated Mesa Verde Black-on-white sherds
(ca. A.D. 1000-1300), nothing related to this deity presently is known to have appeared in Rio Grande sites dating before Pueblo IV. We can be even more specific. The avanyu never appears on Wiyo Black-on-white pottery used by the Tewa between A.D. 1300 and 1400 but occasionally is seen on Biscuit A, its immediate successor, and is strong on Biscuit B. The dating for the Biscuits, which overlapped each other, is given as A.D. 1375 to 1550, with greatest abundance between 1450 and 1500 and ultimate extension to 1550. Introduction of use of the avanyu design here thus can be pinpointed as between A.D. 1425 and 1450.

Kidder (Kidder and Shepard, 1936, Fig. 117, pp. 177, 181-182) states that the avanyu, which he refers to as the capitan, are found in decorations of Glaze IV (A.D. 1425-1575) and Glaze V (A.D. 1425 or 1500-1700) bowls from Pecos, with possible proto-types in Glaze III (A.D. 1425-1500 or 1550). His illustration, Fig. 172 actually looks like a serpent. Speaking specifically for Glaze V, Kidder states (1936, pp. 233-237, Figs. 202-203) that the capitans constitute probably the second most common form of decoration on the exteriors of bowls of this classification. Features (eyes, mouth) commonly are indicated by short dash-lines on the heads. These dates, paralleling those for the Tewa Biscuit wares showing the same design though with slightly different details, can be taken also for the Galisteo Basin where the Glaze wares were produced by the southern Tewa or Tano people. Thus one would place the same date for introduction of the avanyu design and the associated cult among the Tano as among their close relatives, the Tewa.

This design commonly consists of a long body on one end of which is the so-called plume, a stalk supporting a set of five tall triangles graduated in height from sides to center. At the opposite end the figure may terminate in a bifurcation which looks like a fish tail and I believe was intended to be just that. The body almost invariably is composed of a series of rectangular panels.
decorated with repeated or alternated simple geometric motifs which base their arrangement on a primary diagonal division. Trained in conventionalization of designs, the potters had merely modified a simple band into the serpent body and did not even hesitate in sometimes placing the plume at each end or even in a center rectangle as well as at the end.

How do we know this conventionalized concept actually represents the plumed serpent?

The earliest data is found in Hewett's doctoral dissertation in French (1908, pp. 91-92, Pl. XV, and Fig. 20). Although never an archaeologist of the intensive type which developed later, the young Hewett had been skimming the cream on the Pajarito Plateau. He managed an easy relationship with the Pueblo Indians he employed and who at that time were less secretive and more knowledgeable about details of their native culture than later. Hewett, his colleague Kenneth Chapman, and Bandelier, a more systematic scholar whose data Hewett never hesitated to use, all questioned the Upper Rio Grande native peoples whose immediate ancestors were the late prehistoric peoples of the same area. The avanyu, which predominates in the symbolism of the entire Pajarito Plateau, explains Hewett, is found in a multitude of forms.

Awanyu was the best known deity of the pantheon of the ancient tribes of the Pajarito. He was the precursor of the Plumed Serpent of the Pueblo Indians of today, who treasure his name. This last deity appeared comparatively recently in the Rio Grande Valley, not being known earlier than four or five centuries ago. The first [avanyu] is the more archaic. His symbol ceased to be used after abandonment of the great structures of the Pajarito Plateau.

Awanyu was the guardian of springs and of water courses, to control which he made his rounds. He could make them
flow or could dry them out at will. Water was the most important element to the cliff dwellers. If water was abundant they lived an easy and happy life; if it decreased, they suffered or died of thirst and famine. It thus was of utmost importance to retain the favor of Awanyu. If they offended him, he went away, the springs dried up, and in consequence they had to abandon their great pueblos. Awanyu, in leaving the earth, threw himself across the sky. Thus originated the Milky Way. We have found a striking variant of this story among the Aztecs.

Hewett certainly had the gist of the matter. The avanyu was the early form of the plumed serpent, a very important deity to a people concerned with water, and by chance (for pottery types were neither carefully classified nor dated for another 25 or more years) his placing the avanyu form 500 years earlier was amazingly correct. He goes on to explain that the figure topped by the vertical black triangles is the plume of the deity and may be used without the entire figure. The painting of a band of geometric panels across the center of a bowl with a plume-topped serpent body coming out from it on either side symbolized the flight of that deity across the sky. This interpretation by native informants appears even more acceptable when we recall that Fewkes (1919, pp. 242-248) obtained the same explanation of a conventionalized central "sky-band" when working with Hopi potters on their own Pueblo IV pottery designs.

In 1918, Mrs. Wilson, who was familiar with the realistic horned serpent of her period, repudiated the concept of the avanyu as a symbol of the plumed serpent and proposed that it was, instead, a "hand sign". Tewas working at archaeological excavations for Jeancon, assured him that it certainly was not a hand sign but they were skeptical about its symbolizing a serpent (Amsden, 1931, p. 24). Our guess is that those workmen were too young to realize the transitions in depiction which had occurred through the years. Though
the plumed serpent was relatively rare among Hopi designs, Fewkes (1898, Pl. XXIX e and Figs. 266-269; 1919, Figs. 13, 21-23) illustrates several, conventionalized but still closer to a realistic form than those on the Tewa Biscuit Ware. He also includes one Hopi serpent with horn rather than the feather crest. What had happened there and even more among the Tewa was dropping the crest and simply drawing its stem out to a point which thus became a horn. Chapman (1970, p. 254 and Pl. 171) illustrates the Tewa serpent both with the horn alone and with the horn plus the crest as he found them in designs which Julian Martinez drew onto the polished black vessels made by the famous Maria, his wife, in the 1920s or before. Fewkes (1923, p. 33, Fig. 41) reproduces the drawing from the interior of a Mimbres Black-on-white bowl of the 13th century which shows a plumed serpent, his tail forked, his feather crest supported by a horn-like stalk, his body area filled in with geometric designs typical of the Mimbres area, four short legs protruding from his underside, and a fin standing out on his dorsal side near the tail.

Kidder (1916, Fig. 8) shows a serpent design from a Ramos Polychrome vessel made in Casas Grandes, Chihuahua. Here is the bifurcated tail, the body area filled in with a simple repeated geometric design, and a very conventionalized plume which tips forward like that of a quail. If solidly filled in, it would have appeared to be a horn. Kidder shows another more conventionalized serpent of the same type with a "plume" which is even more horn-like (Ibid., Fig. 7).

The "plumed serpent" designs which appear rather frequently in the petroglyph groups associated with some Pueblo IV sites such as San Cristobal actually are horned serpents, with the horn curving toward the front (Schaafsma, 1972). I was told by a Keresan elder that such petroglyph centers were shrines to which Pueblo men of some religious unit repaired periodically to pray and leave offerings for deities represented.
In Mexico, the plumed serpent was the symbol of Quetzalcoatl, and Quetzalcoatl was specifically the patron of "earth waters". As such he was of importance to farmers. Today, for example, when the cacique of Jemez Pueblo calls the annually appointed officers together for instructions in their duties for the year, he mentions the necessity of caring for Mother Earth, the fields in four directions, the animals, the people, all land within the pueblo boundary -- and the irrigation ditches which he refers to as "water serpents".

How should we picture northern New Mexico in the 15th century? Hard times growing harder; Tewa and other farmers finding it impossible to feed their families on what could be raised by dry farming; and Gallina people (quite certainly Jemez ancestors) in the highlands leaving a part of each family to watch crops which ever more frequently withered and died in what originally had been good bottomlands. The younger men and women spent their summers in the higher altitudes where Ghost Ranch archaeological units under my direction have been studying their hunting-gathering shelters at 8200 ft., 8500 ft., and even over 10,000 ft. There berries and other wild foods could be gathered and dried; there the men could hunt deer and elk and dry meat to carry back to home villages for a major supplement to the dwindling corn.

Where stream water was available a nucleus pueblo was likely to find itself growing to unbelievable proportions by the accretion of population from villages being abandoned. Sapawe, near El Rito in the Chama drainage, came to have seven plazas which covered 26 acres. Dates and the traceable continuation of long house walls certify to addition of large units of construction at one time. Ditches four miles long brought river water from El Rito Creek to fields above and below the pueblo. Is it surprising that many of the food bowls found in our excavations there were decorated with an avanyu, the plumed serpent?

The people in the bottomlands and along the smaller tributaries of the Upper Rio Grande who drew plumed serpents into their Biscuit
Ware vessels in the great majority if not all cases were irrigators. Whether Pecos Pueblo irrigated from the Pecos River would be difficult to discover inasmuch as later farmers have worked the valley lands for miles, but it would seem peculiar if this were not the case. But we know from palynology that some of the lesser streams became so undependable that certain peoples who had made one move later were forced into a second. An initial exodus from Sapawe probably occurred in the extremely dry years of 1516 and '17 when there should have been no water in El Rito Creek and little, if any, in the Chama itself. The major exodus to the Rio Grande bottoms we would place during the less intense but long continuous dry spell between 1579 and 1592, only two years of which (1588 and '89) saw normal precipitation. If we may judge from tradition, the people settled in the suburb of Yunque across the river from the main portion of San Juan Pueblo. Deserted plazas and houses at Sapawe were used for burials by those who remained, and piles of metates too heavy to carry any distance were stacked under one of the porticos of Plaza A or, with the long sandstone sides of metate bins, were laid as lining for a trench intended to drain the plaza (Obviously, moisture was not entirely absent!).

The last few hangers-on could have persisted until the first years of the 1600s, for one bone from Sapawe debris has been classified as sheep and one as cow, indications of contact with the first Spanish settlers who themselves had made their residence at San Juan on the Rio Grande. All the other Pueblo IV sites on the Chama were abandoned in this same time stretch. A pendant made from a piece of metal which may have been the clasp of a heavy book (Ellis, field notes) indicates that at least a few families remained in the pueblo of Tsama, as in Sapawe, into the first years of the Spanish period. Those ancestors of the Santa Clara and San Ildefonso people who had been able to subsist by dry farming on the Pajarito Plateau had to give up and move down to experiment with ditch irrigation in Santa Clara Canyon or to join relatives in the
nucleus of the present pueblo who were taking water from the Rio Grande for ditch irrigation of a long strip of valley land. San Ildefonso ancestors from the mesa joined their relatives where three smaller Tewa pueblos had amalgamated at the present site of San Ildefonso, their irrigation ditches running off the lower Tesuque River and off the Rio Grande. Ditches were strung down the Nambe Valley where the populace from several of the Sangre de Cristo foothill villages had combined forces, though some had moved over to San Juan Pueblo. Ditches paralleled the Tesuque River and took off from Pojoaque and even lower Chama headings (Ellis, Water claim field notes for the six Tewa pueblos).

Irrigation had been one of the big features of life at Casas Grandes in Chihuahua, but the Southwestern Pueblos probably picked up the concept from their nearer neighbors, the Hohokam, long before Pueblo IV and used it minimally. Could the plumed serpent, which was of such importance in Casas Grandes, have been known by the Tewa since the 13th or 14th century but have reached a new importance when irrigation became a requirement for existence in the Upper Rio Grande?

One other little problem enters our thinking at this point. Potsuwi'i Incised (A.D. 1425-1525) appeared as an interesting pottery type with no direct ancestor (except for local paste) in the Tewa area just when the avanyu became popular on Biscuit Ware. Potsuwi'i Incised is markedly similar to the contemporary Playas Red of the Casas Grandes country in type of incised designs and in overall shape and appearance, though Playas Red carries a narrow band of red slip below the incised design and sometimes at the lip. Our find of the beak of a scarlet macaw in the 17th century fill of a room in old Pojoaque Pueblo (dating by pottery types) proves continuance of trade from the south, at least on a small scale. But who did the footwork? Did individual traders, whether Pueblo males or males from Mexico, describe Playas Red Incised pottery and plumed serpent designs from Ramos Polychrome so well that 15th century Tewa women could produce
modifications of both? We do know that 20th century male visitors to the Rio Grande thus carried home the technique of blackening pottery by firing it in a reduced atmosphere so that some of this ware now is being made in the Hopi-Tewa village of Hano in northern Arizona.

But we have not done with serpent cults. Among the Pueblo IV petroglyphs of the Upper Rio Grande is found a serpent design with zigzag or undulating body and a round blob head from which a horn curves outward on each side. The same serpents appear occasionally on Biscuit or Biscuit-Sankawi vessels, and our attention was caught by their presence on several of the small (3 to 5 in. diameter) and shallow prayer meal bowls, usually with four depressions pressed into the lip to symbolize the cardinal directions, found in collapsed rooms of Sankawe's Plaza A. We know from the historic Pueblos that prayer meal bowls held corn meal to be scattered as an offering to the sun each morning when it appeared over the horizon. Circular sun shrines have been found near several sites. Plaza A, as we have said, was the last section of the great pueblo to be abandoned and the fact that so much was left in some of the houses suggests that the owners probably had closed their homes with the sandstone hatchway covers we found and had expected to return a little later -- when times were better. A few of these small bowls are decorated with geometric designs but most show dragonflies, butterflies, terraced clouds, lightning, serpents, the Great or Morning star, birds, and plants. On the interior of the most interesting example (10/136) are two of the two horned snakes, together with typical Pueblo versions of the three stars of Orion's belt, the Pleiades, the Morning star, and a solid circle which may be either sun or moon. On the exterior are two more of the same serpents. The butterflies, symbols of Quetzalcoatl, also appear on some Biscuit ware vessels which bear the plumed serpent design. The celestial bodies are those which the Pueblos still consider the most important, all symbolizing deities. But who is the delicate two-horned snake?
Quite certainly not Quetzalcoatl.

In the Rio Grande, as I was told by an elderly ceremonialist, this symbol long has been used for Earth Mother in her position as mother of the Koshare. Their father, of course, is Sun. The zigzag serpent with two horns still appears on slat altars of the Pueblo Koshare society, on some Zuni slat altars, on headdresses used in the fall harvest ceremonial at Isleta, and no doubt elsewhere. It hardly can be accidental that the Huichol of Nayarit in West Mexico, who share so many traits with the Southwestern Pueblos, also have symbolized "the Mother of the Gods and Vegetation" by the two-horned serpent. This symbol is seen in the two-horned bamboo staffs on which this aged deity must lean and which are made as her offerings (Lumholtz, 1902, pp. 160-165). Nayarit, of course, was one of the areas from which trade came into north Mexico and the American Southwest. The great Nahuatl Earth Mother and Mother of the gods was depicted in a serpent skirt. Our little two-horned snake is her local representative.

And the Koshare themselves? This society, probably the most important in the Tewa religious complex and claimed to be their oldest, is not merely a clown organization. According to mythology, the Koshare came out from the underworld not long after the Pueblo ancestors, their function being to amuse the people so that good humor could support good health. As children of Mother Earth and Sun, however, they carry a primary duty of concentration on fertility. They also are important in overall influence and in Pueblo politics.

No one can say precisely when this cult of "Sons of the Sun" began, but we can state that a Koshare is depicted on a worn Biscuit A vessel (10/163) which was found in one of the rooms of Plaza A in Sapawe. Each of the three design areas of the interior show a solid black stepped rain cloud. From one cloud zigzag lines of lightning run upward. One panel is broken. In the third we see a head rising from behind the cloud figure, his long neck crossed with the horizontal black lines characteristic of Koshare make-up. A
feather stands high from the crown of his head and two horn-like projections with bifurcated tips flare outward, reminiscent of the two corn husk-tipped "pokes" into which a Koshare's hair should be arranged. The short lines around the face seem to be sun-rays.

This vessel probably can be dated in the early 15th century. Other evidence of the Koshare having participated in Pueblo religion during Pueblo IV consists of drawings of a black and white striped arm with whitened hand on the walls of Arrow Grotto, the deep inner cave sanctum of Feather Cave (Ellis and Hammach, 1968) in the Rio Bonito district six miles from Capitan in Lincoln County, New Mexico. Kidder illustrates a surprisingly similar design from the interior of a Glaze I Yellow bowl (Kidder and Shepard, 1936, Fig. 51) from Pecos. The date is the same as that from Sapawe. Concentric circle sun symbols of the same period also are found on walls of this cave and in Pueblo IV petroglyph clusters on the Pajarito Plateau and Upper Rio Grande.

In summarizing the cults which we can spot from material culture remains in excavated Pueblo IV Chama sites such as Sapawe, Tsama, and the ruins of Poshuouinge which Jeancon (1923) uncovered below Abiquiu, we would have to add to those we have discussed the cult of Old Fire God who received offerings of tubular smoking pipes and/or of flakes of obsidian and other flinty stone in the deep white ash-filled pit shrine found beneath the slab-lined fire-box in a number of the "small" or religious society kivas of Sapawe and of Tsama. In numbers these pipes ran from one to 47. It would have been impossible to place them in the pit shrine after it had been sealed by the well finished slab-lined firepit sunken into the kiva floor directly above the shrine pit. The Old Fire God, Huehuetotl or Xiutecuhtli "who dwells in the navel of fire", as Leon-Portilla (1963, pp. 33, 90) carefully explains, was subsumed into the overall concept which the Aztecs developed for their supreme deity, Ometeotl, the multipresent lord of duality, the type of deity which tops all Pueblo pantheons. In fact, Xiutecuhtli, the lord of fire and of
time, is said to be "merely another name for Ometeotl". The pit shrines for the Fire god in the kivas of Pueblo IV, then, may have related to a theological concept broader than that pertaining to fire alone, and we could wish that other Southwestern archaeologists had explored under kiva fireplaces so that more of the range of this cult in time and space were known. Underground shrines for the Fire god have been noted for the prehistoric Chalchihuites in Durango, Mexico, by the Kelleys and in the historic culture of Huicholes in Nayarit, West Mexico, by Lumholtz and by Weigand. Both cultures show many similarities to those of the American Southwest.

On the basis of our data we know that the major cult of Huitzilopochtli, the sun god, complete with what we might call the sub-cult of his sons, the Koshare, was present in Pueblo IV upper Rio Grande ancestral Tewa Pueblos between A.D. 1400 and 1600. The cult of Mother Earth, perhaps the earliest in the Southwest, we knew was existent from the evidence of sipapus in some kivas and the drawings of two-horned snakes. There is some evidence for the cult of Tezcatlipoca in representation of constellations from the night sky, and mythological material from living Pueblos suggests the presence of that cult before close contact with native Mexican cultures was cut off.

The cult of Quetzalcoatl is seen in petroglyphs and in pottery designs. The cults of Quetzalcoatl and that of the Koshares and their sun father are those for which we have no antecedent evidence, except in the one painting of the plumed serpent in Four Corners country. Could either or both have been introduced by a small movement of displaced persons from Casas Grandes who joined the Tewa? The timing is right, the new Potsiwi'i Incised is suggestive, but all specific evidence is lacking. Could the concept of the one or the other of these deities have been imported by traders from farther south in Mexico? Yes, but the parallels between plumed serpent designs of Casas Grandes pottery and those on the ancestral Tewa Biscuit wares are sufficient to make a strong point for at least an
idea-contact in design, even if knowledge of the cult was existent at an earlier time. If some of the individual remaining Casas Grandes people whose women still were making Ramos Polychrome continued to trade on their own small basis, Cerrillos turquoise still could have been moving southward and a few macaws northward 50 years after the flaming fall of their great city. Whatever the source of the plumed serpent design, the new Tewa settlement pattern of large pueblos located on permanent water courses and as dependent on irrigation ditches as their people were on their own blood vessels sparked a tremendous need for a helpful supernatural being whose specialty was earth waters. Today's wage earners may have less need for this deity, but he has not been forgotten by their elders.

The University of New Mexico
Albuquerque, N. M.
BIBLIOGRAPHY

Amsden, Charles

Chapman, Kenneth M.
1970 The Pottery of San Ildefonso Pueblo. School of American Research Monograph Series, No. 29, Santa Fe.

Cushing, Frank H.

Di Peso, Charles C.

Dozier, Edward P.

Ellis, Florence Hawley
1964 A Reconstruction of the Basic Pattern of Social Organization, with Comparisons to other Tanoan Social Structures. University of New Mexico Publications in Anthropology, No. 11, Albuquerque.


n.d. Field Notes on Zia, Santa Ana, and San Juan.


Ellis, Florence H., and Laurens Hammach


Fewkes, J. Walter


1923 *Designs on Prehistoric Pottery from the Mimbres Valley, New Mexico*. Smithsonian Miscellaneous Collections, vol. 74, no. 6, Washington.

Hewett, E. L.


Heyden, Doris


Horcasitas, Fernando, and Doris Heyden (Translators and Editors)


Jeacon, J.A.

Johnson, Jean B.

Kidder, A. V.

Leon-Portilla, Miguel

Lumholtz, Carl
1902  Unknown Mexico, vol. II. New York.

Marriat, Alice

Peterson, Frederick

Sahagun, Fray Bernardino de (A.O. Anderson and C. E. Dibble, eds.)
1950, 1952  Florentine Codex, Books, I, III. School of American Research and University of Utah, Santa Fe.

Schaafsma, Polly

Wilson, Lucy L. W.
SOME PICTOGRAPHS FROM NORTHWESTERN CHIHUAHUA

ARNOLD M. WITHERS

In trying to submit a paper of some length as a memorial to Marjorie Lambert and her considerable interests in the Southwest and its Mexican connections, I found myself becoming embroiled in a book of length and controversy. The brief way to avoid this is to leave the interpretations to her better informed colleagues.

One small aspect of this survey concerns two panels of rock art. These are located on the Piedras Verdes River in northwestern Chihuahua, Mexico. Both are located on a massive rock fallen from the towering cliff to the south side of the canyon bottom on the ranch of Mr. Albert Whetten. This locality is about 17 miles northwest of Colonia Juarez and about 8 miles north of Zaragoza.

When viewing these pictographs, I found myself greatly intrigued in almost everything known from Canada to Durango, Mexico. Nevertheless, I feel these pictographs are worth illustrating.

The largest panel (Fig. 1) is dominated by the figure of an avanyu or plumed serpent (Di Peso, 1974, pp. 552-553; Cosgrove, 1947, Fig. 44; Sims, 1950, Pls. 4, 8).

The human figures (Fig. 2) may be compared to those illustrated with horned headdresses in New Mexico (Sims, 1950; Cosgrove, 1947). They possibly might be classified with Shaafsma's Type 4 (1963, p. 28), although her area is remote.

Di Peso (1974, p. 340) would place these pictographs probably in the Medio Period of the Casas Grandes Culture, A.D. 1060-1205. This would be on the basis of their apparent relationship with the trincheras, the boulder villages, and the adobe pueblos in the immediate area of the Piedras Verdes Canyon.

The University of Denver
Denver, Colorado
BIBLIOGRAPHY

Cosgrove, C. B.

Di Peso, Charles C.

Schaafsma, Polly

Sims, Agnes C.
1950  San Cristobal Petroglyphs. Southwest Editions, Santa Fe.
In the early vanguard of Spanish settlers moving into the Valley of Mexico to commence erection of a colonial capital were artisans schooled in the complex craft of making ceramics. Drafting Indian helpers, who themselves had a long appreciation for earthenware, they at once set about searching out suitable deposits of potting clays, minerals for glazes and colorants and sodium beds for massicot ingredients; building two chambered updraft kilns; making a few simple hand tools of curved scraps of iron or sharply pointed cane; shaping deep pits for soaking and cleaning raw clay and molding broad-mouthed vats for glaze solutions and decorating pigments; and building rough scaffolding to harness beasts to grinding stones. No doubt these Spaniards were quite oblivious to the fact that they were diffusionary agents in the transfer, to a new hemisphere and what was to be a new racial strain, of centuries of accumulated technical knowledge, most lately passed to them by the Arabs, and before that, by the Visigoths and the Romans. These colonial artisans, thoroughly ingrained in the concept of pottery, felt that a Spanish home without ceramic drain pipes or downspouts and a dozen or more all purpose utilitarian ceramic vessels was as incomplete as a Spanish home without a roof, preferably one covered with earthenware tile. So in addition to specialized ceramics, such as enormous baptismal fonts, or the numerous shipping casks which were coming to them from Spain and which served many secondary household and construction purposes, they responded to an urge for additional pots. They began forming a wide variety of jarros, tinajas, and cazuelas such as they had known in Spain -- unglazed or lead glazed, decorated or undecorated. These were vessels that came to be produced throughout all Spanish occupied areas in Nueva España wherever population
was sufficient. Furthermore, they were so functionally satisfactory that changes were few for the entire colonial period. Their fragments often comprise the largest percentage of Iberian ceramics recovered from colonial sites, but their study thus far has been cursory. Indian-made pottery in Spanish occupied northern borderlands supplemented or replaced this category of wares.

The tin-glazed table ware produced by these same Spanish craftsmen presently has become of more interest to culture historians because numerous stylistic modifications through time permit the placement of such ceramic data into a broad evolutionary and temporal frame of reference. Mexican maiolists began their enterprise by reproducing known early 16th century Sevillian types. None of these wares yet have been recovered outside of the Valley of Mexico, but they are important in placing the initiation of the local industry at a comparable horizon (Lister and Lister, 1975, p. 31). About the 1560s an influx of Genoese potters into Sevilla brought about an abrupt change in potting techniques, glaze and clay preparation, decorative conventions, and firing methods which were quickly reflected in both Sevillian works and those of the derivative Mexican industry, which might well still have been confined to Mexico City. Two complexes dominate this transitional period, one with a blue ground and one with a white ground, individual types for archaeological convenience being called Caparra Blue, Ichtucknee Blue-on-blue, San Luis Blue-on-white, and Fig Springs Polychrome, the latter also with a blue-on-white variation. (All type names mentioned herein are taken from Goggin, 1968, with the exception of San Elizario: Gerald, 1968). Design content, colors, and layout of these types suggest a provincialization of Hispano-Italianate ceramic art as passed to Nueva España via Sevilla.

By the last two decades of the 16th century, a maiolica industry is believed to have been operating at Puebla, Mexico, which soon became the leading production center. There the 17th century witnessed the peak developments of the Mexican maiolica continuum.
It was a time of experimentation and growing control of the medium which resulted in the finest vessels, in terms of potting and decorative skills, to be made by Mexican maiolists. With confidence achieved through mastery of the manual and chemical aspects of pottery making, there also came a unique hybridization of artistic concepts drawn from Occident and Orient, to be reinterpreted by an artesanado forming from the blend of Spaniard and Indian. Most styles which were to flower in the following 18th century, usually considered the Golden Age of poblano ceramics, actually had their beginnings in this yeasty 17th century atmosphere. In fact, it is likely that the best pieces may have preceded the establishment of the guild corporations which were imposed upon potters at Puebla and Mexico City in the last half of the 17th century (Cervantes, 1939, vol. 1, pp. 22-25, 28-29; Lorenzot, 1920, pp. 173-175; Toussaint, 1967, p. 264).

With that guild structure came such strict, minute regulation of all facets of the craft, even to setting the exact sizes of certain forms, that creativity or initiative necessary for further advancement were curbed, even strangled. Already by the mid-17th century, artisans informally had settled into traditional groupings of masters, journeyman, and apprentices. They also, through their own innate aptitudes, had become specialized, some preferring to work with finer wares and some content to turn out simple cook pots. These various strata were more inflexibly structured by the guild. Mexican maiolists had progressed to the point of producing at least three grades of decorated maiolica (refino, fino, and entrefino), in addition to plain white (común), and had focused primarily upon three principal decorative modes. These categories of grades and styles likewise were formally described by the new ordinances, which undoubtedly were founded upon custom already prevailing. Potters early in the 17th century had returned to a clay body which fired to a light color, though for large objects they realized the necessity for stronger red-burning clays. Decorative pigments then in
use were more highly refined, perhaps imported. Vessel walls were greatly thinned. Forms were more diverse, ranging from very small to very large. And for the first time, many pieces of hollow ware were made for display only, the beginning of conspicuous consumption in ceramics which was to result in baroque manifestations of the next century. However, it was the small vessel forms suitable for altar, table, or bedroom which were shipped to the frontiers.

One of the leading styles of this era was Abc Polychrome, a multicolored ware with figural and religious passages decidedly reminiscent of contemporary compendiario of Faenza. Another type, Puebla Polychrome, took its lace theme from Spanish models, but local tastes called for blue, yellow, or green gimp lines and a bold all-over patterning which were original to Mexico. Both these types frequently bear the same maker's marks, indicating their origin in identical hands. Castillo Polychrome, the last of the big three of the 17th century, was a local conception of Oriental themes done in two shades of blue defined in black. Their adoption was an inevitable result of the flood of Chinese porcelains then coming into the viceroyalty through Manila galleon activity. None of the above decorative styles were mutually exclusive, a fact which should be remembered by archaeologists categorizing sherd lots.

Three major style experimentations also beginning late in the 17th century have been segregated by researchers into types called Puebla, Huejotzingo, and San Agustín blue-on-whites, all of which developed further in the next century. For lesser wares, artisans confined the colors to copper green, iron brown or orange, and antimony yellow applied in casual floral or geometric conventionalizations recalling in color, if not in pattern, some Spanish models. Ceramic craftsmen of this century also turned to glazed earthenware sculptures, most of which were Renaissance religious or cherub figures which might have come right out of contemporary Italian or Spanish workshops. Tiles by the thousands emerged from 17th century Mexican kilns, bearing a happy gamut of Oriental and
European motifs. To date, no Mexican or Spanish tiles of this or the 18th century have been identified in the northern borderlands.

As the 18th century unfolded, a passion for white ground hollow wares decorated in blues engulfed the colonial buying public. This bias, added to restrictive craft ordinances and catholicity typical of Spanish attitude, for at least 75 years brought about a nearly complete concentration upon that palette, often with added detailing in fine lines of black. Nevertheless, the previous century of assimilation of diverse cultural forces produced an exotic ceramic repertoire in which indigenous ebullescence delighted, most fully expressed when polychrome figures were combined with usual blue decorations. This mixing of vougues again give pause when classifying sherd lots. Also although individual motifs were endlessly re-worked, a few fino vessels emerged exactly alike, a situation which has made it difficult to sort the mass of 18th century fino blue-on-white into smaller, perhaps more meaningful, groupings. The variety of shapes of fino grade wares multiplied and the use of maiolica tiles expanded as life styles enriched, but such ceramics remained near the sophisticated heart of the viceroyalty and did not get to the outlying areas or frontiers.

Meanwhile, the 18th century also was witnessing the greatest expansion of Hispanicized population, both internally in Nueva España and externally along its northern borders. This promoted mass production of tin-glazed service ceramics, both entrefino and común, which were distributed to all sectors of the realm and areas linked to it through trade. For the first time they came in sets or lots of specific forms decorated in prescribed ways and sold by the dozen or even the gross. As obvious production pieces, their decoration was not only less elaborate but very repetitious, making it easier now to separate out stylistic types. At Puebla, decorative work remained well done, even though firing treatment grew perfunctory without use of saggars and with cockspur blemishes unobliterated. Green decorations of exactly the same content as those
executed in blue, and others drawn in either an impure cobalt or a copper, which in oxidation fired light blue rather than usual green due to an alkaline base glaze ingredient, were acceptable for these types. At Mexico City clay bodies reddened, glaze thinned, painting became careless, and green decorations appeared routinely. This decline in standards and workmanship followed a disintegration of guild control and the industry itself, decreasing markets caused by bad economic conditions in Mexico, and a rising influx of English industrial ceramics. Perhaps in a valiant effort to revitalize the industry, toward the last quarter of the century, a new blue aperlado ground was introduced in Puebla and attention turned once more to bright polychromy. All leading late styles drew their design inventories from earlier phases of the Mexican tradition but revamped them into new formats (Lister and Lister, 1975, p. 41).

The places of manufacture of Mexican colonial maiolica appear limited to Puebla and Mexico City, this conclusion based upon documents, oral history, and surviving artifacts. Industries mentioned elsewhere have not yet been proven to have made maiolica during the Spanish period. Assuming, then, that most, if not all, colonial maiolicas, other than identified European imports, were products of these two places, ordering them into a logical evolutionary sequence through time has been considered almost entirely upon stylistic evidence buttressed upon known historical developments outside of Mexico. This is because to the present time there have been a few stratigraphically controlled archaeological excavations of sites in central Mexico occupied from the 16th through 18th centuries. Hence, in the attempt to position in time the manufacture of particular types and so give cultural historians useful horizon markers, it remains necessary to turn to areas studied archaeologically where Mexican wares went as trade goods. The northern frontier is one such region.

The accompanying chart (at end of article) of the more significant reported occurrences of maiolica along the northern borderlands
affords a generalized idea of the spread of this pottery at different periods, but first, several observations are in order. An arbitrary selection was made of a dozen most easily recognized types, ignoring lesser modes and suggested variations. One must also take into account the personal biases of those who originally classified the ceramic materials and from what background information they drew their conclusions. Thirty years ago it was commonplace in field reports to call maiolica and both porcelain and Spanish, neither of which was technically correct. Further, an occurrence as noted here has no relationship to quantity of materials, which may be a single fragment, several hundred sherds, or even a restorable vessel. Also many of the finds have come from surface gleanings, others from excavations. In addition to heavier occupation of certain regions during Spanish times, there has been more archaeological work in some areas than in others, thus distorting a simple record such as this. Kinds of sites are varied, and hence it might be thought that kinds of recovered materials are varied.

For example, a presidio with a dozen families, an isolated capilla with a solitary friar, a seat of government with a corps of officials, a port facility advantageously astride a trade network, or a corral next to a tiny ranchería cannot, for most purposes, be equated equally. However, all maiolica from northern frontier localities is of the same sort, and it is all Mexican. No Spanish or Italian examples are known, although such ceramics were imported in relatively small quantity to Mexico City. Chinese porcelain also has been recovered in all northern zones. The maiolica was essentially domestic service ware, not the finest made in Mexico but also not the poorest. No pieces that can be called wasters are seen in the north, even though such rejects were sold at a reduced rate. However, the prevailing small size of sherds must be taken into consideration. There are no large display objects, no sculptures, no tile. A few fino examples from the late 18th century are noted, but, with the exception of several jars in California, these invariably
are small pieces. The difficulties of shipment, whether by land or sea, as well as price, must have been a selective factor. Furthermore, all of the northern frontier sectors, with the exception of New Mexico, experienced their greatest development during the last half of the 18th century, when the more elaborate ceramics were no longer customarily being made and when the industry as a whole was beginning to fade. The presence and kind of maiolica along parts of the north coincides well with historical fact.

I. CHIHUAHUA, NEW MEXICO, NORTH CENTRAL ARIZONA. During the course of the 16th century, Spaniards gradually inched up the meseta central northward from the Valley of Mexico. By 1575 they were established in southern Chihuahua, and during the next century spread into the sierra to erect missions and open a few mines.

Meanwhile, although during the same period there were several entradas into the area to become New Mexico, it was not until the end of the 16th century that a colonizing movement out of Chihuahua brought Spanish settlers to the northern Rio Grande valley. Excavations at their first settlement near San Juan Pueblo show that with them came a few pieces of tin-glazed pottery. To have bothered with such bulky fragile goods in this first colonizing probe into the northernmost wilderness underscores Spanish reliance upon ceramics. Throughout the 17th century, a trickle of such wares continued to be received in the north, mostly as part of the friary supplies dispatched to churches being built from the Hopi mesas in the west to Gran Quivira and Pecos in the east. Known inventories indicate one box of lona del Puebla supposedly was sent to each mission every three years (Montgomery, Smith, and Brew, 1949, p. 207). To date, excavation in many of these mission ruins have produced only a few sherds, seldom more than a handful at any one site and all of uniformly small size, suggesting that the ideal quota of maiolica for the ecclesiastical establishments was not met.

The settlers themselves were eeking out a primitive existence,
unable to pay for quantities of maiolica even if they had been available. Expectedly, the greatest number of fragments of tin-glazed vessels has been found in the debris of the old seat of government in Santa Fe (Snow, 1974, pp. 10, 17). Farther south, in 1660, a convent was erected at Casas Grandes, Chihuahua, closing part of the gap between central Nueva Viscaya and New Mexico. Though it lay west of the camino real to the north, excavations there show a similarly small number of the same maiolica types as are found up the Rio Grande (Di Peso, 1974, vol. 3, pp. 947-949). This entire province was remote, and the road to it was very long and fraught with danger. Maiolica remained a luxury.

Twenty years later the Pueblos rose up to drive the Spaniards from New Mexico back to the area of Paso del Norte. Many churches and haciendas were profaned and/or destroyed during the subsequent dozen years. This unfortunate event provides a divider in the ceramic sequence, with one series of maiolica types having been present before this date and another series assignable to the resettlement period of the 18th century, though some overlapping is apparent. Although still not abundant, a larger number of 18th century fragments have been picked up at more localities on the Rio Grande and adjacent areas than are noted from earlier times. Not only was the northern population greater, but by then tin-glazed table ware was more common in the south, apparently sold at a low enough cost so that ordinary homes, even those on the very extremity of empire, could afford a few pieces. Scattered sherds have been recovered from former homes, corrals, administrative buildings, and missions (Ellis, personal collection; Snow, 1965, p. 33). Friar Dominquez in 1776 reported that even poor chapels had among their altar furnishings a Puebla plate upon which to rest glass cruets (Adams and Chavez, 1965, pp. 90, 154, 211). However, a very restricted number or total absence of examples of types assignable to the last quarter of the 18th century in part reaffirms the irregular and steadily declining contact with central Mexico.
The record of maiolica finds in New Mexico province, including some northern Chihuahua settlements (Gerald, 1968, pp. 41-55), suggests that dating heretofore primarily based upon the Floridian-Caribbean work of Goggin (1968) now needs to be adjusted, usually made earlier. As indicated previously, types such as San Luis Blue-on-white and Fig Springs Polychrome, the earliest maiolicas seen in New Mexico, are thought to have evolved as a direct result of changes taking place in Sevillian ceramics during the second half of the 16th century. There seems little reason to doubt that these same changes would not have diffused rapidly to Mexico, because it can be demonstrated that during the course of the next two centuries Mexican potters kept step with Spanish potters to a remarkable degree, when considering the nature of the infrequent exchange. Furthermore, late 16th century Italian examples believed possibly to have served as actual models have been noted in the Mexico City subway collections (Lister and Lister, 1975, pp. 33-36). The dating of these types, once suggested as beginning in the 17th century, probably should be changed to the last half or quarter of the 16th century.

Finding these two maiolicas in missions established in the north during the general 1600-1680 period might be explained in several ways. They probably arrived during the early stages of occupation. Also, although their major development is placed earlier, the styles might have continued for some time into the 17th century, for example, being made at Mexico City while at the same time other modes were evolving in a new industry at Puebla. Decorative vogues are known to have endured in Mexico, as in Spain, for very long periods of time up to a century or more. This does not give encouragement to archaeologists who seek more discrete dating, but it is a fact of Spanish culture which must be recognized. Additionally, lesser wares often continued patterns which had been dropped for finer vessels. The guild tended to perpetuate styles by discouraging innovations under threat of actual penalties, such regulatory attitude unquestionably being based upon a conformist outlook on the part of
craftsmen. Thus, considerable extension and overlapping of types should be anticipated. Nor is it unreasonable to suspect that goods no longer popular in cosmopolitan centers might have been exported to the provinces, perhaps at reduced cost to some supplier.

The first three main types positively identified with Puebla manufacture--Abó, Puebla, and Castillo polychromes--usually have been dated in the 17th century. It may not be too far afield to place them also in the last several decades of the 16th century, at which time potters are recorded as having been at work at Puebla. The clay body, decorative pigments, techniques of throwing, styles of form and design, and firing methods differed from what had gone before, all of which may be clues to the establishment of a whole new industry, as, for example, one at Puebla as opposed to one at Mexico City. Be that as it may, the three types mentioned above were defined in detail in the Puebla guild ordinances of 1653 (Cervantes, 1939, vol. 1, pp. 28-29), making it obvious that they had been in production for a long time prior to that date. It is known that they also continued to be made for some years after that time, perhaps into the 18th century. Hence, they could have arrived in the north any time during the 17th century occupation and probably did not reappear after the 1692 resettlement.

To be noted also is the fact that Huejotzingo, San Agustín, and Puebla blue-on-whites have been found at New Mexico-Chihuahua sites known to have been abandoned prior to or at the time of the 1680 Pueblo Rebellion, confirming the manufacture of such styles quite some time before their major development in the 18th century. Dating of these types should be moved forward into the last third of the 17th century. In the 18th century New Mexico, these types continued in use in association with a polychrome which had evolved out of the earlier Abó type, that now being called Aranama Polychrome. One style named San Elizario Polychrome, which has been noted with some frequency in a chain of small presidios placed in the last quarter of the 18th century across northern Chihuahua (Gerald, 1968,
pp. 45-52), apparently did not get farther north except on rare occasions. Likewise only a few examples of blue ground Tumacacori Polychrome, which came into being in this same period and which continued into the early part of the next century, are seen, suggesting as noted above an increasing isolation of the northern Rio Grande.

II. SONORA, SOUTHERN ARIZONA. At the same time Oñate was moving one arm of Spanish occupation up the Rio Grande, a second thrust under way on the west coast had reached Sinaloa. In the middle of the 17th century, mines at Alamos drew white settlers still farther northward along the foothills of the massif which divided coast lands from the high interior plateau. Finally, in 1672, Father Eusebio Kino began adding the Pimería Alta to the realm, and in the next several decades missions and presidios strung along the Altar, Magdalena, Santa Cruz, and San Pedro valleys brought settlers to another sector of what later was to become a part of the United States. During the 18th century, population steadily grew along this frontier with the establishment of military posts such as Terrenate, Quiburi, Tubac, and Tucson, and missions such as Tumacacori and San Xavier del Bac. A Pima uprising, numerous Apache incursions, and the expulsion of the Jesuits who had founded the mission chain disrupted frontier life of settlers on this edge of Nueva España who suffered from the same isolation as those to the east. However, contact with the south appears to have been less interrupted and to have continued through the Mexican period of the first half of the 19th century (Barnes, 1972, p. 20).

The incidence of maiolica dovetails nicely with this historical outline, although a complete picture is not available because of lack of historical archaeology south of the international border. Whenever such study is accomplished, it is anticipated that types representative of the late 16th century will be found in the southern reaches of the west coast route, with an increasing percentage of 17th century types as one moves northward. In the Pimería Alta,
there are no samples of any types earlier than the last quarter of the 17th century, with those represented only by an insignificant batch of Abo”, Puebla, and San Luis Polychromes at several localities. San Augustín and Huejotzingo blue-on-whites also may have been introductory styles of maiolica here, because, as pointed out earlier, in New Mexico they appeared prior to ca. 1680. The major utilization of the latter types, however, was in the second half of the 18th century when entrefino table ware of the Puebla Blue-on-white-Aranama Polychrome series was most common in this region (Barnes, 1972, pp. 6-13; Di Peso, 1953, pp. 182-183). The actual number of these sherds found in Arizona is greater than that in New Mexico, further supporting the idea of stronger ties to the south, perhaps even a larger population. Mission entregas noted by Kessell (1970, pp. 195, 198, 200) indicate maiolica table ware or inkwells in residences of friars but not in the churches themselves. Local archaeology seems to confirm more usual domestic use of this pottery.

One type of special interest in the Arizona sector is San Luis Polychrome. This type was not traded up the central Mexican plateau, though it has been recovered in most other zones closer to the capital and in outlying areas reached by trade such as the Spanish Caribbean Islands, Florida, and Guatemala. Although previously suggested as having been a late 16th century development (Lister and Lister, 1975, Fig. 10), its absence in New Mexico may have resulted from its having been made during a period, such as the five or six decades bridging the 17th and 18th centuries, when intercourse between the Rio Grande and the south was virtually suspended. On the other side of the cordillera, it was at this very time that Kino missionization was under way in the Pimería Alta. The padre was able to maintain tenuous connections to the south which supplied his chapels with a few pieces of the goods then available, probably at lower cost than the contemporary Abo” and Puebla polychromes.

At any rate, San Luis Polychrome was a style which must have been considered one of medium quality inasmuch as the base glaze
was lower in tin content than the usual blue-on-whites, potting was coarser, and abstract boldly applied geometric design was carried primarily by green, black, and occasionally orange. It simply does not look like what are known to have been contemporary Puebla styles with their controlled potting and tightly drawn decoration. Admittedly, it might have been the pottery to which Puebla artisans referred in 1721 when they petitioned authorities to officially sanction use of green, saying it had been commonly, but apparently illicitly, utilized earlier (Cervantes, 1939, vol. 1, p. 32). There is a strong temptation to suggest instead that San Luis Polychrome might have been the product of the Mexico City industry of the late 17th century. This feeling arises from observation of materials from the subway excavations which are judged to have been locally made during the 18th century and which appear to have similar paste, glaze, and palette, these types incidentally also not getting north in any quantity (Lister and Lister, 1975, p. 41).

Another way in which the Sonora-southern Arizona sequence of types differ from the Chihuahua-New Mexico sequence is in the greater presence of late 18th-early 19th century examples in the former, specifically San Elizario Polychrome, Aranama Polychrome, Tumacacori Polychrome, Guanajuato Polychrome, and plain whites, the last two of which are not indicated on the chart. The obvious inference is that communication via Spanish towns down the Pacific coast was more continually maintained right up to the end of Mexican rule.

III. Texas. At about the same time Kino was probing Pimería Alta in the west, other Spaniards to the east moved past a scattering of small missions in Coahuila and into what is now Texas, this time in search of French intruders. Still others placed small mission stations along the Rio Grande down river from Paso del Norte. The first governor of the province was appointed in 1691, but for several decades thereafter, the land remained nearly empty of white occupants. Then a few tiny missions appeared along the eastern border next to French
Louisiana and at the crossing on the lower Rio Grande, and a presidio was erected at Espiritu Santo near the coast. Most establishments were ephemeral, moved and relocated several times. In 1718, the villa of Bejar (now San Antonio) was founded, after which the Spaniards were in Texas to stay. They gradually built a number of outposts throughout the region, both secular and religious, and abandoned others. For a short time in the 1770s, new posts guarded an imaginary line across northern Mexico protecting Texas' southern flank and the supply trains from Saltillo and Monterrey. At the end of the Spanish era, Americans were pressing in from newly acquired Louisiana, a process which continued unabated until eventually the new Mexican government was defeated in 1838 and the Republic of Texas proclaimed.

Although a few 16th century Spanish shipwrecks have been discovered off Corpus Cristi Bay, they have yielded no maiolica, only huge tinajas carried aboard all galleons of the time. The tin-glazed samples so far known from Texas generally belong to the most usual half dozen 18th century types, though a very few earlier Puebla Polychrome pieces are noted (Gilmore, 1969, pp. 88-94; 1973, pp. 40-41; 1974, pp. 47-53; Schuetz, 1969, pp. 54-57; Schuetz, unpub. mans.; Tunnell, 1966, pp. 1-20; Tunnell, and Newcomb, 1969, pp. 87-98; Tunnell, and Ambler, 1967, pp. 25-33).

Among late 18th century types some stylistic modifications, which have not been observed elsewhere in the northern borderlands, should be mentioned. Sherds have been recovered which have one surface washed with blue over which darker blue patterns were laid, perhaps a forerunner to the blue ground aperlado series, though designs are those more customary on Pueblo Blue-on-white. Another style found in some Texas materials was one with brown decorations occasionally combined with accents of blue, which may have further evolved into a brown ground imitation of a Chinese porcelain in Mexico called capuchino. Both these minor styles presently are thought to have been made in Puebla because of their
similarity in paste, glaze, and potting. A third style present in Texas bears an open flower medallion with petals alternatingly green and yellow, outlined in black (Gilmore, 1974, Pl. 5 a, b, f). This is regarded as a Mexico City style because of the large number of samples from the subway, the appearance of the same motif on tile panels identified as having been made in Mexico City (Toussaint, 1967, p. 377), and the absence of the motif among known Puebla-made vessels. A strong tie to markets of central Mexico is indicated in these Texas finds.

Also present in some Texas sites are wares believed to have come from Guanajuato where maiolicas were being made during the first half of the 19th century. These are polychromes on white grounds and other wares with yellow and turquoise green grounds. Such types substantiate an active trade with the south through the Mexican, and perhaps even the Texan, era.

IV. CALIFORNIA. The first earnest effort at settlement of Baja California came in 1697. Then Jesuits under the leadership of Kino and Salvatierra crossed over from Sonora to found the mission of Loreto. By 1768, a line of missions was operating in the southern sections of Baja, supplied by sea from a tiny roadstead south of San Blas, Nayarit. Although pearlers lurked around the shores, there never were more than a few dozen Iberians in the harsh peninsula, not only because the land did not seem economically promising, but the Jesuits, in order to maintain peace with their neophytes, tried to keep whites out, other than a squad of soldiers.

Meantime, pirates coveting the treasurers of the Manila galleons also lurking off the shores and rumors of Russian encroachment on the northern Pacific coast of America caused viceregal officials to press for colonization of Alta California. A naval supply base was built at San Blas, and Franciscans, who had taken over the Baja missions after the expulsion of the Jesuits, were ordered to march north to begin pacification. In 1769, San Diego mission and presidio
were opened by expeditions coming by sea and overland from the south, and in the following year San Carlos Borromeo mission at Carmel and a presidio at Monterey. Subsequently, 21 Franciscan missions extended through the fertile California basins, where most of them flourished. In the effort to connect California to central Mexico by land, in 1774 a route was blazed from Tubac in Arizona to San Gabriel in southern California. This led to the founding of San Francisco and Los Angeles by a few families from Sonora. With benign climate and rich soil, large ranches created during the period between 1769-81 proved productive and owners grew prosperous through sale of hides, tallow, grains, and fruits to an increasing flow of non-Spanish traders who came by sea. In 1800, there were some 1200 whites in Alta California, most of them soldiers, but all living a more comfortable life than those on some sectors of the northern frontier and many exposed to more frequent contact with foreigners.

For most of the Spanish era, manufactured goods from Nueva España continued to reach California by sea, though after about 1790 contraband merchandise of English, French, and American origin was more common. The land route via Sonora was too difficult and hazardous for continual use. Missions in northern Baja were supplied overland from southern Baja, which in turn got goods by ship from Guaymas and ports farther south. In 1810, the San Blas supply ships, which seldom had amounted to more than one a year, were suspended. A few Mexican vessels sailed north until the 1830s or '40s, but their exact cargoes are unknown.

No descriptions of excavations have been published about Baja California which have mentioned any appreciable finds of Mexican maiolica. It is likely that fragments eventually will come to light, most probably of the types spanning the 17th and 18th centuries or those characteristic of the 18th century alone. However, the Iberian population always was small, and the missions were poor and isolated.

In Alta California all maiolica thus far known is late 18th century to about the third decade of the 19th century, five principal
types being present at all sites studied (May, 1972, pp. 27-50; Pilling, 1952, unpub. mss.). Generally Puebla Blue-on-white is the most common, very frequently of the molded forms with flat bottoms and foliated rims typical of late manifestations of this type. The specialized minor late 18th century variants mentioned as present in Texas are not known as yet in California, but there are early 19th century types such as Guanajuato Polychrome, a yellow ground ware, a white decorated in black, and another with a green and black encircling chain pattern on white (University of California, Department of Anthropology collections). It is no surprise that a larger number of complete vessels and most of the latest materials have been found in the Carmel-Monterey area, an important port, headquarters of colonial government, a sizeable presidio, and home of well-to-do families.

Albuquerque, N. M.
Chart

Significant Occurrences of Maiolica

Along the Northern Borderlands

NOTE REGARDING CHART: Dates given for sites include founding and termination when known, i.e. (1660-86). Those with a beginning date but no final date have been occupied to the present, i.e. (1610- ). Those with a question mark for either date reflect no knowledge or conflicting information regarding beginning or end, i.e. (? -1892) (1769- ?). In case of the California missions, most were secularized between 1830 and 1840 and have been put to various uses, intermittently or continuously, since that time.
<table>
<thead>
<tr>
<th>TYPE</th>
<th>CHIHUAHUA</th>
<th>NEW MEXICO</th>
<th>NORTH CENTRAL ARIZONA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pig Springs Polychrome</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1610-66 (Goggin)</td>
<td>Casas Grandes, San Antonio convento (1660-86)</td>
<td>Quaré (1628-72)</td>
<td>Awatovi (1629-1700)</td>
</tr>
<tr>
<td>1615-50 (Plowden)</td>
<td></td>
<td>Puerary</td>
<td></td>
</tr>
<tr>
<td>1593-1725 (Snow)</td>
<td></td>
<td>San Marcos (1610-80)</td>
<td></td>
</tr>
<tr>
<td>1620-50 (Amerind Pd.)</td>
<td></td>
<td>San Gabriel del Yunque (1598-1610)</td>
<td></td>
</tr>
<tr>
<td>Last half 16th C, Lister</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>San Luis Blue-on-white</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1640-90 (Goggin)</td>
<td>Casas Grandes, San Antonio convento (1660-86)</td>
<td>Quaré (1628-72)</td>
<td>Awatovi (1629-1700)</td>
</tr>
<tr>
<td>1635-1700 (Plowden)</td>
<td></td>
<td>Puerary</td>
<td></td>
</tr>
<tr>
<td>1598-1725 (Snow)</td>
<td></td>
<td>Abó (1626-72)</td>
<td></td>
</tr>
<tr>
<td>1610-60 (Goggin)</td>
<td></td>
<td>Hawikuh (1630-72)</td>
<td></td>
</tr>
<tr>
<td>Last half 16th C, Lister</td>
<td></td>
<td>Santa Fe, Palacio</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1610- )</td>
<td></td>
</tr>
<tr>
<td><strong>Abó Polychrome</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1650-1700 (Goggin)</td>
<td>Casas Grandes, San Antonio convento (1660-86)</td>
<td>Quaré (1628-72)</td>
<td>Awatovi (1629-1700)</td>
</tr>
<tr>
<td>First half 17th C</td>
<td>Puerary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Cervantes)</td>
<td></td>
<td>Zia</td>
<td></td>
</tr>
<tr>
<td>1598-1725 (I-Snow)</td>
<td></td>
<td>Chihuahua</td>
<td></td>
</tr>
<tr>
<td>1725-80 (II-Snow)</td>
<td></td>
<td>Abó (1626-72)</td>
<td></td>
</tr>
<tr>
<td>1650-1750 (Smith)</td>
<td></td>
<td>Chama valley</td>
<td></td>
</tr>
<tr>
<td>17th C, Lister</td>
<td></td>
<td>Pecos (1626-1838)</td>
<td></td>
</tr>
<tr>
<td><strong>Puebla Polychrome</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1675-1790? (Goggin)</td>
<td>Casas Grandes, San Antonio convento (1660-86)</td>
<td>Pecos (1626-1838)</td>
<td>Awatovi (1629-1700)</td>
</tr>
<tr>
<td>1650-1700 (Plowden)</td>
<td>Casas Grandes, surface</td>
<td>Puerary</td>
<td></td>
</tr>
<tr>
<td>First half 17th C</td>
<td>Casa de Huesos (1680- )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Cervantes)</td>
<td></td>
<td>Santa Ana RR site</td>
<td></td>
</tr>
<tr>
<td>1650-75 (Berber)</td>
<td></td>
<td>Chimuñiquillo</td>
<td></td>
</tr>
<tr>
<td>1598-1725 (II-Snow)</td>
<td></td>
<td>Hawikuh (1630-72)</td>
<td></td>
</tr>
<tr>
<td>1725-80 (I-Snow)</td>
<td></td>
<td>Chuyamungüe (1674-1700)</td>
<td></td>
</tr>
<tr>
<td>1650-1750 (Smith)</td>
<td></td>
<td>San Marcos (1610-80)</td>
<td></td>
</tr>
<tr>
<td>1650-1700 (Amerind Pd.)</td>
<td></td>
<td>Santa Fe, Palacio</td>
<td></td>
</tr>
<tr>
<td>(Puebla lace Poly.)</td>
<td></td>
<td>(1610- )</td>
<td></td>
</tr>
<tr>
<td>17th C, Lister</td>
<td></td>
<td>Old San Felipe</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

132
<table>
<thead>
<tr>
<th>II</th>
<th>III</th>
<th>IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>SORORA</td>
<td>SOUTHERN ARIZONA</td>
<td>TEXAS</td>
</tr>
<tr>
<td>San Juan Bautista</td>
<td>Los Adaes (1721-73)</td>
<td></td>
</tr>
<tr>
<td>San Juan Bautista</td>
<td>Santa Cruz valley</td>
<td>Los Adaes (1721-73)</td>
</tr>
<tr>
<td></td>
<td>Guevavi (1691-1757)</td>
<td></td>
</tr>
</tbody>
</table>

133
<table>
<thead>
<tr>
<th>TYPE</th>
<th>CHIHUAHUA</th>
<th>NEW MEXICO</th>
<th>NORTH CENTRAL ARIZONA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Castillo Polychrome</strong></td>
<td>Casas Grandes, San Antonio convento (1660-86)</td>
<td>Santa Ana RR site</td>
<td>Awatovi (1629-1700)</td>
</tr>
<tr>
<td>1630-early 18th C (Goggin)</td>
<td></td>
<td>Kuman</td>
<td></td>
</tr>
<tr>
<td>Late 17th C (Barber, Cervantes)</td>
<td></td>
<td>Ewikuh (1630-72)</td>
<td></td>
</tr>
<tr>
<td>1680-1700 (Plowden)</td>
<td></td>
<td>Pecos (1625-1850)</td>
<td></td>
</tr>
<tr>
<td>1598-1725 (Snow)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1630-1750 (Smith)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1679-1700 (Amerind Ed.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1640-1700, Lister</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>San Luis Polychrome</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1660-1720 (Goggin)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1650-1720 (Plowden)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1650-1750 (Smith)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1670-1750, Lister</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Puebla Blue-on-white</strong></td>
<td>Carrizal (1774-1897)</td>
<td>Gueraí (1629-72)</td>
<td>Awatovi (1629-1700)</td>
</tr>
<tr>
<td>1700-1850 (Goggin)</td>
<td>Janos (1686-1897)</td>
<td>Zia Corn Clan</td>
<td></td>
</tr>
<tr>
<td>1700-7 (Plowden)</td>
<td>Aquiles Serdán (1704- )</td>
<td>Tenorio Zia</td>
<td></td>
</tr>
<tr>
<td>1700-1830 (Smith)</td>
<td>Bustillos (17-1892)</td>
<td>Santa Ana RR site</td>
<td></td>
</tr>
<tr>
<td>1670-1800, Lister</td>
<td>Casas Grandes, San Antonio convento (1660-86)</td>
<td>Canjelón</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Casas Grandes, surface Casa de Huesos (1680- )</td>
<td>Corrales</td>
<td></td>
</tr>
<tr>
<td></td>
<td>San Buenaventura (1774-78)</td>
<td>Santa Fe, Palacio (1610- )</td>
<td></td>
</tr>
<tr>
<td></td>
<td>San Elizario (1729-80)</td>
<td>Pecos (1625-1850)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Príncipe (1774-1814)</td>
<td>Olenequilla</td>
<td></td>
</tr>
<tr>
<td></td>
<td>San Carlos (1773-87)</td>
<td>Guayamungue (1634-1700)</td>
<td></td>
</tr>
<tr>
<td><strong>Arenas Polychrome</strong></td>
<td>Janos (1685-1857)</td>
<td>Puerco (1628-72)</td>
<td></td>
</tr>
<tr>
<td>Last half 18th C (Goggin)</td>
<td>Mexican house</td>
<td>Zia Corn Clan</td>
<td></td>
</tr>
<tr>
<td>1780-1850 (Snow)</td>
<td>Carrizal (1774-1897)</td>
<td>Tenorio Zia</td>
<td></td>
</tr>
<tr>
<td>1700-1850 (Smith)</td>
<td>Aquiles Serdán (1704- )</td>
<td>Santa Ana RR site</td>
<td></td>
</tr>
<tr>
<td>16th C-1850, Lister</td>
<td>Bustillos (17-1892)</td>
<td>Canjelón</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Casas Grandes, San Antonio convento (1660-86)</td>
<td>Corrales</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Casas Grandes, surface Casa de Huesos (1680- )</td>
<td>Janos area</td>
<td></td>
</tr>
<tr>
<td></td>
<td>San Buenaventura (1774-78)</td>
<td>Gallisteo (1610-80)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>San Elizario (1729-80)</td>
<td>Torrecón</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Príncipe (1774-1814)</td>
<td>Chama valley</td>
<td></td>
</tr>
<tr>
<td></td>
<td>San Carlos (1773-87)</td>
<td>Gran Quivira (1610-72)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>San Marcos (1610-80)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>San Cristobal (1610-80)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
</tr>
<tr>
<td><strong>Sonora</strong></td>
<td><strong>Southern Arizona</strong></td>
<td><strong>Texas</strong></td>
<td><strong>California</strong></td>
</tr>
<tr>
<td>San Luis Bacoancos</td>
<td>Tucson (1776-?)</td>
<td>Los Adaes (1721-73)</td>
<td>San Diego de Alcala (1769-?)</td>
</tr>
<tr>
<td>Calabassas</td>
<td>San Xavier del Bac (1692-?)</td>
<td>Valero (1718-93)</td>
<td>San Diego presidio (1769-1840)</td>
</tr>
<tr>
<td>San Juan Bautista</td>
<td>Guevavi (1691-1767)</td>
<td>Capistrano (1751-1836)</td>
<td>La Purisima Concepcion (1787-?)</td>
</tr>
<tr>
<td>Fronteras</td>
<td>Tucson (1776-?)</td>
<td>San Lorenzo (1762-71)</td>
<td>La Purisima Indian barracks (1823-46?)</td>
</tr>
<tr>
<td></td>
<td>San Xavier del Bac (1692-?)</td>
<td>Ahumada (1766-71)</td>
<td>San Carlos Borromeo (1770-?)</td>
</tr>
<tr>
<td></td>
<td>Guevavi (1691-1767)</td>
<td>Arunaza (1749-1830)</td>
<td>Monterey presidio (1770-?)</td>
</tr>
<tr>
<td></td>
<td>Tumacacori (1751-1848)</td>
<td>Rosario (1754-1808)</td>
<td>Santa Barbara (1786-?)</td>
</tr>
<tr>
<td></td>
<td>Santa Cruz valley</td>
<td>San Xavier missions (1746-86)</td>
<td>Santa Barbara Indian barracks (1792?-1880)</td>
</tr>
<tr>
<td></td>
<td>Tubac (1739-1840)</td>
<td>San Saba (1757-68)</td>
<td>Soledad (1791-?)</td>
</tr>
<tr>
<td></td>
<td>Quiburi (1704-89)</td>
<td>Loreto (1722-26)</td>
<td></td>
</tr>
<tr>
<td><strong>Santa Teresa</strong></td>
<td></td>
<td>Falcón Reservoir area</td>
<td></td>
</tr>
<tr>
<td>Calabassas</td>
<td>Tucson (1776-?)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>San Xavier del Bac (1692-?)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Guevavi (1691-1767)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tumacacori (1751-1848)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Santa Cruz valley</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tubac (1739-1840)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quiburi (1704-89)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Terranate</strong> (1743-75)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>San Bernardino</strong> (1775-80)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### MAJOR MEXICAN MAIOLICA FINDS IN NORTHERN BORDERLANDS

<table>
<thead>
<tr>
<th>TYPE</th>
<th>CHIHUAHUA</th>
<th>NEW MEXICO</th>
<th>NORTH CENTRAL ARIZONA</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Agustín Blue-on-white</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1700-30 (Goggin)</td>
<td>Janos (1686-1857)</td>
<td>Pecos</td>
<td>Awatovi (1629-1700)</td>
</tr>
<tr>
<td>Last half 17th C (Cervantes)</td>
<td>Casas Grandes, San Antonio convento (1660-56)</td>
<td>Cieneguilla</td>
<td></td>
</tr>
<tr>
<td>1700-? (Flowden)</td>
<td></td>
<td>Santa Fe, San Miguel church</td>
<td></td>
</tr>
<tr>
<td>1700-50 (Smith)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1700-50 (Amerind Rd.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1670-1800, Lister</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Huejotzingo Blue-on-white</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1700-early 19th C (Goggin)</td>
<td>Janos (1686-1857)</td>
<td>Cieneguilla</td>
<td></td>
</tr>
<tr>
<td>1700-? (Flowden)</td>
<td>Casas Grandes, San Antonio convento (1660-56)</td>
<td>Santa Fe, Palacio (1610- )</td>
<td></td>
</tr>
<tr>
<td>1780-1850 (Snow)</td>
<td>Casas Grandes, surface</td>
<td>Piaray</td>
<td></td>
</tr>
<tr>
<td>1700-1830 (Smith)</td>
<td>Carrizal (1774-1847)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1670-1850, Lister</td>
<td>Bustillos (7-1892)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18th C</td>
<td>San Buenaventura (1774-78)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>San Elizario (1774-80)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>San Carlos (1773-87)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Elizario Polychrome</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1725-80 (II - Snow)</td>
<td>Janos (1686-1857)</td>
<td>Laguna</td>
<td></td>
</tr>
<tr>
<td>1750-1800 (Gerald)</td>
<td>Casas Grandes, surface</td>
<td>Corrales</td>
<td></td>
</tr>
<tr>
<td>1750-1800, Lister</td>
<td>Carrizal (1774-1847)</td>
<td>Pecos (1626-1838)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bustillos (7-1892)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>San Buenaventura (1774-78)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>San Elizario (1774-80)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Príncipe (1774-1814)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>San Carlos (1773-87)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tumacacori Polychrome</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post 1820-? (Goggin)</td>
<td>Carrizal (1774-1847)</td>
<td>Cañon Ojo de Casa</td>
<td></td>
</tr>
<tr>
<td>1850-7 (Barber)</td>
<td>Casas Grandes, surface</td>
<td>Santa Fe</td>
<td></td>
</tr>
<tr>
<td>1780-1830 (Flowden)</td>
<td></td>
<td>Jémez area</td>
<td></td>
</tr>
<tr>
<td>1780-1850 (Snow)</td>
<td></td>
<td>Cieneguilla</td>
<td></td>
</tr>
<tr>
<td>1810-30 (Smith)</td>
<td></td>
<td>Pecos (1626-1838)</td>
<td></td>
</tr>
<tr>
<td>1790-1820 (I - Barnes)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1810-40 (II - Barnes)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1830-60 (III - Barnes)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1820-60 (May)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1780-1840, Lister</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SONORA</td>
<td>SOUTHERN ARIZONA</td>
<td>TEXAS</td>
<td>CALIFORNIA</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td>San Juan Bautista</td>
<td>Quiburi (1704-89) Tucson (1776- )</td>
<td>Los Adueño (1721-73) Valero (1718-93)</td>
<td>San Diego presidio (1769-1840)</td>
</tr>
<tr>
<td>Tumacacori (1751-1848) Tucson (1776- ) Tubac (1769-1840) San Xavier del Bac (1692- ) Santa Cruz valley</td>
<td>Valero (1718-93) Cepirano (1731-1836) Arenaza (1794-1830) Rosario (1754-1808)</td>
<td>San Diego presidio (1769-1840) Santa Bárbara (1786- ?) La Purísima Concepción (1797- ?) San Carlos Borromeo (1770- ?) San Juan Bautista (1797- ?) Monterey presidio (1770- ?)</td>
<td></td>
</tr>
</tbody>
</table>
BIBLIOGRAPHY

Adams, Eleanor, and Fray Angelico Chavez
1956 The Missions of New Mexico, 1776. A Description by Fray Francisco Atanasio Dominquez. University of New Mexico Press, Albuquerque.

Barber, Edwin Atlee

Barnes, Mark R.

Cervantes, Enrique A.
1939 Loza Blanca y Azulejo de Puebla. 2 vols. Mexico.

Di Peso, Charles C.

Gerald, Rex E.

Gilmore, Kathleen
1973 The Keeran Site, the Probable Site of La Salle's Fort St. Louis in Texas. Texas Historical Commission Archeological Report No. 24, Austin.

Goggin, John M.

1968 Spanish Majolica in the New World. Types of the Sixteenth to Eighteenth Centuries. Yale University Publications in Anthropology, No. 72, New Haven.

Kessell, John L.


Lister, Florence C., and Robert H.


Lorenzot, Francisco del Barrio

1920 Ordenanzas de Gremios de la Nueva Espana. Secretaría de Governación, Mexico.

May, Ronald V.


Montgomery, Ross Gordon, Watson Smith, and John Otis Brew


Pilling, Arnold R.

1952 California Mission Maiolica. Ms., Department of Anthropology, University of California, Berkeley.

Plowden, William W.

Schuetz, Mardith K.
1969 The History and Archeology of Mission San Juan Capistrano, 
San Antonio, Texas, (vol. 2). State Building Commission 
Archeological Program, Report No. 11, Austin.

Smith, Hale G.
1965 Archaeological Excavations at Santa Rosa Pensacola. Florida 
State University, Notes in Anthropology, vol. 10, Tallahassee.

Snow, Cordelia Thomas
1974 A Brief History of the Palace of the Governors and a Pre­
liminary Report on the 1974 Excavation. El Palacio, 
vol. 80, no. 3, pp. 1-21.

Snow, David H.
1965 The Chronological Position of Mexican Maiolica in the South­

Toussaint, Manuel

Tunnell, Curtis
1966 A Description of Enameled Earthenware from an Archeological 
Excavation at Mission San Antonio del Valero (The Alamo). 
State Building Commission Archeological Program, Report 
No. 2, Austin.

Tunnell, Curtis D., and J. Richard Ambler
1967 Archeological Excavations at Presidio San Agustin de 
Ahumada. State Building Commission Archeological Program, 
Report No. 6, Austin.

Tunnell, Curtis D., and W. W. Newcomb, Jr.
1969 A Lipan Apache Mission, San Lorenzo de la Santa Cruz, 
1762-1771. Texas Memorial Museum, Bulletin 14, Austin.

140
When the task of examining the temper or aplastic inclusions in a number of majolica sherds from Middle America and Spain was first considered, hopes for obtaining any tangible results were quite low. The purpose of examining the majolica sherds with a petrographic microscope was to determine if the mineral inclusions might differ from factory to factory or through time. There was also a thought that petrographic analyses might provide a quick and economical way to identify different types of majolica and for tracking down places of manufacture, whether it be in Spain or Mexico.

Majolica generally has a very fine-grained, dense, and homogeneous clay body which varies in color from creamy white to moderate reddish orange. Mineral and other aplastic particles in the clay are so fine that they can rarely be seen, let alone identified, with 60X magnification. Exceptions were two majolica vessels from a factory in Antigua, Guatemala, which had temper grains ranging up to 1.0 mm. Most of the aplastic inclusions in potsherds analyzed previously in the Southwest had grain sizes from 0.25 to 2.0 mm., allowing identification in many cases with a stereomicroscope.

The possibility that petrographic analysis would succeed in distinguishing one clay body from another seemed remote, for it had been suspected that majolica ware was not tempered, but contained only residual mineral inclusions of the clay. Fortunately, it turned out that majolica did indeed have unique character in thin section.

Majolica sherds from Spanish factories contained subrounded grains of quartz with minor amounts of feldspar and biotite, while the Middle American majolica is characterized by minerals from

141
crystal tuff or ash from volcanic regions. Microphenocrysts of basal-

tic hornblende, fresh sodic plagioclase, biotite, and magnetite, 

with varying amounts of volcanic glass or pumice are characteristic.

Opal phytoliths, usually colored in transmitted light, are ever-

present. The source of the astatic inclusions may be from the 

ejecta of the east-west Mexican volcanics or possibly from other 

volcanic provinces in Middle America.

These mineral inclusions in the Middle American majolica con-

trast sharply with the mundane quartz sand and silt grains of the 

majolica sherds from Muel and Talavera, Spain. Minor differences in 

the character of the glazes and clay bodies were also noted.

Because time was short, only thirty specimens were examined. 

Four of these were from factories in Spain; three from factories in 
Puebla, Mexico, and two from a factory in Antigua, Guatemala. The 

source of the rest of the sherds was unknown.

Five variations were found within the Middle American majolica 

sherds, and possibly two within the Spanish. The characteristics 
of the seven tentative majolica groupings are listed in Table 1. 

It is too early to say that each category represents a majolica 

factory. However, one of the groups includes a "temper" sample from 
a present day majolica factory of the Uriarte family of Puebla, Mexico.

The mineral distribution of the first category resembles the 

temper of Group 2 described by Williams (1956, p. 580). William's 

Group 2 temper was found in one red and three black sherds found at 
Ticoman and Cerro del Tepalcate. There is also some similarity to 
the tempering materials described by Shepard (1948, pp. 92-93) in 
the early form of plumbate, an Early Postclassic (A.D. 900-1200?) 
Mesoamerican tradeware. The plumbate was believed to have origi-

nated in southern Guatemala and Salvador.

Two sherds of plumbate, from Museum of New Mexico collections 
from Tajumulco, Guatemala, were examined in slides and were found 
to contain minerals characteristic of crystal tuff or ash. One of 
the sherds (MNM 37748/11-G2184) is identical to some unfired temper
material from the modern day Uriarte factory in Puebla, Mexico (David H. Snow collection). These two specimens also correspond closely to Williams' Group 3 temper type (1956; pp. 577-580).

Shepard also reported volcanic ash or tuff temper in pottery from Yucatan, although no detailed descriptions were published (1964, p. 518). She did report uniformity in the characteristics of the temper from Yucatan, but no source for the ash was suggested.

Volcanic tuff temper has also been described in "Thin Orange Ware" sherds from Mexico City by Sotomayor and Tejero (1963), although Shepard (1948) characterized this ware as being untempered. Different places of manufacture may be indicated.

Two majolica polychrome vessels (G-2186 and 2187), known to have been made in Antigua, Guatemala, were examined and found to contain yet another variation of volcanic ash. Both vessels contained coarse grains (0.5 to 1.0 mm.) of crushed volcanic tuff, which contrasts with all other specimens which had microscopic temper fragments. Petrographically, the Antigua majolica tempers were similar to other crystal tuff tempers of Middle American majolica, but varied in minor details. In particular, gold colored, crenulated flakes of mica visible with a stereomicroscope were diagnostic. One of the plumbate specimens (G-2185) from Tajumulco, Guatemala falls in this temper class also.

If the Antigua category holds up as a type, its origin is undoubtedly Guatemalan. The three sherds in this group represent a time span of over 700 years. That there should be any similarity at all between the majolica and the prehistoric plumbate is remarkable.

From the various bits and pieces of data that we have, we must conclude that crystal tuff or ash was used extensively for temper in Middle American pottery both prehistorically and historically. Undoubtedly, there were localities where potters used untempered clay. But as Shepard has commented, clear unaltered feldspar crystals normally do not occur in clay. She believed that the
tempering material was probably a crystal ash ground to a flour (1948, pp. 92-93).

In describing pottery making of the 19th century potters in Mexico, Hough (1895) provides some clues concerning the nature and source of tempering material in earlier wares. At Tonalon, he found that two types of clays were mixed: "...one black and tenacious, from the marshy places; the other, a gray, friable, kaolinic clay, from the high river banks. The clay is dug out and carried to the pottery, and the two kinds mixed in equal proportions, as the white clay is too loose by itself, and the black clay too sticky." The description suggests that the gray, friable clay is a fine-grained, weathered volcanic ash, probably from the B horizon of soils.

Since fragments of consolidated ash, or crystal tuff, were found on occasion, particularly in the Guatemalan sherds, tuffs were probably also used for temper. The coarse grains of temper in the Guatemalan sherds supports a belief that majolica made in the New World, at least, was purposefully tempered.

The geologic sources of the Middle American tempers have not been established. Howel Williams (1956, p. 156) suggests that the source of the volcanic tuff or ash might be found in the Valley of Mexico or adjacent areas. He also remarked that the ash was so fresh that it might have been deposited in postglacial time. Earlier deposits of Pleistocene age should also be considered, as presence of highly etched pyroxene in Category IV indicates an age greater than 10,000 B.P. (Birkeland, 1974, p. 106). The presence of opal phytoliths, if actually in the ashes or tuffs rather than the pottery clay, might preclude an age older than Pleistocene.

Williams (1956) also brought up the possibility that the green hornblende in the crystal tuffs might have been altered to reddish brown during the firing of pottery. Perhaps firing tests should be conducted to test the effects of heat on the color of minerals in pottery.

The problem of locating the source of tempering material and
relating them to manufacturing centers remains for future research. As Shepard (1963) has pointed out, sporadic analysis of sherds out of cultural context has little meaning. Regional surveys of ceramic materials, perhaps involving thousands of potsherds, may be necessary to recognize manufacturing centers and define trade patterns through time.

It would appear that the problem of majolica is closely related to that of another Middle American wares. Whether or not there is any cultural relationship between prehistoric use of tuff temper and its presence in majolica cannot be predicted at this time. Perhaps the use of tuff in the different wares is coincidental. However, areal studies of the other Middle American wares may help to locate the factories where certain majolica vessels were produced during early historic time.

In any case, it now seems very possible to relate a variety of crystal tuff to a specific area, and perhaps even to a particular factory. The results of this brief study are not conclusions, but do give hope that future petrographic studies can produce answers to long standing questions about majolica in the New World. Right now it is possible to determine within a few moments whether or not majolica was produced in Spain or Middle America. Given more time and study, we expect other answers will be found.

The majolica specimens that were analyzed are listed in Table II, in their respective clay-temper categories. A graph of the relative abundance of the mineral inclusions of each category is also included in Figure 1. Based upon such scant evidence, these findings will be subject to change in the future, but for now these may provide a basis for future studies.

Acknowledgments. My thanks go to David Snow for introducing me to the archaeological problems of majolica in the New World and for loaning majolica specimens from his personal collection. The suggestions and assistance given by Wayne Lambert and Ray E. Wilcox,
of the U. S. Geological Survey, Denver, in the analysis of the mineral components of the majolica were most helpful.

Sandia Park, N. M.
The largest group of majolica sherds showed the following characteristics of temper, aplastics, and glazes:

(1) Feldspar, sodic; oscillatory extinction; fresh anhedral fragments; occasional Carlsbad-albite twinning; moderate amounts.

(2) Hornblende; minute laths and splinters; pleochroic yellow or light green to reddish brown; extinction angle less than 10°; common.

(3) Biotite, minute anhedral flakes; reddish brown and dusty; sparse.

(4) Quartz grains, probably residual sand grains in clay; varying amounts.

(5) Opal phytoliths (opalized grass cells); low index of refraction (1.44-1.48); often as minute rectangles and prisms; brown, reddish brown, possibly other colors; sparse to abundant.

(6) Glaze shards may be colorless or pale blue; bands or black dust are common in the colorless glaze fragments, while random or radiating acicular (needle-like) inclusions occur in the blue tinted glaze. Indices of refraction vary within one shard, usually from below to above 1.55, the index of the mounting medium. Lath-shaped crystallites are usually present in small amounts. These can be observed under crossed polars and are near white.

One sherd of Puebla Polychrome (G2188; LA 1742-7-7) produced glaze fragments that were black and opaque.

(7) Accessory minerals may include pale green diopside, hypersthene (?); magnetite, and hematite. Pumice or volanic glass is not conspicuous.

The opal phytoliths of this and other Middle American categories fall into the Elongate class (Class 4) described by Twiss, et al. (1969 p. 111). If these phytoliths are indigenous to the
volcanic ash or tuff contained in the majolica sherds, this may limit the age of the tuff to the Pleistocene. Twiss (ibid, p. 114) found that phytoliths in glacial tills and soils were badly eroded and dissolved, so that only the Elongate class remained.

**CATEGORY II.**

This class of majolica sherds have the following characteristics in slides:

1. Feldspar, sodic, as in Category I; common.
2. Biotite, usually reddish brown, minute flakes; more common than hornblende.
3. Hornblende, as in Category I; also light green hornblende (?); sparse.
4. Quartz grains; fine to silt size in varying amounts.
5. Magnetite, black, minute opaque flakes; small amounts.
6. Opal phytoliths, as in Category I.
7. Glaze shards have abundant dust, but banding is not usually present as in the first category. Anisotropic crystallite inclusions are common.

**CATEGORY III.**

Only two sherds were included in this category, including one modern majolica polychrome sherd believed to be from the Uriarte factory in Puebla, Mexico. Aplastics include:

1. Plagioclase and sanidine with 2V ranging up to 10° common.
2. Quartz, silt size to a very fine, irregular and subrounded grains, moderate amounts.
3. Biotite, minute dusty, yellowish red and green (?); traces.
4. Calcite, fine crystalline aggregates.
5. Opal phytoliths, as in Category I and II.
7. Glaze has considerable black dust, no banding; also anisotropic specks. Index above 1.55.
CATEGORY IV.

One specimen of "temper" material from the Uriarte factory in Puebla, Mexico and a plumbate vessel (G-2184) are included in this group. Characteristics are:

1) Feldspar, fresh rhombs, sodic, Carlsbad-albite twinning; zoned; oscillatory extinction; pale chocolate brown "lattice" inclusions in some grains; oscillatory extinction; most abundant mineral.

2) Hornblende; pleochroic euhedral prisms and laths; yellow green to dark green and olive green, some yellow to reddish brown; common.

3) Mica, yellow, yellowish red, anhedral flakes; sparse.

4) Hypersthene, pleochroic pale yellow red to red or green; sparse. Etched.

5) Diopside, pale green, oblique extinction; sparse.

6) Zircon, euhedral prisms, sparse.

7) Magnetite flakes, subhedral, sparse.

8) Opal phytoliths; colored fragments, rods, rectangles; low index of refraction; common.

9) Volcanic glass, cellular pumice; clear colorless; also spherulites; sparse.

10) Lithic fragments; microphenocrysts of feldspar in a glassy dusty matrix; sparse to common.

CATEGORY V.

Two majolica polychrome vessels from Antigua, Guatemala and one plumbate vessel from Tajumulco, Guatemala (G2185) are included in this category. Distinguishing characteristics include coarse grains (to 1.0 mm.) of minerals and tuff fragments and gold colored, crenulated mica flakes, which may be visible without magnification.

1) Mineral and tuff fragments up to 1.0 mm.

2) Mica, gold colored, crenulated, visible megascopically in some specimens; in slides, yellow to red anhedral flakes; dusty and altered; sparse to common.
(3) Feldspar, clear fresh fragments, albite twinning and oscillatory extinction; sodic to intermediate; most common mineral.

(4) Hornblende, pleochroic yellow to yellowish red and dark red; laths, fragments, euhedral prisms; basaltic; common.

(5) Volcanic glass sherds, vesicular glass; sparse.

(6) Magnetite flakes; minute; sparse to common.

(7) Diopside; pale green subhedral stubby prisms; oblique extinction; sparse to common.

(8) Opal phytoliths; rods, fragments, colored.

CATEGORY VI.

Three sherds from Muel, Spain, are characterized by:

(1) Quartz grains, silt sized to fine grains, subrounded; common.

(2) Feldspar, minute, rhombic flakes, probably sodic; sparse.

(3) Biotite, fine irregular flakes; pleochroic pale yellow to deep yellow or reddish yellow.

(4) Magnetite flakes, black subhedral; sparse.

(5) Glaze fragments contain dust, but not banded. May contain anisotropic silt size fragments. Blue glaze fragments may contain crystallites visible in plane light, but no needles like those in the Mexican categories. Indices of refraction all above 1.55.

CATEGORY VII.

One majolica sherd from Talavera, Spain resembles the sherds from Muel, Spain, except that the biotite flakes do not seem to be pleochroic. The glaze is deep blue and is blue in reflected light, which contracts with Middle American blue glaze fragments which are white in reflected light.

The mineral inclusions in the Spanish majolica categories may be residual in the clays, although some of the quartz grains may be observed megascopically.
Table II. Majolica sherds in each of the clay-temper categories

<table>
<thead>
<tr>
<th>CATEGORY I. (Puebla, Mexico?)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Puebla Blue-on-white</strong></td>
<td>G2152 (LA 26-1)</td>
<td></td>
</tr>
<tr>
<td>&quot; &quot; &quot;</td>
<td>G2164 (FA 71.22-14-b)</td>
<td></td>
</tr>
<tr>
<td>&quot; &quot; &quot;</td>
<td>G2165 (LA 6178-55-11)</td>
<td></td>
</tr>
<tr>
<td>&quot; &quot; (modern)</td>
<td>G1509</td>
<td></td>
</tr>
<tr>
<td><strong>Puebla Polychrome</strong></td>
<td>G2153 (LA 16 E)</td>
<td></td>
</tr>
<tr>
<td>&quot; &quot; &quot;</td>
<td>G2169 (BS AM 11)</td>
<td></td>
</tr>
<tr>
<td>&quot; &quot; &quot;</td>
<td>G2188 (LA 1742-7-7)</td>
<td></td>
</tr>
<tr>
<td><strong>San Elizario Polychrome</strong></td>
<td>G1508</td>
<td></td>
</tr>
<tr>
<td>&quot; &quot; &quot;</td>
<td>G2166 (70-89-44)</td>
<td></td>
</tr>
<tr>
<td>&quot; &quot; &quot;</td>
<td>G2167 (LA 16)</td>
<td></td>
</tr>
<tr>
<td><strong>Unclassified Blue-on-white</strong></td>
<td>G2160 (FA 71.72-20-a)</td>
<td></td>
</tr>
<tr>
<td>&quot; &quot; &quot;</td>
<td>G2161 (B.P.)</td>
<td></td>
</tr>
<tr>
<td><strong>Columbia Plain</strong></td>
<td>G2154 (FA 71.72-1-a)</td>
<td></td>
</tr>
<tr>
<td><strong>Casa Rugerio Polychrome</strong></td>
<td>G2162</td>
<td></td>
</tr>
<tr>
<td><strong>Caparra Blue</strong></td>
<td>G2156 (FA 71.72-4-a)</td>
<td></td>
</tr>
<tr>
<td><strong>Puaray Polychrome (?)</strong></td>
<td>G2168 (LA 34-16-4)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CATEGORY II (Mexico?)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>La Vega Blue-on-white</strong></td>
<td>G2151 (FA 71.72-2-b)</td>
<td></td>
</tr>
<tr>
<td><strong>Ichtucknee Blue/blue</strong></td>
<td>G2157 (FA 71.72-5-a)</td>
<td></td>
</tr>
<tr>
<td>&quot; &quot; &quot;</td>
<td>G2159 (27/11 CSF RD)</td>
<td></td>
</tr>
<tr>
<td>&quot; &quot; &quot;</td>
<td>G2158 (25/11 CSF RD)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CATEGORY III (Mexico?)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unclassified Green/white</strong></td>
<td>G2155</td>
<td></td>
</tr>
<tr>
<td>?Polychrome, modern</td>
<td>G2163 (I. Uriarte)</td>
<td></td>
</tr>
</tbody>
</table>
CATEGORY IV (Puebla, Mexico)

Temper? sample G1510 (Uriarte factory)
Plumbate vessel G2184 (37748/11 MNM)

CATEGORY V (Guatemala?)

Plumbate, Tajumulco G2185 (37741/11 MNM)
Majolica Polychrome, Antigua G2186 (FA 66.25-25-21)
" " G2187 (FA 66.25-23)

CATEGORY VI (Muel, Spain)

Muel Luster G2149 (M10)
Muel Black-on-white G2148 (M24)
Muel Polychrome G2150 (M28)

CATEGORY VII (Talavera, Spain)

Majolica polychrome G2170 (Talavera, modern)
Figure 1
BIBLIOGRAPHY

Birkeland, P. W.

Hough, Walter

Shepard, Anna O.

Sotomayor, Alfredo, and Noemi Castillo Tejero
1963 Estudio Petrografico de la Ceramica "Anaranjado Delgado." Instituto Nacional de Antropología E. Historia, Departamento de Prehistoria, Publicaciones 12, Mexico City.

Twiss, P. C., Edwin Suess, and R. M. Smith

Williams, Howel
A SPANISH-COLONIAL RANCHO IN NEW MEXICO

JOSEPH H. TOULOUSE, JR.

The structure under discussion was discovered on the site of Bandelier's Puaray on the west bank of the Rio Grande opposite Bernalillo, New Mexico. It was first described and figured by Majorie Tichy (1939):

... it is definitely post-Spanish [sic] in style and type of building, and all cultural debris associated with it was Spanish, or Indian copies of Spanish patterns. It showed every likelihood of having been purposely destroyed, for only the bare outline of its former foundation remained, and it seems unlikely that so large a building (judging by foundation) would disintegrate so rapidly when other older and less substantially built sections of the [Indian] ruin still retained wall heights of three and a half feet, or more. This building was situated on a rocky bluff some distance southeast of the [Indian] ruin...

If Indians worked on the construction of this building they did it under Spanish supervision. One has only to study its ground plan to decide this. Adobe used was of the small brick-like Spanish type. The great thickness of foundation walls, and the more or less generous use of lave blocks and other large stone, found nowhere else on the ruin, are also important features to be considered. The main part of the building is over fifty-two feet long, the width thirty-eight feet, with the two wall lengths and widths varying but a few inches. ... The main wall widths were three feet or more. At no point did foundations stand more than a few inches in height. The building had been completely leveled...

A general summing up of the building would be to describe
it as being enclosed entirely on three sides by thick walls of stone and adobe, and partially enclosed on the southeastern side, by a narrower adobe wall of a later date, for most of the original wall on this side had disappeared. The southeastern side may have had some sort of portal at one time, and this side most likely contained the main entrance. If one will note the ground plan it will also be seen that additional walls, or possibly parts of old buttresses, appear at various exterior points. Note that the interior of the building is divided into several smaller rooms. However, these dividing walls, of inferior construction, appear to have been set in after the main building was finished, or perhaps after its main period of usefulness had passed. That this structure is definitely Spanish is undeniable, from archaeological remains, and that it was occupied by Spanish people will also be conceded when the description of its material remains are given. It would appear to have been a building containing originally one, and then two inner rooms and might possibly have been a small chapel though not a true church in the orthodox sense of the word, which was later turned into living quarters, possibly by Spanish farmers, or the like. . .

Unfortunately the Spanish articles found were not described in Tichy's (Lambert's) article, and we must rely on descriptions and dates of the Spanish and Mexican majolicas reported by Plowden (1958) and Goggin (1968) from Puaray to place this structure as to time. The following types are reported and dated:

<table>
<thead>
<tr>
<th>Type</th>
<th>Plowden</th>
<th>Goggin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fig Springs Polychrome</td>
<td>1615-1700</td>
<td>1615-1700</td>
</tr>
<tr>
<td>Castillo Polychrome</td>
<td>1680-1700</td>
<td>1700-1725</td>
</tr>
<tr>
<td>Puebla Polychrome*</td>
<td>1650-1700</td>
<td>1700-1725</td>
</tr>
<tr>
<td>Ancilla Polychrome*</td>
<td>1640-1675</td>
<td>1640-1700</td>
</tr>
</tbody>
</table>
Type | Plowden | Goggin
---|---|---
Abó Polychrome* | 1650-1700 | 1650-1700
Puaray Polychrome* | nd | nd
San Luis Blue-on-white | 1635-1700 | 1615-1700
Puebla Blue-on-white | 1650-1700 | 1700-1780
Huejotzingo Blue Banded | 1700- | 1725-1780
Aranama Polychrome | 1725-1780 | 1725-1780
Unclassified Blue-on-white* | nd | nd

* On Goggin's list

It would appear that this structure was occupied during the 17th and early 18th centuries. The Abó Polychrome was named for the type pieces found at San Gregorio de Abó mission (Toulouse, 1949) along with large pieces of San Luis Blue-on-white.

Majolica was an established part of the mission supplies received during the period 1621-1680 (Scholes, 1930). The list of supplies published by Scholes speaks of "One dozen jicarillas (small Mexican bowls). . . One box of loza del Puebla (Puebla title or porcelain). . ." Since no tiles have been found in Spanish-Colonial archaeological sites it can be presumed at this time that we are speaking about "porcelains" in the mission supply list, or table dishes.

It is my feeling that the structure is the remains of a 17th century Spanish-Colonial ranch and was presumably abandoned in 1680 and reoccupied after the reconquest into the early 18th century.

Hackett and Shelby (1942, Part 1, pp. 22-23) mention a rancho at a narrow pass, apparently just above the junction of the Rio Grande and Rio Jemez, the house of Cristóbal de Anaya located two leagues south of San Felipe. One quarter of a league below San Felipe was the house of Pedro de Cuellar, a short distance farther south the house of Capt. Agustín de Carbajal, and beyond a short distance the above noted house of Cristóbal de Anaya. However, see David Snow's discussion in this volume of the Spanish-Colonial oc-
ocupation in the Bernalillo area.

Anthropological Institute New Mexico
Albuquerque, N. M.
BIBLIOGRAPHY

Goggin, John M.
1968  Spanish Majolica in the New World. Yale University Publications in Anthropology, no. 72, New Haven.

Hackett, Charles W., and Charmion C. Shelby
1942  Revolt of the Pueblo Indians of New Mexico and Otermin's Attempted Reconquest, 1680-1682. Coronado Historical Series, vol. 8 & 9, University of New Mexico Press, Albuquerque.

Plowden, William W., Jr.

Scholes, France V.

Tichy (Lambert), Marjorie Ferguson

Toulouse, Joseph H., Jr.
1949  The Mission of San Gregorio de Abo. Monographs of the School of American Research, No. 13, Santa Fe.
By Way of Introduction

Late in the fall of 1950, I was introduced abruptly to Spanish Colonial history and archaeology in the Rio Grande Valley when, oblivious to the arctic gusts of wind thundering across the gravel bluffs opposite the south end of Bernalillo, New Mexico, E. Boyd cheerfully directed my frozen eyes to the handful of broken pottery and small artifacts we had been collecting from the ground among the jumble of basalt rocks. My numbed senses took in but did not comprehend her name for that bleak area we had just traversed, shivering, eyes to the ground, a dozen times or more. She called it "BP", a spot I knew had to be the most desolate, certainly the coldest I had encountered in all my 13 years. I could not understand how anyone in his right mind would choose to spend there more than the time it takes to pass it by, and the bits of brightly colored pottery and metal scraps in her hand made very little impression on me. They could have dropped, I was sure, only from the hands of passersby; the jumble of black rocks clearly the fortuitous result of ancient natural forces (the absence of similar black rocks within sight or, as I much later took it upon myself to learn, within a short walking distance, made no impression either), and nothing about the place suggested to me that anyone had ever attempted to live there. My skepticism must have been more evident than my discomfort, and it was patiently explained to me that an archaeologist had, some 15 years ago, excavated here the remains of a 17th century Spanish house. Marge Lambert was that archaeologist, but I did not meet her for nearly 15 years when I went to work for the Museum of New Mexico. Marge still is one of a handful of people who have experienced the excitement and the frustrations, and the tantalizing
interpretative possibilities which come from the excavation of a New Mexican colonial house or ranch site, I believe Marge is, if not the first, then certainly one of the first to have done so.

For nearly 25 years, Bandelier's Puaray, still referred to as "BP", and its role in the development of what today is Bernalillo, has been one of those projects that I intended to get to next year. 'Next year' is almost here again, as I write this, and like Marge's excavations, I have barely scratched the surface of the cultural-historical processes which define Bernalillo as a community through time. These processes cannot be completely understood without considering the archaeological remains of Bandelier's Puaray and other nearby Spanish Colonial sites and without understanding their role in this central place of the old Rio Abajo.

Next year, maybe, I will have the opportunity to get back to a report which will describe the excavations, which I directed, of a 17th century Spanish Colonial house just two miles north of Bandelier's Puaray, on the same side of the river. In the meantime, I have taken this opportunity to bring together, in laundry-list fashion, some of the pieces of the jig-saw puzzle that is the history of Bernalillo and its neighbors. Putting the pieces together will be a formidable task, but a fascinating and important step, toward understanding the complexity of development of a frontier Spanish Colonial settlement into a 20th century town.

The first step is to determine just where Bernalillo was, or more properly, where it has been; what it contained, and what people called where they lived. Historic documents and oral history offer the archaeologist an opportunity to translate his data into the realities of the socio-cultural past but, contrary to popular belief, the fit between archaeological data and documentary or ethnohistoric 'facts' is exceedingly complex and they are often at odds. Bernalillo is a case in point. Today it is neatly circumscribed by the Rio Grande, by natural and political boundaries, by cultural constraints, and by the oral traditions that are its community charter. Few of
these have resisted the ravages of time.

A citizen of Bernalillo, when asked where old Bernalillo is, most likely will point to an area known as "Las Cocinitas", a group of ruined adobe structures surrounding a small plaza a block or so west of US 85. Las Cocinitas seems to be clearly the oldest extant portion of what one usually thinks of as Bernalillo today.

Several years ago, while I was excavating LA 4955 for the Museum of New Mexico, at Kuaua Pueblo ruins (Coronado State Monument), a community historian visited the site, and in answer to the obvious question I suggested that the 17th century house being uncovered might have been originally a part of Bernalillo. That was the wrong thing to say, and he never returned. How, then did LA 4955, Bandelier's Puaray, and other nearby archaeological sites of Spanish origin, including a 17th century occupation of portions of Kuaua ruin itself, fit the local 'historic facts', and what role did they play, if any, in the development of Bernalillo across the river? What parts did Santiago, Los Gallegos, the Pueblo and hacienda of La Angostura, and Guache, play in the history of a community whose very name has as many suggested origins as the number of centuries it has been in use?

Santiago

1602. The Enrico Martínez map shows a Pueblo of Santiago located on the west side of the Rio Grande, between Santa Ana Pueblo and Puaray Pueblo. The latter is shown, as it should be, on the east side of the river, but Santa Ana is located just south of the junction of the Jemez and the Rio Grande (Hammond and Rey, 1966, inside cover).

1634. Fray Alonso Benavides described the martyrdom, at second hand, of Fray Rodríguez, in 1580, who was taken by Indian friends from Puaray, "a league away to a pueblo now called Santiago, where, while preaching apostolically the devine word, they killed him and threw his body into the Rio del Norte, which flows along the edge of this pueblo" (Hodge, 1945, pp. 55-56). A short time earlier, Zárate Salmerón, describing the same
incident, noted that the Pueblo of Santiago was a league and a half above Puaray (Milich, 1966, p. 35).

1662. Testimony in this year indicated that Juan Esteban de Fagoaga, in the 1640s "lived twelve leagues from Santo Domingo, on a farm called Santiago" (Hackett, 1937, p. 229).

Memory of Santiago lasted well into the 18th century and, even though the pueblo itself seems to have been forgotten, a tract of land and several Spanish ranches retained the name; one ranch was owned by the heirs of the grant which today is occupied by part of Bernalillo.

1716. [From a campaign diary of Phelix Martínez to the Moqui Pueblos]. "I ordered Maestre de Campo Thoma's Olguín to conduct the army and to halt and remain at the place and post of Bernalillo... on the 18th [of August] I... sent an order to the said Maestre de Campo... to break camp and make the day's march to the place and post called Santiago, where I would join him... which I did, arriving at the said place... having marched 8 leagues [from Santo Domingo Pueblo]" (Bloom, 1931, p. 178).

1727. [Will, Salvador Montoya, son of Captain Diego Montoya]. Salvador married Manuela García de la Riva, whose dowry to him consisted of lands "at el Torreon on the Rio del Norte below Bernalillo". Manuela's father was a weaver by trade, and "weaver's bend" is an early place name in Bernalillo. The Torreon tract was bounded north by lands called Santiago, and east by the Rio del Norte. Montoya also declared his share in the Santiago tract, which he inherited from his father. Captain Diego Montoya owned land and a house on the west bank opposite the "weaver's bend" in 1701 (SANM, Twitchell Number 512).

1744. [Lawsuit, Francisco Gutierrez, son of Felipe Gutierrez]. A
priest called on Francisco at his "ranch of Santiago", which he purchased from his father. Felipe Gutierrez was the grantee of what is today called the Bernalillo grant (SANM, Twitchell Number 333).

1768. [Estate inventory, Manuel Olguín, at Bernalillo]. In his will, Manuel, who was almost certainly a son, or grandson, of Thomas Olguín mentioned as Maestre de Campo for the Moqui campaign in 1716, declared as part of his estate, "a tract of land situated on the other side of the Rio del Norte... [I declare] that the said land is divided in two parts by the Rio del Norte, and so the land lays on both sides of the river". In the act of delivery of the widow, there were "five hundred and twenty-five pesos pertaining to her for the site of Santiago", where his house was undoubtedly located (SANM, Twitchell Number 645).

We seem to be missing what, for historic reasons, is an important Indian Pueblo between Bernalillo and Puaray. Bandelier (1892, p. 227), from information provided him by Sandia Indians, called LA 326 by the name, Puaray, from which we get Bandelier's Puaray. In almost the same breath, however, he said that "this village is also called Pueblo de Santiago, but by whom he did not mention (see also Lange and Riley, 1966, pp. 310-314). There is no doubt that Santiago, prior to 1768 at least, was located on the west side of the Rio Grande and it is quite accurately shown on the 1602 Martinez map. The present north boundary of Sandia Pueblo, as laid out in 1748 (SANM Twitchell Number 486) and reconfirmed by the Pueblo Lands Board (Brayer, 1939, pp. 72-74), starts at the Rio Grande nearly opposite LA 326 (see accompanying figure). In 1748, the north boundary was to be a line beginning opposite an old tower at the Cañon del Agua, which is shown on the U.S.G.S. (7.5') Bernalillo Quadrangle, and is the location of the present boundary line. While the existing ground plans for Bandelier's Puaray, or LA 326, do not conclusively indicate
the former presence of a tower, I believe that a closer examination of the site might disclose such a feature.

In short, I suspect that Bandelier's Puaray, LA 326, is the former Pueblo of Santiago, as Bandelier suggested. The distance above Puaray, noted by Zárate Salmerón, is about right (see Snow, 1975, for a suggested location for Puaray), and there are several 18th century references to houses with torreones in the Alameda and Corrales areas which can be equated with the 1727 Torreon tract situated below the Santiago tract (SANM, Twitchell Numbers 238, 465; U.S., Surveyor General, Court of Private Land Claims, Town of Alameda Grant, Case #91). The distance from Santo Domingo to Santiago, in 1716, was said to be 8 leagues by Phelix Martínez, or about 20 miles. This is the approximate distance to Bernalillo today, not to its 18th century location, which, as will be shown, was situated considerably to the north of its present site. It may be that the 17th century Spanish house excavated by Marge Lambert at LA 326 and referred to by Toulouse in this volume, was the site of Juan Esteban de Fagoaga's ranch in the 1640s.

Las Angosturas and Upper Bernalillo

1643. Governor Alonzo Pacheco de Heredia confiscated, as a result of a charge of treason and seditious behavior, the place of Juan Ramírez, "which said property was situated on the banks of the Rio del Norte, between the Pueblos of San Felipe and Sandia, which being the central place of the most important and populus part of the kingdoms and provinces of New Mexico, and being also the best and most popular crossing by which the Indians of the Apache nation, the common enemy of our Holy Catholic Faith, committed their assaults, depredations and murders on our country and people, he established there a fort which he called the Fort of San Antonio and left there a garrison of one captain and 15 soldiers" (Santa Fe, New Mexican, July 12, 1880).
1680. [Letter from Don Severino de Suballe, August 8]. "All the Spaniards who were above Sandia have been despoiled---Anaya and Carabajal with their families perished---except those of Bernalillo, all of whom are coming here [in this place below Thome]" (Hackett and Shelby, 1942, Part I, p. 30).

1680. [Otermín's army and the retreating colonists from Santa Fe marched from San Felipe Pueblo] "with all care and vigilance to the narrow pass at the house of Cristóbal de Anaya---about a quarter of a league farther on there was seen an estancia belonging to Pedro de Cuéllar, which was found sacked and destroyed. A short distance beyond they came to another house, belonging to Captain Agustín de Carabajal---a very short distance from there they came to the house of Captain Cristóbal de Anaya" (Hackett and Shelby, 1942, Part I, p. 22).

1692. Referring to re-settlement of New Mexico, de Vargas reckoned that "from the hacienda of La Angostura, two leagues from the Pueblo of La Angostura, that is, San Felipe, to the abandoned pueblo of Sandia, and one league from the abandoned pueblo of Puaray, at the said first one of Sandia Spaniards also may be settled." (Espinosa, 1940, p. 286).

1693. Diego de Vargas reported seeing the house of Agustín de Carabajal [deceased] "hard by the mesa on which San Felipe was now located" (Espinosa, 1942, p. 37); de Vargas actually referred to the place as the former "hacienda of Doña Damiana [Domínguez de Mendoza], the deceased wife of Carbajal." He also reported, a league farther on, the ruined hacienda of Cristóbal Anaya and, one-half a league farther, "the abandoned hacienda of Ambrosio Sáenz, where a house was still partially standing--on the road to San Felipe" (Ibid., pp. 139-40).

1695. [Grant of land]. In this year, Manuel Baca asked for and received a grant of lands "at the Angostura de Bernalillo which had formerly belonged to his father, Cristóbal Baca (SANM, Twitchell Number 1136).
The settlers of "Bernalillo" were afraid to move closer to Santa Fe, as de Vargas requested, because they could not "get their property and livestock across the fast running Rio Grande without irreparable loss" (Espinosa, 1942, p. 249). These people were to retire to Santa Fe "and come by way of the pueblo village of San Felipe where they could halt and cross the swollen Rio Grande by rafts" (Ibid., p. 255).

A grant of land was made to an unidentified recipient, on the Rio del Norte, "formerly belonging to the Sargento Mayor Ambrosio Saenz" (SANM, Twitchell Number 1136).

Fort San Antonio has disappeared from historians' view even more completely than the Pueblo of Santiago, and may have reverted to a residence shortly after its establishment since it is not mentioned again in the documents of the period. Virtually nothing is known of Juan Ramírez de Salazar (Chavez, 1953, p. 90), except he was almost certainly related to other families in the Bernalillo area, such as the Salazar, Rodríguez de Salazar, and Romero groups. Francisco Romero was married, in 1683 at the age of 48, to Francisca Ramírez de Salazar, and one of their children (most likely), Baltasar, was prominent in the Angostura area in the 18th century. Francisco Ramírez de Salazar did not return to New Mexico, and the location of his house is not definitely known. One clue to its location might be "the best and most popular crossing of the Apaches" which, because of the topography and natural cover provided by the bad lands, may indicate the area about the mouth of the Jemez River. The Jemez River is a natural corridor from the Rio Grande Valley at this point and was in continuous use until construction of New Mexico 44.

Cristóbal Anaya, and his son Cristóbal, evidently had their own estancias in the vicinity of the narrow pass, which referred then, as it does today, to Las Angosturas, which is located between the mouth of the Jemez River and San Felipe Pueblo. This is the area in which I suspect the remains of Fort San Antonio, if they exist, will be found. Don Severino de Suballe's letter suggests that not
only were there other families in the area known then as Bernalillo, but he implies that Anaya and Carbajal lived apart from that community. Many of those families that did escape the rebellion at Bernalillo, as de Suballe noted, returned to re-settle ancestral lands in the Bernalillo Valley and many chose to live on the west bank. Diego de Vargas, who was instrumental in re-settling Bernalillo, referred to those people on the west bank of the river as settlers of Bernalillo, and some of them, or their immediate ancestors, must have occupied LA 4955 (or, as I called it during excavation, Casa Quemada) and nearby sites on the west bank. Bandelier's Puaray is too far south to have been involved in de Vargas' reference to the Anaya or associated group of estancias at the Angosturas (e.g., Toulouse, this volume).

Although we know the names of some of the families of the area during the 17th century, their relationships and their troubles, the location of their homes and the extent of their landholdings have disappeared, for the most part, with the documents of the period, and it is from testimony involving land transfers and other legal documents from the 18th century that we gain a more complete picture of the pre-Revolt era in the Bernalillo part of the Rio Abajo.

1701. [Deed, Las Angosturas de Bernalillo]. Manuel Baca donated to Captain Don Fernando Durán y Chaves, "a piece of ground from that which said Manuel Baca has taken possession [in 1695], that is the amount which the throw of a stone with the hand will cover, from the place where said Chaves has built a house" (SANM, Twitchell Number 230).

1704. [Suit, Bernalillo]. Cristóbal and Juan Antonio Jaramillo asked for a grant of land bounded north by San Felipe, east by the Rio del Norte, south by Don Fernando Durán y Chaves, and west by the mesas. The grant was not issued, among other reasons, because these men were at the time settled on a grant "on the other side of the Rio de Norte which formerly
belonged to the Carvajals", and which was most likely the location of the massacre of Agustín de Carbajal and his family 24 years earlier (SANM, Twitchell Number 78).

1707. [Grant of land]. Grant of a house and lands formerly belonging to Doña Isabel Holguín, was made to Baltazar Romero by the Marqués de la Peñuela (SANM, Twitchell Number 1136). Isabel Holguín was the mother of Agustín de Carbajal. Both were killed at Agustín's estancia in 1680. A daughter of hers married Don Fernando Durán y Chaves (Chavez, 1954, p. 15).

1709. [Deed, Bernalillo]. Manuel Baca, brother-in-law of Felipe Gutierrez (whose 1701 grant is today called the Bernalillo grant), for fifty pesos, sold land to Santa Ana, described as the "piece of farm land which he had at the bend of the river at the mouth of the Santa Ana River, which is bounded on the north, by a mesa, on the south, by the river [the Santa Ana, or Jemez River], on the west, by the lands of the Pueblo of Santa Ana on the other side, which said lands Manuel Baca had by grant from the Marqués de Brazinas (U.S., Surveyor General, Court of Private Land Claims, No. 157, The Pueblo of Santa Ana v. United States).

1713. [Land conveyance, Bernalillo]. Captain Juan Gonzales Bas conveyed to Santa Ana land which he had acquired from Captain Diego Montoya, which was described as bounded "upon the north, by the lands of Javier Miranda; on the east, by the Rio Grande as it ran in about 1709, which was at the place called Estero; on the south, by a line from said ancient bed of the river to the house of Baltazar [Romero]; and on the west, by the Ceja del Rio Puerco" (U.S., Surveyor General, Court of Private Land Claims, No. 157, Pueblo of Santa Ana v. United States).

1734. [Deed of sale]. Baltazar Romero, son-in-law of Diego Montoya, sold land to Santa Ana Pueblo described as a "tract of lands and a grove situated on the other side of the river--it be-
longed to Bernalillo, a very ancient settlement of Spaniards" (anulled, prejudice of the settlement and contrary to royal laws; SANM, Twitchell Number 1345).

1739. [Will, Angosturas de Bernalillo]. Cristóbal Baca, son of Manuel Baca, declared "one share in the location called Anaya, in the Rio Abajo which I inherited from my parents" (SANM, Twitchell Number 88). Cristóbal's paternal aunt was Francisca Anaya Almazán (Chavez, 1954, p. 141).

1739. [Deed of sale]. Josefa Baca, daughter of Manuel, sold to Cristóbal Martín Gallegos "some land on the other side of the river in Bernalillo, commonly called of Francisco Domíñquez" [de Mendoza], whose family did not return with the Reconquest (Chavez, 1954, p. 26), "bounded east, by the Sandia Mountains, north below the house of Doña Ana [probably Doña Ana Rodriguez de Anaya, wife of Ambrosio Saenz], south opposite the house of Diego Montoya where there is a small bend, and west by the Rio del Norte and where the cottonwoods start" (U.S., Surveyor General, Court of Private Land Claims, No. 157, Pueblo of Santa Ana v. United States).

From our modern perspective, lacking extensive documentation, and in the absence of adequate archaeological survey of the Bernalillo Valley, the history of settlement, as evidenced in the foregoing references, is confusing, at best. Bernalillo was simply a scatter of ranches. This was true in 1706 when Fray Juan Álvarez described it (Hackett, 1937, p. 375); LaFora said that between Sandia and San Felipe, in 1766, "on both sides of the river there are several small ranches called Bernalillo" (Kinnaird, 1958, p. 90); and in 1782, Father Morfi noted that "at about twenty leagues from Santa Fe is that which Father Álvarez calls the Villa de Bernalillo, a settlement of Spaniards under the protection of Nuestro Padre San Francisco. It is composed of several scattered ranches; the pueblo is without unity or regularity. In 1744, it had 100 families" (Thomas, 1932,
In 1776, Fray Atanasio Domínguez passed through this part of the Rio Abajo and described in his inimitable fashion the situation of Bernalillo, and his observations summarize the confusing picture presented by the documents presented above.

1776.  [Inventory and description of the missions, Fray Domínguez]. Sandia mission "has charge of the administration of some citizens---about two leagues away---called Bernalillo, and it consists of separate ranches with not very good lands. These citizens are considered Spaniards" (and his census gives 27 families with 81 persons, which leads me to suspect that Father Morfi's claim of 100 families in 1782 referred to persons). Domínguez turned up river and described "a small settlement of ranchos [which] looks to this mission [of San Felipe] for spiritual administration. It is about two leagues downstream from the mission on the same side of the river [the west side] at the foot of some hills. It is called Upper Bernalillo to distinguish it from the Bernalillo I mentioned at Sandia. On the south bank of this river [Jemez], where the said cañada opens is the settlement I have just described" (Adams and Chavez, 1956, pp. 144, 165-166).

Los Gallegos to Guache

1701. [Application for grant, Felipe Gutierrez at Bernalillo]. "I request your excellency to be pleased to make me a grant in the name of His Majesty---for a tract of land situated on this [east, or Santa Fe] side of the Rio del Norte, in front of the house of Captain Diego Montoya, which is called the weaver's bend, containing a league and a half in area---" (U.S., Senate Executive Documents, No. 38). The boundaries were validated in 1708, as follows: "on the north a sand hill which is the boundary of Captain Juan Gonzales; on the east, some high hills; on the south, a small grove; and on the west, the Rio Grande" (Ibid.). This is the so-called
Bernalillo grant.

1744. [Land division, Felipe Gutiérrez grant]. The grant was divided upon Felipe's death, into thirds. Francisco, one of three heirs, had already purchased the share belonging to his brother Bartolo, and was deeded Antonio's third by Gregoria de Gongora, the latter's wife. Francisco built a house on Bartolo's portion, but sold the northern part of that tract to Javier Miranda, who abutted on the north. Gregoria de Gongora's sister was the first wife of Baltazar Romero (SANM, Twitchell Number 333).

1753. [Deed of sale, Bernalillo]. Alejandro Mora sold to Santa Ana some land bounded as follows: "on the north, by the boundary of the Town of Bernalillo which is at an arroyo that comes down from Santa Ana [the Jemez River?]; on the east, by a line from the ancient bed of the Rio Grande; on the south, by the walls of the house of Felipe Gutiérrez; and on the west, by the Rio Puerco" (U.S., Surveyor General, Court of Private Land Claims, No. 157, Pueblo of Santa Ana v. United States).

1763. [Petition for land and deed of sale]. Santa Ana Pueblo wanted lands which were "on the other side from Bernalillo [bounded] on the west side by the Rio del Norte, on the east to the foot of the Sandia mountains, on the north the half of the Angostura, on the south by three cottonwood trees---below the house where said deceased [Cristóbal Martín Gallego] used to live, and from the said cottonwood trees the straight line follows from northeast to southwest to join and reunite said lands with those which said natives have purchased which formerly belonged to Miranda, and from said cottonwood trees in the direction of the south they reserve, without selling, a piece of land which was sold to [Martín Gallego] by Josefa Baca, deceased---" (SANM, Twitchell Number 1349).

1768. [Land dispute, Bernalillo]. Jacinto Gutiérrez, son of Francisco, pointed out that the boundaries of his father's land were, on the north, lands of Josefa Baca and the house of Diego Montoya.
Josefa Baca, he said, had sold the property to Cristóbal Martín Gallegos. The deposition was taken at the "place of Los Gallegos in Bernalillo (SANM, Twitchell Number, 697).

Cristóbal Martín Gallegos, and his brother, Roque, came to Bernalillo in the 1730s, when Josefa Baca sold the former some land adjacent to her inherited property. Roque built three houses, at least one of which was adjacent to the Bernalillo church. He later donated his land to his brothers' wife Quiteria Contreras. Cristóbal Gallegos also built near the church and it was claimed, during the deposition regarding a land dispute in 1770 (SANM, Twitchell Number 368), that Andrés Aragón lived across the river at the time the Gallegos brothers arrived. A grand-uncle, apparently another Gallegos, but unidentified also lived with Roque and Cristóbal near the church. According to Juan Candelaria (1776, p. 277), the Bernalillo church was washed away by the Rio Grande in 1735 or 1736. It must have been re-built by the time the Gallegos brothers arrived, although Fray Domíquez failed to note such a church in 1776. Ignacio de Aragón married Luisa Baca, daughter of Cristóbal of Bernalillo, and took up residence in that place in 1710 (Chavez, 1954, p. 128). Andrés Aragón, mentioned as living on the west bank in the 1730s, was the most likely the son of Ignacio.

With the purchases of lands by Santa Ana Pueblo, including a parcel from Quiteria Contreras in 1763, which today make up El Ranchito Grant intruding between present Bernalillo and Algodones and Angostura, Bernalillo became crystallized into the Upper and Lower communities described by Fray Domíquez in 1776. I have not attempted to document the fate of Upper Bernalillo after that date, but perhaps shifts in the rivers' course (as indicated in 1709 and in 1735 or 36), or continuous flooding throughout the century and later, forced people to concentrate on the higher ground east of the river in the present localities of Algodones and Angostura.

1816. [Letter, Jose Gutierrez to Governor Maynez, Bernalillo]. "The
[Sandia] Indians, in the year 1814, loaned to more than 20 Spaniards, who were poor and had no lands of their own, certain pieces east of the Rio Grande and about 2,000 varas from the intake of the Sandia irrigating ditch; six of the Spaniards had built some huts on the land in order to have some place in which to live while farming, and in two years' time they had begun to get some return for their labors" (SANM, Twitchell Number 1359).

1824. [Deed of sale]. "Juan Ángel Moquino, alcalde for the district of Sandia Pueblo, and Mariano Montoya, also of that pueblo" deeded to 67 residents of Bernalillo a large tract of land "on account of their not having land on which to support their families". This, and other small portions of land were sold by Sandia to residents of Bernalillo during the early 19th century, and constitute the commercial and residential center of Bernalillo today. These parcels were declared null and void by the United States Government since the Indians could not legally deed away their land, following Spanish law, and suit to quiet title was entered in 1924 before the Pueblo Lands Board (Brayer, 1939, pp. 69-74). Such title would have returned downtown Bernalillo to Sandia Pueblo. The citizens rallied and purchased the aggregate from Sandia, thus extending Bernalillo as a community considerably south of the original settlement.

1880. [News story, the Bernalillo News]. "This morning two human bodies, dead and frozen, might have been seen by the early risers hanging from a cottonwood tree, at the rear of Schuster's store in Guache, the name given to the southern part of this settlement" (Stanley, 1964, p. 13).

Among several meanings for the word guache, is that which refers to the men who feed the arrastre, or crushing mill, with ore. An 1881 newspaper account noted that gold was reported in the foot-
hills near "that berg" referring to Bernalillo (Stanley, 1964, p. 12), and the mineral resources of the Placitas district are well known.

1897. El Ranchito Grant, as confirmed by the Court of Private Land Claims, was bounded as follows: "on the north, by an east-west line running through the house of Cristóbal Martín Gallegos, which was located at least 4,300 varas south of the point known as Loma Infernado and about one and a half miles north of the present Church at Bernalillo, said house forming the south boundary of the Pueblo of Santa Ana Grant; and on the west, by [the] old bed of the Rio Grande River which was located several hundred yards east of the new bed of the river through the place known as the Estero in the vicinity of the house of Cristóbal Martín Gallegos, deceased" (U.S., Surveyor General, Court of Private Land Claims, No. 157, Pueblo of Santa Ana v. United States).

1897. Testimony before the Court of Private Land Claims, regarding the Felipe Gutierrez grant at Bernalillo, provided the information that "the town of Bernalillo is now on the east or hither side of the Rio Grande del Norte, though at the time of the grant [1708] it was on the western or further side of that river" (U.S., Surveyor General, Court of Private Land Claims, No. 83, Felipe Gutierrez Grant).

Bernalillo's present church was constructed about 1857, according to local information (The Albuquerque Journal, Sunday, Nov. 29, 1970, p. A-10). Cristóbal Martín Gallegos' house, during the 18th century, was located next to the church of that time, and in 1897, his house was said to have been located about one and a half miles north of the present church, which was constructed some 40 years prior to the grant testimony in 1897. In the modern community of El Llanito, slightly more than a mile north of Our Lady of Sorrows Church in Bernalillo, "along the main highway there is a large cross located in the middle of a field....This marker has been pointed out by in-
formants as indicating the position of the old church...and is now one mile east of the river" (Bowen and Sacca, 1971, p. 42).

The 18th century church was at the place called Los Gallegos, and the latter was probably the nucleus of the modern community of El Llanito. The present north boundary of the Bernalillo grant runs immediately north of that community. Los Gallegos, and associated ranches, was undoubtedly Domíquez' Lower Bernalillo, and Felipe Gutierrez' house was situated somewhere between there and the north boundary of Sandia Pueblo, which today runs through Bernalillo, just south of the present church.

The south boundary of the property that Cristóbal Martín Gallegos purchased from Josefa Baca, in 1739, was to be a line from east to west opposite the house of Captain Diego Montoya. Josefa Baca also sold land to Juan Gonzalez Bas in 1713, and the south boundary of that tract was given as a line opposite the house of Diego Montoya. The north boundary of Felipe Gutierrez' grant, as confirmed in 1708, was given as a line opposite the house of Diego Montoya also, and this line was confirmed in 1897. 1768 testimony by Jacinto Gutierrez makes it clear that the Josefa Baca or Cristóbal Martín Gallegos tract abutted the Felipe Gutierrez grant to the south, the dividing line between being a line opposite the house of Diego Montoya. This area, on the east side of the river, was known as the weaver's bend, and is today, El Llanito.

There are three Spanish Colonial houses opposite El Llanito. today: LA 4955, Kuaua, and a small undesignated site several hundred yards north of the latter which has been cut by the old railroad grade which crossed the river at this point early in this century. Either of these might have belonged to Diego Montoya prior to the revolt, or to his parents. LA 4955 was evidently destroyed in 1680 and never rebuilt. The Santiago tract, in which Montoya owned land, was almost certainly the area of the west bank directly opposite modern Bernalillo and was the location of the Pueblo of Santiago, or LA 326, and of the Spanish house excavated by Marge Lambert.

Museum of New Mexico
Santa Fe, N. M. 178
BIBLIOGRAPHY

Adams, Eleanore, and Fray Angelico Chavez
1956 The Missions of New Mexico, 1776: A Description by Fray Atanasio Domínguez. University of New Mexico Press, Albuquerque.

Albuquerque Journal, The

Bandelier, Adolph F.

Bloom, L. B.
1931 A Campaign Against the Moqui Pueblos under...Governor Phelix Martinez, 1716. New Mexico Historical Review, vol. 6, pp. 158-226.

Bowen, Joanne, and Mary Lynn Sacca

Brayer, Herbert O.

Candelaria, Juan

Chavez, Fray Angelico
1954 Origins of New Mexico Families in the Spanish Colonial Period. Historical Society of New Mexico, Santa Fe.

Espinoso, J. Manuel
1940 First Expedition of Vargas into New Mexico, 1692. University of New Mexico Press, Albuquerque.
Hackett, Charles W.

Hackett, Charles W., and C. C. Shelby
1942 Revolt of the Pueblo Indians of New Mexico and Otermín's Attempted Reconquest, 1680-1682. University of New Mexico Press, Albuquerque.

Hammond, George P., and Agapito Rey
1966 The Rediscovery of New Mexico, 1580-1594. The University of New Mexico Press, Albuquerque.

Hodge, F. W.
1945 Fray Alonso de Benavides' Revised Memorial of 1634. The University of New Mexico Press, Albuquerque.

Kinnaird, Lawrence (ed.)

Lange, Charles H., and C. L. Riley

Milich, Alicia R. (ed.)

SANM Spanish Archives of New Mexico (Twitchell Numbers, WPA translations). Museum of New Mexico, Santa Fe.

Santa Fe New Mexican (newspaper), July 12, 1880. Santa Fe.

Snow, David H.
Stanley, F.
1964  The Bernalillo Story. Pep, Texas

Thomas, Alfred B.

Twitchell, Ralph E.

United States, Public Documents
1874  Senate Executive Documents, No. 38, 43rd Cong., 1st Series. Surveyor General, Court of Private Land Claims.
SANTA FE'S SEVENTEENTH CENTURY PLAZA,
PARISH CHURCH, AND CONVENT RECONSIDERED

BRUCE T. ELLIS

Much of what has been published on the pre- and immediately post-Revolt physical layout of Santa Fe is speculative. No pre-1680 deeds or grant papers survived the 1680 holocaust; the chief sources for hypothetical reconstructions of the period are the Otermin and especially the Vargas journals, supplemented by a few post-1693 land documents that refer to pre-Revolt properties.

Among the statements about 17th century Santa Fe that have been made are the following:

1) During their 1680-1693 occupancy of the city, the Pueblo Indians built multi-storied house blocks on the east, south and west sides of the plaza, joining the eastern and western wings of the complex to the ends of the Palacio Real on the plaza's north side thus to form a quadrangle. Kivas were erected in the plaza. A wall was built around the entire central section of the city north of the river. All of this is described in some detail by Twitchell (1925, pp.136-138, 150-151). Hewett and Fisher (1943, p. 104) and a "portcullis" to the wall.

2) The original pre-Revolt plaza was at least twice as long, east to west, as is the present square (various writers).

3) The location of the church and convent that were burned by the Indians in 1680 (a) is uncertain (Kubler, 1940, p. 100); (b) was exactly where the present Cathedral now stands (Bandelier, article in Daily New Mexican, July 5, 1890; Twitchell, 1925, p. 153; Prince, 1915, p. 73; et al.); (c) was close to and almost directly behind the site of the present Cathedral (Chávez, 1949, p. 93). As Chávez alone provides documentation to support his thesis, his article is of primary importance in any discussion of the subject.

The first assumption can be disposed of readily. There is
nothing in the well translated and annotated archival material on
Vargas' first expedition (Espinosa, 1940) or in the less satisfac­
torily rendered or paraphrased documents on his second entrada
(Twitchell, 1914, vol. II; 1925; Bailey, 1940) to indicate either
that the Indians erected house blocks around the plaza or built a
wall around a sizable section of the city north of the river. The
occupied pueblo that Vargas found upon his September 13, 1692 entry
had been built by the Indians within the confines of the extensive
casas reales complex north of the plaza. This complex had been
securely walled and fortified by Otermin just before the 1680 debacle,
and it alone was spared the destruction wreaked upon the city during
the siege of that year and following the exodus of the Spaniards.
The Indians added two or three stories to some of the buildings in
the complex and limited its access to a single fortified gate that
faced the plaza. The rest of the city around the casas reales and
the plaza, evidently, they converted into cornfields.

Vargas wrote that upon entering Santa Fe from the west he "soon
found myself in the fields which surrounded the villa and its square" -
by "villa" meaning the casas reales, which throughout the 17th and
early 18th centuries were referred to by that term. Rather than
having to "scale [the] outside wall and intrenchments" in order to
reach the plaza, as stated by Twitchell, he brought both his troops
and artillery into the plaza with no difficulty, coming close enough
so that the expressions on the faces of the Indians could be seen.
The excited Indians demanded that the troopers' horses be kept out
of their cornfields. At that time his little army was deployed in
squads around the perimeter of the occupied casas reales; the Indians
obviously were concerned about damage near at hand, not downriver
or beyond the plaza.

Consistently, in the journals of both his 1692 and his 1693
entradas, Vargas differentiates between the former city plaza, in
which he stationed his troopers and where he conducted his nego­
tiations with the distrustful Indians, and the main patio within
the walled casas reales compound. Once given peaceful entrances to
the latter, on December 14, 1962, he found the Indians "coming down
from their houses, which are high, on ladders." In this patio, a
few days later, an altar for Mass was erected and many Indian children
were baptized.

On his second entrance, in December 1963, Vargas found the
situation unchanged. He again led his soldiers - this time ac­
companied by settlers and seventeen friars - into the former plaza
without hindrance. The single gate of the walled pueblo was thrown
open to him. Later, however, when he attempted to oust the Indians
from their dwellings to provide shelter for his freezing colonists,
this gate was closed and a bloody battle ensued. All of it occurred
upon and within the fire-stepped walls of the casas reales; there
was no fighting in the former plaza or any other part of the city
except a brief cavalry skirmish on the foothills to the north, to
repel some mounted Tewas and Tiwas coming to aid the beleaguered
Tanos.

In short, the walled pueblo occupied by the Indians from 1680
to 1693 - later described by Vargas as having round towers at each
of its four corners, two interior patios, a single gate and three -
and four-story dwellings - had been converted by them from the
Spanish casas reales. There were no Indian house blocks on the other
sides of the plaza and no kivas within it, no separate surrounding
wall - and no portcullis.

Concerning present estimates of the plaza's original dimensions,
it is possible that a case can be made (although admittedly upon
scanty evidence) to show that previous to the 1680 Revolt the plaza
was not only twice as long as it is now, east to west, but also
twice as wide, north to south. This requires some highly inferential
use of existing documentation.

The ordinance issued by Philip II in 1573 for the laying out
of towns in New Spain have been published by Nuttall (1921, pp. 743-
753), both in the original Spanish and in translation. In the origi-
nal, the recommended maximum plaza dimensions are 800 by 32 (sic, error for 532) pies, the medium 600 by 400 pies, and the minimum 300 by 200 pies. Nuttall translates the Spanish pie as "foot." But the pie was one-third of a vara in length, or 10.97 inches. The correct recommended plaza dimensions thus would be, in English measurement: maximum - 731 by 486 feet, medium - 549 by 366 feet, and minimum - 274 by 183 feet. The size chosen for a new plaza was to correspond with the estimated future growth of the settlement.

Despite Kubler's statement (1940, p. 18) that Santa Fe, of all Hispanic cities in the New World, is a "paradigm" of Philip's ordinances, Governor Peralta certainly did not carry them out to the letter in 1609-10. Nevertheless, there seems to have been some effort made to follow the Vitruvian grid pattern specified. An oblong central plaza was laid out, quite probably proportioned to estimated future growth - which, as that of the capital city, might be substantial. Peralta therefore would not have designed a plaza of the minimum size decreed - a mere 274 by 183 feet - and in fact seems to have opted for the maximum, at least in length. The distance between the present plaza's west end and the western edge of the present Cathedral grounds, including the bordering streets, is very close to the recommended 731-foot maximum. As a plaza of this length and the present plaza's 280-foot width (including the bordering streets) would have been disproportionately - and uselessly - long and narrow, this suggests that the original plaza's width also was of recommended maximum size, about 486 feet. This width would place its southern border just a few feet north of present Water Street.

The importance of Water Street in Santa Fe's early layout has not been sufficiently stressed. Before its present name was given it in March 1881 (Daily New Mexican, March 9, 1881), it was known as Rio Chiquito Street, taking its title from a stream which left the Santa Fe River (called merely El Rio or El Rio Grande in Spanish days) just west of the present intersection of Cathedral Place and the Alameda. It coursed northwest to present Water Street and then -
its flow amplified by a ditch that led from a large spring southeast of the present Cathedral - ran west along this street to a point just north of Guadalupe Church, where it re-entered the Santa Fe River. Both it and the ditch from the spring are shown on Gilmer's 1846 map of Santa Fe.

The Rio Chiquito appears to have been a natural divergent channel of the Santa Fe River and to have been in existence in pre-Revolt times. It is referred to as _el Rio Chiquito que llaman_ in grant papers written in 1699 (SANM I: 411), which also mention _el Rio Grande_. As _el Rio Chiquito_ it is named in very many early 18th century deeds. A public road ran along its north bank at least as early as 1716, as is shown by a deed of that year (SANM I: 312) - a road that ultimately became the Water Street of today. An 1850 deed (Book B, Deeds, p. 99, SFCCO) refers to a land boundary as _la calle que comumente llaman el Rio Chiquito_ and a deed of 1855 (Book B, Deeds, p. 95, SFCCO) has as a boundary "a street running parallel with the southern front of the Public Plaza, through which said street runs the Rio Chiquito."

A 1722 deed covers property located _entre los dos Rios_ (SANM I: 439). As late as 1835, in papers covering a law-suit of that year, it is called "an outlet of an arm of the Rio Grande," belonging to no-one, serving from time immemorial only as the boundary of properties located along its sides (SANM I: 1313). It flowed briskly - often too briskly - well towards the end of the 1800s. On July 10, 1872, the _Daily New Mexican_ reported that

... men are busy at work levelling and filling up the Rio Chiquito street, and laying a paved acequia to prevent the water from overflowing the entire street.

A water-course along the plaza's original south side, supplying the settlers' houses and gardens between it and the main river, would have been consistent with the ditch, dug from the river, that ran along the plaza's entire north edge from early pre-Revolt times - the latter being the ditch that the Indians cut
in 1680, thus depriving the Spaniards, in the besieged casas reales, of water. In fact the existence of the Rio Chiquito in 1609-10 may have been a deciding factor in Peralta's location of the entire plaza.

There are several documentary indications that the 17th century plaza did indeed extend almost or fully as far south as present Water Street.

In 1697-8, when Governor Cubero built a convent for the Franciscan friars in Santa Fe, he granted them the land on which the new convent stood plus sufficient extra land for a future church and for farming (AASF, Loose Documents, Mission, 1697 No. 1 and 1698 Nos. 1 and 2; the grant papers, which were first brought to light by Chávez, are translated and discussed by him in Chávez, 1949). The land was bounded on the west by "the former plaza of this Villa." The convent was in course of construction when the grant was made, and it was situated - not due east of what would be an extension of today's plaza up to present Cathedral Place - but well to the south of this extension's southern border. Thus its building-site, bounded west by the "former plaza," had to face a part of this former plaza that lay south of present San Francisco Street, which defines the present plaza's southern edge. (In the sketch accompanying Chávez' 1949 article a wide plaza is indicated, without comment in the text.)

Mention of San Francisco Street (la Calle Real de San Fransisco) in early 18th century deeds has led to the assumption that this main street of the city bordered the plaza's south side since the 1693 Reconquest and probably pre-Revolt times as well (e.g., Twitchell, 1925, p. 156). This may not have been the case.

The royal ordinances of 1573, previously cited, stipulated that after the plaza had been located, main streets should be laid out, one running from the middle of each of the plaza's four sides while from each corner there should extend two streets. In Santa Fe, this classic Roman pattern can still be traced, although in vestigial form of three factors:

1) The obfuscation of the city's pre-Revolt street pattern by
Indians who occupied it from 1680 to 1693, all except the casas reales complex having been converted by them to cornfields. Former street and property lines would have been ignored, in this conversion, although the early acequia network probably was maintained and even amplified, at least close to the casas reales.

2) The rapid regranting and new granting of lands in the central city immediately following the 1693 Reconquest, in which former street, plaza, and house-lot patterns often were muddled. This uncontrolled "urban renewal" was especially disruptive of the old layout in the plaza area.

3) The straightening, changing, and elimination of old streets and alleys, and the cutting through of new streets, occurred in the late 1800s when Santa Fe's boosters were trying to make of it a neat midwestern-style metropolis.

Of the four *calles principales* that were to run from the middle of each side of the plaza, present Washington Avenue to the north, West San Francisco Street to the west and lower Shelby Street to the south are the approximations of three. That there may have been a fourth to the east, through the site of the present Cathedral, is possible, although the marshy ground to the *cienaga* would have blocked (as it did until the 1870s) the projection of a main street very far in this direction. It is certain, however (see later), that there was a street pattern of some sort east of the plaza in pre-Revolt times.

The earliest mention of la Calle Real de San Francisco seems to lie in the records of 1704 lawsuit, in which the plaintiff, a returnee with Vargas, stated that his claimed property was on the street so named and that it had belonged to him and his *padres* before the Revolt (SANM I: 481). A 1713 deed (SANM I: 162) may place a part of this property at the east end of the former plaza, but the tie-in is uncertain.

A deed drawn in 1708 (SANM I: 298) conveys property on *la Calle Real avajo que llaman de San Francisco para el poniente*. The pro-
perties noted as boundaries in this deed, the locations of which are known, make it clear that this "lower Royal Street called San Francisco, to the west" did in fact lay west of the plaza.

There appear to be no further deed references to la Calle Real de San Francisco until 1740 (SANM I: 272), by which time present San Francisco Street from the Cathedral grounds to well west of the plaza had long been established. In the many intervening deeds to properties on the street it is called merely le Calle Real.

Some confusion about the name is evident in the report of a survey of streets ordered by Governor Marín del Valle in 1756 (AASF, Loose Documents, Mission, 1756 No. 1). The report states that the camino running north from the fuerte at the southwest corner of the Palace's west wall and the houses and lands of several private owners as far as the Arroyo de los Mascaras,

... se le pon nombre de San Francisco

This late assignment of the name to a north-south street, which according to a much earlier report existed in pre-Revolt times not as a camino but only as a narrow foot-path running along the wall of the Palace (examination of streets made in 1715; SANM I: 8), conceivably was the result of garbled rumor.

From all the above (discounting the 1756 report), the inference may be drawn that as originally laid out, la Calle Real de San Francisco extended west as one of the main roads that were run from the middle of each of the plaza's sides. As stated above, a similar road may have led east from the plaza's opposite side - giving access to the pre-Revolt church and convent of St. Francis (see later) and thus accounting for the name applied to the two aligned but at that time separated roads.

Perhaps the best evidence that the original plaza extended south almost to the Río Chiquito is found in the 1699 grant cited earlier (SANM I: 411). The papers in the case note that in 1696 an Isabel Jorge petitioned Vargas for a piece of land situated on the north bank of the Santa Fe River which in pre-Revolt times had be-
longed to her grandfather. It was bounded on the east by lands of Lorenzo de Madrid. Vargas granted her a part of this land on May 20, 1696. Three years later Isabel petitioned Governor Cubero for a regrant of the property, stating that her original papers had been eaten by rats. She asked for lands "bordering the Rio Chiquito, as it is called, bounded on one side by lands of Lorenzo de Madrid ... and on another side running as far as the Rio Grande." Lorenzo de Madrid's lands, according to a 1706 deed (SANM I: 411d), were bounded north by the Rio Chiquito and south by the main river.

In the act of possession given her by Cubero on March 20, 1699, Isabel was granted

... a piece of land in the Villa on the south edge of the plaza [writer's emphasis] running as far as el Rio which serves as its boundary and bounded on the east by lands of Lorenzo Madrid ...

This apparently places the south edge of the plaza at that time directly on the Rio Chiquito's north bank. Soon afterwards, the plaza grounds north of the bank up to the present line of San Francisco Street were granted off - a process probably hastened by Governor Cuerbo y Valdés' 1705 edict that all citizens were required to at once locate their "house-lots, gardens and corrals ... on the Royal Plaza and the four public streets" (SANM I: 1198). Even earlier, soon after 1693, the plaza's original east end had become blurred by grants issued hurriedly by Vargas and then by Cubero. By this time, apparently, it had become clear that Santa Fe would never live up to its early billing as a large capital city, and a maximum-size plaza was simply a waste of good real estate.

As a final point in connection with this suggested south boundary of the pre-Revolt plaza, the present slight bend in Water Street towards the north, from its intersection with Shelby Street eastward, has no relation to the original course of the Rio Chiquito and could have no bearing upon the plaza's possible limits. In all probability, this angled portion of the street represents the course
of the ditch from the large spring on the Church grounds, previously mentioned, that once added its flow to the Rio Chiquito's waters. Although Gilmer's 1846 map shows this ditch emptying into the Rio at a right angle farther to the east, it later may have been re-located and thus have become a new and permanent boundary marker. In the late 1800s, when efforts were being made to bring some order into what had been since Spanish times a combination water-way and muddy land, the Daily New Mexican of March 23, 1881 reported that ... Water Street cannot be made straight, but when the commissioners and committee get through with it, it will be vastly improved.

Ultimate "improvement", of course, lay in the final cutting off of the waters of both the Rio Chiquito and the ditch, which seems to have occurred before the end of the century.

The 1573 royal ordinances stated that as soon as the plaza and streets had been laid out a site for the church and convent should be chosen. This should not be on the plaza but distant from it, and so situated that no other buildings could impinge upon the premises.

In the instructions given Governor Peralta in March 1609 for the founding of Santa Fe (Bloom, 1929) there is no mention of a church site; in fact, other than regulations for private property, the only notation of city planning in the instructions is that "one square of the streets for the erection of Royal Houses and other public buildings" should be marked out. This latter implies, indirectly, that the grid plan was to be used - which would further imply that the 1573 ordinances were assumed to be known by Peralta.

In none of the very few early and mid-17th century references to the Santa Fe parroquia and convent are the structures located even approximately. Not until Otermín's account of the 1680 siege of Santa Fe (Hackett, 1942) is there indication made that the church and convent lay east - evidently well east - of the then plaza.

On August 15, 1680, Otermín wrote, the enemy came down from the heights northeast of the cases reales. He went out to meet them
"above the convent." The enemy then regained the heights and "went nearer the sierras" (farther east). There were skirmishes on the next day, but on the 17th the enemy - now augmented in numbers to more than 2,500 - came down from the heights and attacked. They set fire to the church, cut the ditch at a point east of the casas reales and even attempted to burn the doors of the fortified tower at the southeast corner of the casas. On the following day and night the burning of the church and "all the houses" continued - until on the morning of the 19th Otermín sallied out with his forces "towards the house of the maese de campo Francisco Xavier." Here the Indians were attacked and routed. The scene of the fight evidently was east of the casas reales, for after the dispersal of these Indians Otermín, "turning at once upon those who were in the streets leading to the convent," also routed these, with much slaughter. Many of the survivors fled again to the hills north of this eastern part of the city - the present Fort Marcy heights.

The statement that the Spaniards turned to "the streets leading to the convent" (and presumably the church) would imply that these structures were sufficiently far removed from the plaza to require access from it by means of roads. That there were houses upon these roads in pre-Revolt times, between the church-convent complex and the plaza, is indicated in records of a 1712 lawsuit (SANM I: 491) and also in the 1715 survey of Santa Fe streets, previously cited.

The Otermín documents, however, do not locate the church and convent with any precision. Much more definitive are the 1697-8 grant papers, also previously cited (AASF, Loose Documents, Mission 1997, No. 1), by which Governor Cubero gave to the Franciscan friars their new convent and its lands. Because of some fine points in the first of these papers, its descriptive section is here transcribed in the original Spanish:

... el convento que actualmente se esta fabricando el cual esta en frente de la yglesia y convento antiguo que linda por la parte del norte con la azequia de agua que passa por en frente de esta dicha villa. Y por la parte
del sur todo lo que fue calle que haze frente al convento y yglesia que era antiguanmente. Y por parte de poniente con la plaza que fue desta dicha villa ... y asimismo un pedazo de tierra para huerta que esta y cae por la parte del oriente y llega hasta dicha yglesia vieja ...

Based on this description, Chávez (1949) places the pre-Revolt church and convent "almost directly behind the present Cathedral." However, the phrase en frente de, as used in early Spanish land documents, did not necessarily mean "directly in front of ..." The fronting could be relative, at a considerable off-axis angle. Another notation in the Cubero grant paper may suggest that the old church and convent lay to the southeast, rather than due east, of the new convent. This structure was situated immediately south of where the Cathedral now stands, its front about on a line crossing the middle of the Cathedral's nave.

The south boundary of the new convent's lands (not the south wall of the convent itself, as stated by Chávez; all the boundaries noted in the document are those of the granted lands) was defined as todo lo que fue Calle que haze frente al convento y yglesia que era antiguanamente. Chávez translates this as "all that once was a street, which forms a front before the convent and Church which existed in former times." On his sketch he shows this "old street" starting east from the southeast corner of a tentatively drawn plaza area and flanking the south wall of the convent, as placed by him.

A possible question about this placement arises from the Spanish scribe's use of the idiom hacer frente a (to make head against, to face) - an apparently unique occurrence of the term in local hand documentation. As applied to a street's relationship to a building, haze frente a more probably would mean that the street ran directly towards the face of the building, than that it passed along a side wall. That this may have been the scribe's intention is suggested by the fact that the old convent and the church seems not to have had a common south side along which a street could pass; as Chávez states and as is implied by the east boundary's garden strip reaching south
"as far as the Old Church," the convent probably stood south of the church, as was usual in New Mexico. The former street, therefore, instead of flanking in the convent's south wall, could well have led straight up to the adjoined buildings, both of which would have faced west, or to a walled cementario in front of them. If this street ran east from the southeast corner of the large original plaza discussed above, the short lane that now juts east into Church property from Cathedral Place and which is aligned with the most southerly stretch of Water Street (shown on the 1885 Hartmann and 1912 King maps of Santa Fe) is possibly the street's vestigial remnant. In any case, the theoretical abutment of this old street against the former church-convent western facade would place these buildings well off the plaza (consistent with the 1573 ordinances) and well southeast of the location proposed by Chávez.

Chávez also interprets the Cubero document's definition of the grant's western boundary - "on the west, the former plaza of this Villa" - as meaning that the "1697 convent's west front ran along" this former plaza, and therefore, since the exact location of the convent is known, in relation to the existing Cathedral, that the former plaza extended east to a point about midway of the Cathedral's nave. As stated above, this boundary was that of the granted land only; it cannot be used to define the building-line of the convent's west front. A walled cemetery, later noted as running about 104 feet west from the convent's front to the former plaza line, had been laid out by 1713, as shown by a deed of that year (SANM I: 162). Thus the eastern edge of the former plaza would have been only a short distance east of the present street curb-line in front of the Cathedral, not a hundred or so feet farther to the east.

As is evident, neither of the foregoing concepts of the plaza's original size and the location of the early church and convent is documented to the point of absolute certainty. They are offered as suggestive possible alternatives to views previously held and which,
except for Chavez' findings, have been supported by no documentation at all.

Santa Fe, N. M.
BIBLIOGRAPHY
ABBREVIATIONS USED

AASF Archives of the Archdiocese of Santa Fe. Microfilm in New Mexico State Records Center, Santa Fe.

SANM I Spanish Archives of New Mexico, as numbered in Twitchell 1914, vol. I. Originals and microfilm in New Mexico State Records Center, Santa Fe.

SFCO Santa Fe County Clerk's Office, Santa Fe.

Bailey, Jessie Bromilow
1940 Diego de Vargas and the Reconquest of New Mexico. Albuquerque.

Bloom, Lansing B.
1929 Instructions to Peralta by Vice-Roy. (Translated by Ireneo L. Chaves.) New Mexico Historical Review, vol. 4, pp. 178-187.

Chávez, Fray Angelico
1949 Santa Fe Church and Convent Sites in the Seventeenth and Eighteenth Centuries. New Mexico Historical Review, vol. 24, pp. 84-93.

Espinosa, J. Manuel

Hackett, Charles Wilson (ed.)

Hewett, Edgar L., and Reginald G. Fisher

Kubler, George
Nutall, Zelia
1921 Royal Ordinances Concerning the Laying Out of New Towns.  
*The Hispanic American Historical Review*, vol. 4, pp. 743-753.

Prince, L. Bradford
1915 *Spanish Mission Churches of New Mexico*. Cedar Rapids.

Santa Fe Daily New Mexican, Santa Fe. Microfilm in History Library 
Museum of New Mexico, Santa Fe.

Twitchell, Ralph Emerson
1914 *The Spanish Archives of New Mexico*. 2 vols. Cedar Rapids 
1925 *Old Santa Fe*. Santa Fe.

MAPS

1846 Plan of Santa Fe, New Mexico, Surveyed and Drawn by J. F. 
Gilmer, 1st Lieut. U. S. Corps of Engineers. National 
Archives, Record Group 77, Washington. Copies in History 
Library, Museum of New Mexico, and writer's files.

1885 Map of the City of Santa Fe, N. M., by H. Hartman, C. E. 
Copies in New Mexico State Records Center, Santa Fe, and 
writer's files.

1912 King's Official Map of the City of Santa Fe, New Mexico. 
Copies in City Hall, Santa Fe, and writer's files.
When Coronado entered the Pueblo Southwest in 1540, he was pleased to discover a local weaving industry. Dresses and shawls woven wider than long, shirts, breech cloths, and belts were made of native cotton and decorated by dyeing, painting, and embroidering. As a kind of mobile commissary, Coronado's men had driven some 600 sheep with them. In 1542, after two disastrous years of intermittent warfare and disappointment in seeking riches, Coronado and his men returned to Mexico, leaving behind, at Pecos, a few sheep and some missionaries. It is doubtful that these sheep played any part in native weaving, but the sheep introduced in 1598 caused a profound change in native Southwestern weaving, for although cotton textiles are still woven today, wool came to be the dominant material from that time onward.

The final inspection of the Oñate colonization party in 1598 shows that the livestock included 716 goats, 2,517 sheep, and 383 rams. The sheep were intended to supply both food and wool for weaving. It was not necessary to transport the European-type horizontal-bed treadle loom, which weighed several hundred pounds, since the colonists carried the knowledge of loom construction and operation, as well as the tools and the small amounts of iron needed to make the loom when they settled in the Rio Grande Valley. Hundreds of yards of cotton, wool, and silk cloth, of Mexican, Spanish, French, Chinese, and English origin, were brought along, as well. Two years later, more hundreds of yards of cloth were brought in, and despite the fact that the Pueblos were forced to pay a tax or levy in cotton mantas each year -- about 2,000 in 1601 -- it is clear from the historical records that the Spaniards depended on their own supply system rather than on the Pueblos to supply their basis needs for cloth. This aspect of Spanish-Pueblo interrelationship has been
vastly over-played. In fact, cotton mantas became a sort of money of the realm, and fines, in mantas, were assessed against Spanish encomenderos who oppressed the Indians. Nevertheless, the Pueblo weavers were exploited alternately by the priests and the governors for commercial purposes, and their products were traded to the mining districts of northern Mexico by whichever faction was in control at the moment.

The first real hint of the extent of Spanish weaving comes in 1638. In that year, Governor Rosas, whose pecadillos included confiscating big looms, i.e., treadle looms, from private citizens for use in his own Santa Fe workshop, shipped a number of textile goods made in that shop to Parral, Chihuahua. These included 19 pieces of a coarse woolen cloth called sayal, each 100 varas (nearly 100 yards) in length. There were also 49 hangings of the sort usually done in decorative tapestry, 46 drapes, and 476 "painted" blankets or mantas. Some of the latter could have been woven by Pueblos on the upright loom, but the sayal had to have been woven on the horizontal loom with its capacious warp and cloth beams. In its general description, sayal appears to be much the same as what is now known as jerga, a coarse woolen cloth used for coarse clothing, as well as for floor covering, wall hangings, etc. Jerga was usually woven in plain twill in plaid designs, but occasionally the plain diamond twill was made. There is almost no real evidence with regard to Spanish weaving during the 1700s. There appears to have been a moderate cottage industry with almost all of the production being locally consumed, although some blankets found their way into northern Mexico for the annual trade fairs. After the Pueblo Revolt, the Rio Grande Pueblos appear to have given up weaving for a time, but by this time the Navajos were beginning the ascendancy in weaving that they never relinquished.

If we can judge by what was woven in the 1800s, the principal Spanish loom product was the Spanish serape-type blanket, variously called manta, frezada or serape, in a loose tapestry weave. Since
the loom produced a cloth only about 25 inches in width, the blankets were usually made by sewing two identical or nearly identical pieces together. A one-piece blanket could be woven on such a loom by arranging a double set of warps. The warps were usually of 2-ply yarns and were normally doubled or tripled on the edges to make a selvage. The warps passed from warp beam to cloth beam, and when the fabric was finished it was cut from the loom and the warp ends tied into fringes or knotted close to the end in various ways and then cut off. Designs seem to have been rather limited, consisting primarily of stripes arranged in a variety of rhythms, among which was the so-called Moki pattern, which seems to have been a Spanish invention (Fig. 1a). Perhaps a few simple figured stripes with leaf designs were used, as well.

The colors available appear to have been the natural wool colors of creamy white, dark brown, and carded intermediates; indigo, which was widely used; campechewood or logwood; brazilwood; and perhaps, to a limited extent, cochineal, as well as local rabbitbrush and other plants. The indigo gave several blues; logwood gave purples and blacks; brazilwood gave warm reds to a "cafe au lait" beige; cochineal, a true crimson or scarlet, depending on the mordant; and yellows and greens came from the local weeds. Cochineal occurred locally, but it is not known whether or not this was ever used. The wool was from the Andalusian churro sheep, which produced a long, nearly straight staple, fairly coarse but lustrous, and virtually without grease -- characteristics that made it ideal for hand-spinning methods. The Spaniards usually used the same spinning methods as the local Indians instead of the spinning wheel of somewhat later times. Little weaving in cotton seems to have been done.

By the early 1800s, the local Spanish product was overshadowed by the Navajo serape, which, in both commercial and prestige terms, exceeded even the famed Saltillo blankets, a few of which apparently found their way into the northern Rio Grande Valley. In 1804, technical help was sought for the Rio Grande weavers, and in 1807
Figure 1. Old Rio Grande blankets

a. "Moki Pattern" with indigo and natural color wool in clustered stripes (University of Colorado Museum No. 25042).

b. Modified Saltillo. Concentric diamonds in stripes (Lowe Art Museum No. 61.073.010).

c. Saltillo-derived center motif with triangular corner elements (Lowe Art Museum No. 65.050.126).

d. Central diamond woven with terraced-edged figures (University of Colorado Museum No. W/TxC-2).
the Bazan brothers were brought from Mexico City to Santa Fe to establish a cotton-weaving industry and to improve the quality of weaving in wool through better spinning, dyeing (including ikat pattern dyeing), and loom work. This is said to have been accomplished in two years. We lack proof on the point, but it appears likely that the Bazan brothers introduced the concentric serrate diamond design system generally known today as Saltillo. This included patterned grounds with spaced geometric elements or intricate vertical zigzags of various kinds, patterned borders, and minutely figured borders in each component of the concentric diamond central figure. It is interesting to note that this entire system appears to have been a Mestizo adaptation of various design elements of the Mexican Indians of that area.

The Spanish-American weavers of New Mexico were unable to match the fine yarns, the skill in dyeing, and the ability to weave the minute figures. The result was a coarsened version of the Saltillo, with small elements taken out of context and used as stripe fillers, or in other all-over arrangements, to create a local decorative design system (Fig. 1b). They also used large triangle fillers in the corners, perhaps in imitation of Navajo blankets which often had this device (Fig. 1c). Sometimes the center dominant figures were done with terraced edges, again apparently following Navajo practice (Fig. 1d). Some the decorative blankets made use of raveled cloth—or, more often, the 3-ply vegetal-dyed Saxony commercial yarns introduced from the United States across the Santa Fe Trail in 1822 and 1823. These yarns, from Saxony merino sheep, were made in England, France, Germany, and later, in New England, and were used by the Old Rio Grande weavers for the spots of color that they could not achieve from their dye pots.

With independence from Spain in 1821, the border with the United States was opened, and the Santa Fe Trail became a dominant factor in New Mexico life. Virtually all commercial cloth and yarns, which had come through Spain and Mexico to be sold at excessively high
prices by the Chihuahua merchants, now came over the new trail to Santa Fe and on down into northern Mexico. After disposing of their goods, the American merchants not only took bullion and coins, but also yards of jerga to use as pack covers, Old Rio Grande (as well as Navajo) blankets, raw wool, and mules, on their return journey. While the vast majority of Old Rio Grande blankets were made for local consumption, the excess production was sold. In 1853 and again 1858 and 1859, "many wagon loads" of Old Rio Grande and Navajo blankets were sold to the Sioux, who recorded it in their winter counts.16 Another sale of 4,000 blankets in 1867 led to a major change in Navajo weaving, as we shall see.

The American take-over of New Mexico in 1846 only speeded up what had been going on in terms of trade.17 Somewhat later, in 1859, the Americans introduced various breeds of the merino sheep with fine, kinky, short-stapled wool heavy with grease. This wool was almost impossible to work by hand methods, and as merino sheep began to cross with the churro, the character of the wool began to degenerate. Spanish-American yarns began to change, becoming lumpy, greasy, and dull. The introduction of aniline dyes, 3-ply and then 4-ply Germantown yarns, and cotton twine warps, marked the end of fine old blanket design and the innovation of the Vallero (of the valley) blankets, which featured 8-pointed star designs (Fig. 2a). These look suspiciously like American quilt patterns brought in by the American settlers in the late 1800s. During all of this time, striped blankets continued to be made, the materials and dyes reflecting the time of their weaving.

The hoped-for cotton industry never developed, but there was some production in heavy hand-spun cotton, and perhaps a dozen of these Old Rio Grande cotton blankets, decorated in wool yarns or by ikat dyeing, have survived (Fig. 2b).

The Vallero was the last fling of native weaving. It seems to have largely died out about 1900, just as that blend of Spanish-American and Pan-Indian (thunder-birds, etc.) designs and commercial
Figure 2. Old Rio Grande and Navajo blankets

a. Old Rio Grande Vallero pattern blanket (Lowe Art Museum No. 61.73.22).

b. Old Rio Grande hand-spun cotton blanket with stripes in wool (Lowe Art Museum No. 61.73.27).

c. Navajo one-piece dress - "Blue Borders Manta" (University of Colorado Museum No. W/TxN-1).

d. Navajo early striped shoulder blanket (Museum of New Mexico No. 9150/12).

e. Navajo "Phase II" Chief blanket collected by Samuel Woodhouse in 1851 (Museum of American Indian, Heye Foundation No. 11/8281).

f. Navajo "Phase III" Chief blanket (University of Colorado Museum No. 18063).
yarns woven on modified Spanish looms, now known as Chimayó, was getting under way. This commercial venture, in many ways a continuation of the old cottage industry, was developed -- and persists -- to supply the curio trade that burgeoned as more and more tourists discovered Santa Fe.

When the Navajos first came into Spanish view in the early 1600s, they were called the Apaches de Navajú -- the Apaches of the great fields -- which they cultivated in the country northwest of Santa Fe. Although they were in part, agricultural, they were also known as hunters, raiders, and basket makers, as were most of their Athapascan kinsmen. They apparently did no weaving of cloth at that time. By the middle 1600s, the Navajos were trading, and occasionally raiding, around Jemez, Acoma, and Zuni. It was their habit to incorporate members of other tribes into the Navajo tribe, and it is probably from this source that the Navajos learned to weave. It has usually been contended that the Navajos learned to weave from Pueblo refugees who, after the successful revolt of 1680, fled to the Navajo country in 1692, following the reconquest of New Mexico by De Vargas. However, there are several bits of historical evidence against this interpretation. For one thing, in 1692, as an inducement to peace, the Spaniards offered the Navajos, and conducted, a trade fair in the province where they could trade their deer skins and woolen cloth. They could have added trade in Pawnee and Jumano slaves. Furthermore, we know from the Rabal Documents that as early as 1706 the Navajos were trading wool and cotton cloth of their manufacture to both Pueblos and Spaniards. Also in 1706 this information is confirmed by Governor Francisco Cuervo y Valdez, who states that "They (the Navajos) make their clothes of wool and cotton, sowing the latter and obtaining the former from flocks which they raise."

We shall return to cotton later, but it is apparent that the Navajos were weaving commercially by 1706, and by any standards, the 14 years from 1692 to 1706 is a remarkably short time to es-
tablish a cotton industry such as they had. Because of certain
generic similarities between Zuni and Navajo weaving, such as the
use of lazy lines, some selvage features, eclectic use of design,
and women as the weavers, I believe that the Navajos learned their
trade from Zuni weavers some time between 1650 and 1680. This
would account for what we know, but it does not exclude the possi­
bility that other Pueblos were involved, for we know next to
nothing about the weaving of the eastern Pueblos.

In any event, it is clear that the Navajos learned to weave
from Pueblo masters, for they took over the Pueblo upright loom
and all of its weaving accessories, basic weave techniques, gar­
ments, and Pueblo-style stripe decoration. Aside from scattered
historical references, our first knowledge of Navajo weaving comes
from some archaeological finds with estimated dates of about 1750
to 1804 for the Massacre Cave fragments. These show clearly the
carry-over of Pueblo into Navajo. One find contained a one-piece
woman's dress or blue-borders manta. About three such dresses
have survived (Fig. 2c). While the resemblance to the Pueblo dress
is apparent, there are several differences. The presence of lazy
lines in a plain diagonal twill is one of these. The selvage system
consisting of two 3-ply selvage cords instead of the standard Pueblo
system of three 2-ply cords, closely knotted corner closure instead
of the loose Pueblo corner, and the lack of supplementary cords be­
low the selvage and at the juncture of diamond end twill and diagonal
body twill, are evidence of Navajo rather than Pueblo manufacture.

With the blue-borders manta there was a striped shoulder blanket
with fairly wide alternating stripes in white and brown, with one
weft pick of indigo blue; but again, the selvage system is Navajo
(Fig. 2d). With these was a dark blue shirt in diagonal twill.

Another archaeological find, the Patchwork Cloak, dated about
1750, gives us a kind of sampler of Navajo weaves of that time.
The fragments of cloth sewn together to make the cloak include plain
weave, plain diagonal twill, plain diamond twill, plain tapestry or
weft-faced cloth, and patterned tapestry. The fragments represent parts of a woman's dress with blue stripes on brown ground, a Pueblo-like manta in diagonal and diamond twill but with Navajo selvage system, a serape with design very similar to the Moki pattern, and a serape with right-angled pattern changes in tapestry.

This picture is amplified by the Massacre Cave fragments. With this find, the repertory now includes shirts, one- and two-piece dresses, woman's shawl, plain striped and Phase I Chief blankets, and both fine weave and soft diyugi weave serapes. Materials include white and brown wools with combed gray, raveled cloth in crimson, and commercial diagonal twill cloth in blue. Dyes include indigo and native yellow, as well as commercial cochineal and indigo. Decorative devices include simple stripes, compound stripes, wavy stripes, stripes with beaded edges, vertically beaded stripes, and the zoning or clustering of stripes in panels. Most important, however, in showing that the Navajos had already broken from the Pueblo stripe tradition, were terraced triangles and open diamonds produced by stepped zigzag stripes. The source for this design system probably lies in the baskets the Navajos were famed for before they began weaving cloth, for a comparison with traditional Navajo basket design shows the terraced triangles and zigzags to be standard elements. This terraced design system occurs in Massacre Cave fragments of a two-piece dress of the kind known historically since 1788, which supplanted the one-piece dress of Pueblo origin.  

One other archaeological fragment is of interest, for it is a scrap of an Old Rio Grande blanket from a ruin named White House, in Tsonitsosí Canyon south of Canyon de Chelly. Amsden considered this to be early Navajo, but it is clearly Spanish-American, with its 2-ply warps, Rio Grande dyes, and stripe system. Its importance is that it shows that Old Rio Grande weaving was known by about 1800 in central Navajo country.

With this historical and archaeological base, we can trace the development of Navajo weaving through historical times. While the
woman's two-piece dress supplanted the Pueblo-like one-piece dress, many garments continued to be woven in the Pueblo wider-than-long pattern. By 1850, the Phase I Chief blanket sometimes featured narrow stripes of raveled red cloth alongside the indigo blue stripes. One of the blankets collected by Woodhouse in 1851 already shows the red blocks of the Classical Phase II blanket (Fig. 2e). By 1860, the terraced triangle motif of the Phase III blanket is present, and by 1870, the Classic full, half, and quarter diamond, 9-spot pattern Chief blanket is developed (Fig. 2f). Later pieces become more elaborate, and today, rugs are still occasionally woven in the Chief pattern. The woman's shoulder blanket followed much the same development as the man's blanket but featured panels of narrow alternating stripes in combed gray and black rather than the wider white and black stripes of the man's garment. About 1850, the Navajos began to weave a fancy shawl, usually with a black center but sometimes with combed pink, blue, green, or yellow center, flanked by decorative end panels with typical Navajo dress panel designs in blue or other colors on a red ground. Most of these are woven in plain tapestry, but many are in diagonal tapestry twill. For many years, these have been confused as Pueblo garments, and while the Pueblos bought many of them, and perhaps occasionally wove one, they are typical Navajo garments, made by Navajo techniques and decorated with Navajo designs (Fig. 3a). They persisted into the late 1800s.

Along with the Pueblo, another major influence in Navajo weaving came from the Spaniards, especially the longer-than-wide serape and perhaps the emphasis on tapestry weave. It is in the serape that the genius of Navajo weaving shows itself to the greatest advantage. However, before tracing the development of woolen tapestry serapes, we should briefly consider Navajo weaving in cotton. Most recent writers on Navajo textiles have dismissed cotton as non-existent among the Navajos, or where mentioned, have discounted it as being Pueblo rather than Navajo. Nevertheless, it is clear from a perusal of the Spanish documents that cotton was a standard textile
Figure 3. Navajo blankets

a. Woman's shawl (University of Colorado Museum No. 24493).

b. Hand-spun cotton blanket with wood decoration (Heard Museum, Fred Harvey Collection No. 186BL).

c. "Moki Pattern" or "Mexican Pelt" blanket (University of Colorado Museum No. W/TxN-4).

d. Early Classic blanket (University of Colorado (Museum No. 23487).

e. Late Classic blanket (Museum of the American Indian, Heye Foundation No. 23/922).

f. Transitional Classic blanket with terraced and serrate design (University of Colorado Museum No. W/TxN-3).
fiber raised and woven by the Navajos throughout the 1700s. Gregg makes it clear that they were still weaving cotton in the 1820s. However, to my knowledge, only a single Navajo cotton serape, now in the Harvey collection, has survived. It shows a Classic pattern in raveled wool on the white cotton ground (Fig. 3b).

The earliest Navajo serapes were probably of simple striped form in white and brown wool, but by 1800 or shortly after, they had adopted the so-called Moki pattern from the Spaniards. The Navajos call this pattern "the Mexican Pelt," clearly showing its derivation (Fig. 3c).

By 1821, when the Santa Fe Trail was opened, the Navajos had already evolved the use of bold, large-scale, terraced triangles and their correlaries, the terraced zigzag stripes, and the terraced diamond motifs (Fig. 3d). These early Classic serapes were woven with designs in dark blue and white, on grounds of crimson raveled cloth. The 1821 date is significant, because the cloth used after that came across the Santa Fe Trail and not through Mexico. At first, much of this cloth probably came from England, as had the earlier "Bayeta," but increasingly it derived from New England mills as American-made cloth gradually forced out the English cloth after the war of 1812. In general, it could not be distinguished from the English cloth, but most of this raveled yarn is S-spun, in contrast to the earlier Z-spun English yarn. We do not yet know whether this is absolutely consistent, but it appears to be so. Three-ply vegetal-dye Saxony became available but does not seem to have been much used by the Navajos until later. In any case, these Bold Classic fabrics were made as serapes and as ponchos. The terraced open diamond pattern was sometimes expanded into diamond nets with other motifs in their center.

After 1846, many of the American traders and officers collected Navajo blankets. These later textiles show a general decrease in the boldness of the design; the terraced zigzag stripe, diamonds, and triangles become fussier and less well executed. Instead of
a few bold panels, there are numerous small, weak panels, often separated by narrow stripe zones on a white ground (Fig. 3e). This Late Classic style continued beyond the Navajo internment at Bosque Redondo, some of the later pieces featuring patterns woven in broken stripes. One interesting sidelight is the introduction of 3-ply commercial silk yarn, from which at least two blankets were made, both collected in the early 1860s. One is the famous Chief White Antelope blanket with its small pictorial bird element.33

Bosque Redondo was a major turning point for the Navajos, in weaving as in everything else.34 After 1846, the almost continuous raiding and warfare by the Navajos against the Spanish and American settlers led to Kit Carson's campaign against them 1862-63. Carson's technique was to destroy their hogans, their orchards and fields, and, more importantly, their herds of sheep and goats. Confronted by this, most of the Navajos capitulated and were forced to march to Bosque Redondo, near Fort Sumner, in the arid, alkaline Pecos River Valley.35 They were an alien people in an alien environment. They were subjected to many pressures and social changes. They nearly starved and were cold besides, for they had few sheep from which to weave their garments; but they were supplied American-style clothing and commercial blankets. Here, the Post Commissary and the American soldiers stepped in. New aniline-dyed 3-ply Early Germantown yarns were used together with yarns, now Z-spun, raveled from new aniline-dyed cloths and blankets, as well as some wool from their own sheep. Blankets of this period may have as many as three or four different kinds of raveled yarns, aniline-dyed commercial yarns, and, rarely aniline-dyed home-spun yarns. Many of them were woven for the officers and men of the Post. After several discouraging years on the Pecos, the Navajos were in desperate straits.

In 1867, in one effort to relieve them, the Government bought Spanish-American blankets and issued them to the Navajos.36 Probably most of these were plain striped, but some must have been decorative blankets with the derived Saltillo design system. When the Navajos
Figure 4. Navajo blankets and rugs

a. Slave Blanket in wedge-weave technique (University of Colorado Museum No. 18088).


c. Pictorial blanket of Germantown yarn (University of Colorado Museum No. 16034).

d. Hubbell Pattern rug (University of Colorado Museum No. 25081).

e. "Storm Pattern" rug from J. B. Moore 1911 Catalogue, Crystal, New Mexico.

f. Experimental weaving, Navajo Tribal Museum, Window Rock, Arizona (University of Colorado Museum No. 23478).
returned to their homeland in 1868, they took the new system with them, and by 1885 it had become the dominant pattern in Navajo weaving. It was this system, filtered once through the Old Rio Grande weavers, that changed Navajo design from terraced to serrate diamonds, even though they were most often adapted to the Navajo stripe or panel system. Terraced zigzag stripes became serrate zigzag stripes. Terraced diamonds became serrate diamonds, and an occasional blanket had a border. Terraced motifs occurred together with serrate motifs often mixed on the same garment (Fig. 3f). The new aniline-dyed yarns were much used in these composite blankets. It is interesting to note that the pattern join technique in serrate design is only a precisely positioned lazy line with a different color on each side.

There were a number of developments after Bosque Redondo. One of these was the wedge-weave technique. One of the earliest wedge-weave pieces is known to have been woven by a Navajo slave in the San Luis Valley (Fig. 4a). Most "slave" blankets exhibit Old Rio Grande dyes and perhaps some Spanish-American design combined with Navajo loom work. From historical evidence, it seems probably that many of them were commercial pieces woven in imitation of Spanish-American or even Saltillo serapes, and some were made after 4-ply Germantown yarn was introduced in 1875.

These new Germantown yarns, often on cotton twine yarns, were used in eye-dazzler designs based on Saltillo elements (fig. 4b), and in many of the pictorial blankets (Fig. 4c), which became common during the late 1800s. They were often used in many of the finely decorated saddle throws which developed after Bosque Redondo. They were frequently combined with native-spun yarns, cloth strips, or bundles of threads from late raveled cloth. Some saddle throws featured the tufted weave, and one piece is woven as double-cloth. These small, fine pieces were used by the Navajos, but most were probably for sale to the Americans who bought them as souvenirs of their stay in the West.

Tapestry twill and heavy plain tapestry saddle blankets re-
placed the sheep skins that had once been used under the saddle. Cotton string warp was superior for saddle blankets and was often used. Another weave that was invented during this period was the two-faced weave.

Aside from the saddle blanket, about the only textile the Navajos continued to weave for their own use was the bed blanket -- the soft, fluffy-weave diyugi, usually with striped or zoned panel decoration. After 1885, more and more of these were bought by Anglo-Americans and used as rugs. At this time, the merino-contaminated sheep issued to them after Bosque Redondo began to degrade their weaving wool, and cheap aniline dyes refused to "take" on the kinky, greasy, and often dirty wool. This was the nadir of Navajo weaving, and it lasted until about 1920, with some exceptions. Several traders, realizing that Navajo weaving would die out unless a new market could be found, tried to help. One of these was Don Lorenzo Hubbell. He actively sought new markets -- the tourists who were coming to the Southwest in increasing numbers. He had paintings made of some favorite designs so that a customer could pick a design, a size, and a color scheme, which usually included neutral combed gray and the rich red that came to be known as Ganado Red (Fig. 4d). Hubbell would have one of his 300 weavers weave the piece, and then ship it. Many of his best pieces were sold through Fred Harvey after he went into the curio business about 1900.

Many of Hubbell's patterns were basically non-Navajo, but it remained for J. B. Moore to introduce a totally new concept in Navajo rugs. Moore, who bought Crystal Trading Post about 1896, sent the greasy wool back East to have it scoured. This clean wool he issued to his best spinners to make into yarn, which was then dyed by his wife in her kitchen with the best aniline dyes available. Then the dyed yarn was issued to his best weavers to make up the rugs of standardized patterns but in size and color schemes of the buyer's choice. Some of his patterns had roots in traditional Navajo weaving but some were copied from Oriental carpets, others probably from
Plains Indian beadwork designs, and some, full of crosses and swastikas, were made up to look Indian. The new-famous Storm pattern (Fig. 4e), he apparently created some time before 1911 when it appeared in one of his famous catalogues that were circulated widely in the Midwest and East.

Some fancy rugs were made from commercial yarns such as 4-ply Germantown, a coarse 4-ply carpet yarn with much kemp fiber, and a heavy dense 1-ply commercial yarn, all aniline-dyed. These largely died out by 1900, but runners and pillow tops, invented in Chaco Canyon in 1896, continued to be made of 4-ply yarn until about 1935.

The first known sand-painting tapestry was woven in Chaco Canyon in 1896, followed by another in 1897, but the idea did not catch on until later. Beginning in 1919, Hosteen Klah began his series of authentic sand-painting tapestries, and two of his nieces wove others under his direction. By about 1925, commercial sand-painting pieces were being made near Ganado and Kayenta, and today these "ceremonial" commercial products abound.

Yei rugs seem to have been made first near Farmington, about 1910, but by 1926, Yei or Yeibechai rugs were being exhibited in art museums as tapestries and widely sold as ceremonial rugs. Pictorials became more common, and full pictorial compositions are now woven, especially in the Lukachukai area. The revival, which began at Chinle in 1919, spread to Wide Ruin in 1938 and to Crystal in 1949. The regional specialties that began to develop around the turn of the centuries are now recognized by the rug fancier, and the fine tapestries of Two Gray Hills approach, in fineness of weave if not originality of design, the best of the Classic pieces.

Finally, new directions are being actively encouraged with the use of acrylic and metallic yarns and highly abstract styles (Fig. 4f). While the weaving picture changes from year to year, and has done so for three centuries, Navajo weaving remains a viable and valuable art.

University Colorado Museum
Boulder, Colorado

220
NOTES AND REFERENCES

1. Hammond and Rey, 1940, pp. 171 et. seq.
3. Ibid., pp. 199-308.
4. Ibid., p. 641
6. Ibid., passim.
7. Ibid., pp. 124-147.

10. There is considerable confusion surrounding the early Spanish sheep in the Southwest, many writers, including Boyd (1974, p. 192 passim), designating them as merino. However, Towne and Wentworth (1945), and Wentworth (1948) make it clear that churro was the breed introduced into the Southwest. Merino wool is a very fine, short-staple fleece with a marked crimp and heavy with grease and albumen, making it almost impossible to work by the hand methods employed by Spanish and Indian weavers in the Southwest. When the merino was introduced in 1859 (Wentworth, 1948 p. 237), their crossing with the churro led to the increasing deterioration of wool so marked in Spanish-American and Navajo weaving at the turn of the 20th century.

11. More than 60 Saltillo serapes, now in the American Museum of Natural History, were collected in northern New Mexico in 1910.
13. Wheat ms. As far as can be determined, the "Saltillo" design system was in full flower by 1700. There is no known Spanish or North African source for the design elements and layout, but they abound in native Mexican-Indian weaving.
14. American Fur Company Inventory Book from 1822 to July 1823 (Missouri Historical Society Archives). See also Santa Fe Papers File in the same archives.


22. Wheat ms.

23. Ibid. Also Amsden, 1934, p. 205 and Pl. 63.

24. Wheat, ms.


26. Wheat, ms.; Amsden, Pl. 49.

27. Amsden, 1934, Pl. 61. Amsden also confused the locality with the famous White House in Canyon de Chelly.

28. Mera, 1942; Amsden, 1934; Hill, 1940.


30. Meinig, 1971, p. 17, notes that in the half century after 1821, New Mexico suddenly changed from the northernmost province of New Spain to the southwestern province of a new transcontinental nation. It was transformed from a terminus to a pathway.


32. This conclusion is based on an examination of several hundred cloth samples from New England and English mills housed in the Merrimac Valley Textiles Museum, North Andover, Massachusetts.

33. Amsden, 1934, pp. 183-184, Pls. 1 and 86, noted the "silky" quality of the yarn but misidentified it as "Saxony wool".


37. Gregg, 1954, pp. 147-148, indicates the Spanish-Americans also made copies of Saltillo and Navajo serapes.
38. Wheat, ms.

39. Pepper, 1923, ms., on Navajo weaving, stated that the first pillow covers were woven for him, personally, but soon became very popular. Courtesy Museum of American Indian, Heye Foundation, New York.

40. Ibid.


42. Reichard, 1936, p. 154 et seq.


44. James, 1937, pp. 139-140.

45. In 1926, several Navajo Yei rugs were exhibited at the Cincinnati Museum of Art, along with tapestries from Europe.

BIBLIOGRAPHY

American Fur Company Inventory Book, 1822 to July 1823. Archives, 1822-23, of the Missouri Historical Society, St. Louis.

Amsden, Charles A.

Bailey, L. R.

Bloom, Lansing B.
1927 Early Weaving in New Mexico. New Mexico Historical Review, vol. 2.

Boyd, E.

Cole, Arthur H.

Forbes, Jack D.

Forrest, Earle R.

Gregg, Josiah
Hammond, George P., and Agapito Rey

1953 *Don Juan de Oñate, Colonizer of New Mexico, 1595-1628*. Coronado Cuarto Centennial Publications, 1540-1940, vols. 5-6, University of New Mexico Press, Albuquerque.

Hill, W. W.
1940 Some Navaho Culture Exchanges During Two Centuries (with a translation of the early eighteenth century Rabal Manuscript). *Smithsonian Miscellaneous Collections*, vol. 100, Smithsonian Institution, Washington.

James, George W.

Mallery, Garrick

Maxwell, Gilbert S.

Meinig, D. W.

Mera, Harry P.

n.d. *Navajo Textile Arts*. Laboratory of Anthropology, Santa Fe.

Newcomb, Franc J.

Peake, Ora B.
Pepper, George H.

Reichard, Gladys A.
1936 Navajo Shepherd and Weaver. J. J. Augustin, Publisher, New York.

Scholes, France V.
1937 Church and State in New Mexico: 1610-1650. New Mexico Historical Review, vol. 7.

Towne, Charles W., and Edward N. Wentworth

Wentworth, Edward N.
1948 America's Sheep Trails. The Iowa State College Press, Ames.

Wheat, Joe Ben

Worcester, Donald E.

Wyman, Leland C., and Charles A. Amsden
CONSERVATION OF BASKETRY IN THE SOUTHWEST*
MALCOLM B. WITHERS

This is a general guide to conservation of basketry for southwestern United States and northern Mexico in particular, but useful in all temperate climates with proper precautions concerning humidity. We wish to pass on procedures, suggestions, and knowledge that we have found useful, so that unnecessary mistakes can be avoided in caring for fragile and beautiful baskets.

In conservation of basketry as well as in its construction, attention to component materials is basic. The conservator will find it valuable to know the plant used in the basket's construction, as well as which part of the plant was used and the function of that part in the life of the plant. For example.

willow stems: In woody plants the outer layer next to the bark is very tough and flexible; the inner part of a stem is very brittle.
spruce root: Roots usually function as organs of absorption, aerating organs, food reservoirs, and means of support.
cedar bark: Bark is the tough external coating of a woody perennial stem or root.

This information will provide first clues regarding the method of treatment involved. It is well to remember that the materials used to construct a basket were not God-made primarily for that purpose.

Before beginning any repairs, a "case history" of the basket should be compiled. From the time the basket was made to the moment it arrives in your hands, you must, to the best of your ability, try to determine all of its uses and misuses. Some things will be evident;

*Photography for the article was done by Marsha Silverman and editing was done by Signa Larralde, both graduate students at the University of Denver anthropology laboratory.
others will be known to you from your studies of other baskets. Learn to recognize the dust of the present, soil accumulations from the past, ink stains, biological growth, the various coatings applied over the years, castor oil, shellac, mineral oil, glues, and so on. Hopefully you will be able to remove them all.

Dust and dry matter can best be removed by mechanical means: by brushing or by picking with a wooden tool to dislodge bits of grime or loosen them. A vacuum cleaner may be used very successfully if the nozzle is covered with one or more thicknesses of nylon netting.

Fastness tests for any dyes or paints then should follow with all solvents you plan to use, as well as with water and with any washing agents. Thoroughly soak a small, inconspicuously located area and blot the area with clean tissue to see if the paint or dye is fugitive. Allow enough time for the area to be completely saturated.

Now remove all the previous castor oil, mineral oil, beeswax, turpentine, or other coatings with the solvents you found to be most appropriate in the paint and dye tests. We have used Stoddard's solvent, carbon tetrachloride, benzene petroleum ethers, and spirits. There are other excellent solvents. Many are either explosive, extremely toxic, flammable, or cancer forming. Consequently, a non-toxic, non-flammable solvent should be used whenever possible. For example, use pure toluene or xylene instead of benzene; use 1,1,1 trichloroethane instead of carbon tetrachloride. "Pure" rather than "industrial" solvents should be used in museum work.

At this point, you know the structure and materials of your basket; you have determined the nature of dusts, oils, etc., and have removed them. The decision of whether or not to wash the basket in water must now be made. Immerse the basket in water only if you are absolutely certain that the basket can stand it. Once the materials used in making a basket are released from their duties of being twined, coiled, or otherwise shaped, they return to their natural state as far as is possible, and if they are dampened, they can be straightened and are ready to be re-formed again. This is
where water can be essential.

In order to clean and repair a basket, it is necessary to exercise some sort of control over the materials forming the basket. Water will do this by softening and making the basket "members" flexible, but too much water or an uncontrolled use of it can result in a heap of vegetable fibers all headed back to their beginnings. The basket itself may warp and buckle as the fibers move, especially if there are breaks in the basket body. All this can happen in a matter of seconds. Consequently, consider this step carefully and take all precautions to prevent damage--or disaster, as the case may be--to the artifact.

We have found that spruce root and cedar bark baskets can generally be immersed safely; willow baskets cannot. It is better to be cautious in this decision if you are unsure of the basket's component materials.

Sponge baths often prove to be a safer procedure than immersion. This involves careful use of a soft brush and immediate blotting up of water with paper tissue. In washing, a non-ionic detergent wetting agent may be used. We use Igepal CA 630 in a 5% or 10% solution. Froth from this detergent plus a minimal amount of water can be used as an effective cleaning agent.

If you decide to immerse the basket, plan out the repairs or reshaping that will need to be done when the basket is wet. Have ready, before you begin washing, a drying support on which to place the wet basket, which will be extremely weak at that point. The support can be made by padding an upended can, bowl, cone, or other object of the proper shape and size with cotton and absorbent paper or towelling. Also have ready all the clamps and strips you may need to reshape the basket and to hold the new shape in place.

Prepare a tepid bath and gradually lower the basket. The water will support it from all sides if the basket is immersed properly. Watch constantly for any changes--sudsing may obscure the activity below--and be prepared to remove and support the basket immediately
should the basket begin to fade or disintegrate.

Remove the basket from the bath and place it on the support. At this time all repairs can be made since the members are flexible. Once the members are re-shaped manually and in place, they should be bound down and allowed to dry. We use all sorts of clamps and strips for this: snap clothespins, tongue blades, hair clips and pins, rubber bands, copper wire, pipe cleaners, straight pins, and T pins (these should be inserted between basket members—not through them). We have found strips of polyethylene or Lucite of various weights especially useful. These strips not only aid in securing the wet basket members but also protect the basket from the clothespins and metal pins. The basket should be supported at all times and allowed to dry very slowly with ventilation.

Once the basket is repaired to the extent that the members are all back in place and the basket is completely dry, begin very slowly to remove the supports. Work on one small area at a time, applying the glue. Duco Cement or an acetone soluble, cellulosic cement of any kind is better for baskets because it does not involve water. Apply the glue in beads; the best way to do this is to collect a small bead of cement on the tip of a small tool—for example, a hibachi stick—and place the bead of glue underneath the member to be glued down, on whichever surface will be least visible (inside or outside). Then replace the polyethylene strip and the clamp, or just apply pressure and wait for the glue to set. There should be no problem since the member has been previously shaped. It is always necessary for the basket to be completely dry before gluing can begin. Otherwise, the glue will "bloom" and it may not adhere, generally creating a mess. Even the moisture from one's hands will make an unsightly crust on the basket. Given this hazard, you may want to use a dental tool for your other hand while you are gluing: apply the bead of glue and apply pressure with the clean tool.

Once the basket is repaired it can be brushed with a glycerine mixture which we have used successfully; the treatment was only
originated seven years ago, and its survival value for baskets thus has not be documented over long periods of time. This recipe was contrived to suit our needs from Leechman (1944, p. 112). A solution of equal parts of glycerine and water (soft or distilled) with one fluid ounce of Formalin (1%) per gallon of solution has been found effective in keeping basketry fibers flexible and "healthy"--the solution is slightly hygroscopic. The small amount of formalin was added as a fungicide.

Baskets should be stored in a relatively dark, cool, and well ventilated area once they have been stabilized. They should be covered should there be dust, but not tightly, since a free movement of air is desirable. All precautions against insect and other mechanical aging should be taken. Baskets should be checked at least twice a year and treated as it becomes necessary. Heat and light and a fluctuating humidity are most damaging. In museums, baskets always seem to "float" to the top shelves in all the work and storage rooms, where the heat is greatest; often they are stored in a hot attic space. They would be much better cared for in cool basement storage.

All of the suggestions above are determined by the geographical location of the basket--in this case, the southwestern United States and northern Mexico, an area of arid, temperate climate. The following illustrations portray aspects of this conservation process.

University of Denver
Denver, Colorado
Illustrations of the Conservation Process Discussed
Figure 1. Paiute storage basket and lid before cleaning
Figure 2. Paiute storage basket lid before cleaning
Figure 3. Basket lid half cleaned
Figure 4. Basket lid after washing. Supporting strips are pinned in place.
Applying glue beads to breaks in basket
Figure 6. Paiute storage basket lid after conservation with untouched basket
SUGGESTED REFERENCES

Denver Art Museum Leaflets, Department of Indian Art, Denver Art Museum, Denver.

Gyermek, Stephen A.

Leechman, J. Douglas

Marriott, Alica
1957 It Ought to Be in a Museum. Clearing House for Western Museums, Newsletter 213.

Mason, Otis T.

SOURCE OF SUPPLIES MENTIONED

Duco Cement
E. I. duPont de Nemours and Co., Wilmington, Del. 19898

Igepal CA 630, Igepal CA Extra
General Dyestuff Corporation, New York.

1,1,1 trichloroethane
Sargent-Welch Scientific Company
When the Board of Regents of the Museum of New Mexico created a curatorship of ethnology at its annual meeting in 1938, the author was appointed to fill the position and was charged with planning installations in the new department, in the Hall of Ethnology. The idea back of these actions was to present the cultures of living Indian peoples--especially those of the Southwest--in a manner commensurable with the Museum's galleries of archaeological, historical, and fine arts collections.

In presenting the ethnological materials and accomplishments of the modern Indians, we were most fortunate in being able to bring to the Museum two Navajo men from the Black Mountain-Canyon de Chelly area of Arizona who were versed in Navajo religious practices. They had agreed to make genuine sandpaintings here, as well as certain reproductions, and explain their significance. The men were brought to Santa Fe in the fall of 1940. I shall refer to the elderly one, a singer, as ST, and to his assistant as AA.

First, a set of four real sandpaintings (drypaintings) from the Shooting Chant was made for mounting near an alcove devoted to the culture of the Navajos. There a full medicine kit was displayed as it had been used of old by a singer (hataaJii), or "medicine man," alongside colorful figures painted by the widely known Navajo artist, Harrison Begay. Begay, who had learned much of Navajo ceremonialism from a singer to whom he was related, insisted on painting the display figures so that they would be correct in the old ceremonial attire and with the proper regalia.

Working as ST's assistant on the sandpainting, the middle-aged novice in addition served as my interpreter. He had learned a great deal of the elder man's wisdom and proved to be a skilled
painter of sandpaintings—the real ceremonial ones, as well as reproductions of them—when furnished with suitable paper and tempera colors. After the two had made the set of four paintings of the Shooting Chant, or Shootingway, female branch, with finely crushed rock—natural color pigments—and juniper charcoal prepared and brought by them from Navajoland, and had told something of their meaning, they duly blessed them with sacred pollen exactly as would have been done on the Navajo Reservation. Then they followed the same procedure with each of three sets of four paintings painted with Carter's tempera colors: Mountain Topway, female branch; Mountain Topway, male shooting branch; and Featherway. Just as they used the colored sands when making actual drypaintings, they painted their designs on paper, laying one color over another. ST had done work of this nature previously, but AA had not.

Here, I should like to say that ST was not only a singer with many years of training and practice, but he was one who looked ahead to the future as well. He appreciated the fact that certain non-Indian students and researchers were truly concerned with the preservation of Navajo wisdom and its manifestations through all aspects of their culture. In regard to the ceremonial knowledge and skills which he possessed, he had given much thought to their continuity. As our daily association and work progressed, he became more talkative—in most instances through our interpreter, AA.

Finally, he expressed some of his apprehensions. He said, "I am an old man, some day I'll die. Many of the old men like me, who know Navajo religious ceremonies, have already died and others are dying all the time. What they know dies with them. The young people are not learning our ceremonies; they don't know."

"What if some day ... maybe twenty-five, maybe fifty, maybe a hundred or two hundred years from now ... our Navajo people want to know about these things? They'll hear about what we used to do. But they won't know how. What are they going to do?"

"I've been thinking about this for a long time. I've wondered
about what is right. Now, unlike some others—most other medicine men—I've decided that it's right to tell people like you about my sandpaintings and what they mean. I think it's right to have them kept in museums like this. Then, some day, if the people want to know about the old ceremonies and paintings, they can come and see them, and learn about them. I think this is right."

Even following this talk, ST kept thinking and questioning himself. Then, after we had concluded the paintings and recorded information on the four curing ceremonies, and were talking of arrangements for taking the two men back to their homes, the fine old man made his decision to share more of his knowledge. He painted a special sandpainting and identified its sacred personages and the accompanying features. This sandpainting, he said, and its attendant sacred rites constituted the ultimate curative redress which he possessed for an ill person. He solemnly remarked: "After everything else has failed, this sandpainting is made and the prayer is given." Only a few singers, he added, have known it.

I learned that on the occasion of the severe illness of the wife of AA, and because it was indicated that she had been bewitched by someone from some other locality, this prayer ceremony had been performed for her. ST, in making this sandpainting, which he held in higher regard than any of his other paintings, made his supreme plea to the Holy People. Even though it proved to be of no avail, for the patient had an advanced case of tuberculosis and died in spite of all that was done for her, it afforded solace for her bereaved husband.

Performance of this act was worth more to ST than what he received for an ordinary medicine sing (azee' bee hatdäl, a ceremony involving medication). For instance, when a usual ceremony might bring him payment of a horse, a cow and calf, ten to eighteen sheep, and other items of proportionate value, for this prayer he probably would be paid three cows and others things accordingly. The singer had to have a buckskin on which to sit while he prayed. This was used also to cover the sandpainting. If a novice is learning this
prayer and song for the sandpainting, he should have a buckskin, too, and a long string of turquoise to tie to the head of the buckskin; he should give these to the singer-teacher.

It is from the collection made at the Museum of New Mexico, which then became a major feature of the Navajo Indian portrayals in the Hall of Ethnology (now featuring the Modern Indian as the name of the hall), that I have been given permission to publish this unusually rare depiction and relate something of its symbolism and mythology.

Navajo singers frequently employ specific symbols overtly and covertly. In this prayer and painting the singer and patient relive the mythological beginnings of the Navajos. The singer depicts these symbolic associations, and by actual contact with the sandpainting the patient identifies herself with the deities (ye'éii), and the sands absorb the sickness or evil.

On the tempera color painting made by ST (see accompanying figure), according to him, "the brown circle in the center is a hole, ha'atiin, road coming out;" the Navajo claim that the Holy People came up out of this hole (hajtindé) * (see Notes)-- Place of Emergence. He explained that "the blue square around it is haashtáh," indicating up to a higher place.² Above this (toward the east) is a two-terraced black cloud in the shape of the base of a stemmed projectile point, "the dark world, which represents darkness;" it is outlined in white (In mythology it is considered to be male and is assigned to the north.)

To the south is a similar blue cloud (nahootsoi), "blue cloud--blue streak across east (sic.) sky every morning," which is outlined with yellow. The yellow cloud (nahootsoi), "yellow streak across the western sky," or evening twilight, with blue outline is at the west. And at the north of the painting is the white cloud (haiZkáh), "early morning white streak across the east sky," or dawn, which is outlined with black.

The ladder (haas'áá), which extends from the blue square around the place of emergence up through the black cloud, represents that
on which the Navajos came up out of their hole. To the right, with claws resting on the left tip of the black cloud is dōlīi, the mountain bluebird who helped the Navajos up from the underworld by showing them the way the trail went. The bird is depicted without outline, all blue but for tiny eyes indicated in black. He is "always this way for a prayer," according to my informant.

The black clad figure, Naayē' Neizghâni, a war god, at the right of the painting—in the south—is the one who led all of the Navajos out of the hole. Blue Bird was ahead of him as they went. On the left, or north, is Tó Bajtsohohitso, Child Born for Water (that is, "child whose father is water"), twin brother of the black figure, and also a war god. These then are the Holy Twins. The Franciscan Fathers relate the myth of their origin: Their mother was Changing Woman, the daughter of the Sky and Earth (who may be called Mother Earth). She was impregnated by the adulterous Sun, and also conceived by the trickling water of a fall. Sun's child was called "Slayer of the Monsters," or "Slayer of the Enemy," the other child was called "Child of Water," or "Fathered by Water." "When they discover their descent in early youth, the children journey to the sun in order to enlist the aid of their father in ridding the earth of its monsters. Though the petition includes his own offspring, the sun grants it, even to the extent of personally killing his son yeitso." In turn, Naayē' Neizghâni slays all the monsters and thus obtains the name Monster Slayer. The Water Child also is invoked as Aliso hwee nādleehé, "all is renewed with him," and Tsó hwee nādleehé, "he who is versed in all things."³

Child Born for Water was the last man out of the hole, as ST related the emergence tale. "He and Ani'lt'áñii, 'the little blue fellow' ('he who causes things to ripen'), were the last ones out of the hole. These two were behind all of the people." Ani'lt'áñii is the horizontally placed small blue figure at the upper left of Born for Water. ST spoke of the figure as "raising something, like corn." The Franciscan Fathers describe it as a small bug, sacred
to the Navajos, which has green spots on its wings and abdomen; they comment that it is usually found in cornfields. Wyman and Bailey give further information. They identify it as either a lacewing fly or a tree cricket, a Chrysopidae species called "a ripener" (the blue [green] ripener, Ani't'anii dootl'ishii). They found it to be an insect of great importance to the Navajos, considered to be the ripener of corn. It is a symbol of fertility, happiness, and life itself that appears prominently throughout Navajo mythology and ceremonialism. The sound that the insect is credited with making is considered one of happiness. ST concluded his remarks here by saying, "Blue Bird is male and Ani't'anii is female."

At the outer limits of the painting, the four sacred mountains are portrayed. At the east is a black mountain, of which ST said, "coming out [of the earth] mountain; to the south is a blue mountain, the head [of all the people] mountain." A yellow mountain, "rain mountain," is toward the west; and at the north is a white mountain.

The identification of these mountains as given by my informant agrees with Matthews' information (1888, p. 165; 1897, p. 221, notes 52, 54, 56, 60), being "Jemez mountain" (Pelado Peak), or Sis Naajint', in the east; San Mateo (Mount Taylor), or Tsoodzil, in the south; San Francisco Peak, or Dook'o'oodli'td, in Arizona, west; and San Juan (La Plata), or Dibé Nitsaa, in the north.

ST continued his recitation: "When the people came out of their hole, they saw these four mountains. They followed the trail which Blue Bird showed them. The tracks [foot prints] on the tops of the mountains show the trail coming out of the hole. These tracks are made of cornpollen.

"The people went, first, to the top of the black mountain. Then they went to the summit of the blue mountain, where the chief of all the people gave a speech, saying: 'Tell all the people that we came up from a beautiful place.' They continued to the top of the yellow mountain. There it started to rain. They next went to the top of the white mountain. As soon as they got there, they
began to talk; they wanted to know what to call it for as yet it had no name. Then a turkey came and spread out his wings. Some corn fell from his feathers, and the people said, 'Now we have a name for it. We will call it Naaddi Dzil, 'corn mountain.' The people remained on top of the white mountain.'

ST pointed out that each mountain has a door "which leads to the inside of the mountain. The reason for the doors is that when the people got on top of each mountain, they went on over; not one went back to the hole. They spread out over the entire earth."

Each of the deities, Monster Slayer and Child Born for Water, hold a wand or cane. ST described these as "canes, like for an old man." They are held in white hands; the arms are extended, elbows akimbo. The cane is called "gish." The cane of the black figure is spoken of as Naayee Neizghdii bigish, "black god's cane;" that of the blue figure, as To Bayishohiini bigish, "blue god's cane." Each cane is of the same body color as that of its respective deity.

ST explained that the gods wear beesh, "iron or flint clothing," or armor, in which the Sun Father dressed them originally. The word beesh initially meant "flint knife," thus flint points; it is now generally applied to iron and metal. A knife point arises from each of their shoulders, and five points project from both sides of each being, those of the foreside point upward and those of the posterior, downward. Three knife points stand erect on the deities' heads. All of the points are of the body color, and all are outlined with red—a symbol of protection. A tasseled plume (downy eagle feather) extends upward from the center of the head, in front of the middle point, and floats at right angles toward the back. All of this is in white except for a small black area on the quills just before their white tips.

Each of the tall, slender bodies is shown with a larger, upper segment, from which the arms extend forward; below this are four segments indicated by five narrow red lines that cross the torso horizontally and are diagonally bisected with like red lines made
from the upper left (of the figure) to the lower right. Arms and legs—which are shown with upper limbs and calves separated at the knees by "rainbow lines," one red and one blue—are decorated with zig-zag red lines. Those of the arms extend from the right armpit of each deity to the wrist in opposed positions; and opposing lines appear on the left arms. Both the deities are shown with turquoise blue and red wrist bands. These, too, represent "rainbow lines," which often appear at joints.

The face (mask) of each deity is of brown color, signifying that they are of earth origin in part; the color is the same as that of the place of emergence. The eyes and mouths are indicated by tiny black dots. Each head is surrounded by a narrow black outline (representing hair), except at the neck. This outline is broken by two very small white dashes outward from each eye, and by like dashes below the ear region, where turquoise ear loops with coral tips, of jacloh (jaat7'667) type, are suspended. The limit of the neck of each deity is separated from the head by a narrow yellow chin line (representing a streak of pollen—"the evening light"). The sides of the neck are outlined by white; the neck of each deity is crossed by four lines equally placed (which signify "the breath of life"). Each Holy One has his feet adorned with "moccasins" of black with white cords around the ankles and extending in pairs down the feet on inside and out. At the front center is a perpendicular red line. (The position of the calves and that of the head feathers indicate the direction in which a personage is moving.)

In the sandpainting, Ripener is portrayed with a rectangular head of turquoise blue, short vertically and wide. A white line is across the upper forehead (bespeaking cornmeal, which symbolizes dawn), and a narrow yellow line is at the lowest limit (symbolizing pollen and evening light). A similar line in black surrounds the face at each side and across the top. Tiny black dots indicate the eyes and mouth. A white marginal line is shown at each side of the neck, reaching to the "arms" which project from it at right angles.
Across the neck are four horizontal red lines, as on the deities. From the elbows, uplifted "hands" are shown as white V's, which have blue and red wrist bands. Atop the head an eagle down plume, like that on the heads of the deities, floats toward and very close to Blue Bird's beak (the feather, tied on with white cord, represents speed and lightness).

The torso of Ripener is crossed by two thin, elongated triangular features (wings ?). An opposed triangular element indicates the upper legs. From the knees, at which are encircling red and blue bands, well developed calves extended downward. The black feet are composed of three (cloud symbol) elements, that are outlined in black. Other than the head and feet of the figure, no outlines are shown, as with Blue Bird.

It was explained by ST that this sandpainting is made inside of a ceremonial hogan. He said: "Everyone has to be quiet and listen to the prayer. People can come in while the prayer is being given, but no one can leave the hogan. No medicine is given, but when the singer begins to pray, everybody has to take some cornpollen. When the prayer, which is started about nine o'clock in the morning and lasts until late in the afternoon--perhaps five o'clock--is over, everybody again takes cornpollen. If the singer gives a second prayer, he begins it after the evening meal" (thus after sundown, or, according to Navajo reckoning, on the next day).

ST said that no body painting is applied on the patient. He told that "the patient, whether male or female, sits on the yellow mountain of the sandpainting, which is covered over with the singer's buckskin. The patient has to wear his good clothes; good moccasins, a good skirt or leather shirt, beads, and proper ornaments. The patient's saddle, blankets, and other belongings are brought in and placed behind the patient in the hogan."

When the prayer is completed, the sandpainting is destroyed. "Then," explained ST, "the patient's bed is made on the sand and he is allowed to sleep on the erased painting. Next morning, the sand
is taken out and thrown toward the east. This sand must never be left under a tree which has been struck by lightning or which has been struck down by wind, for this would be bad luck. The sand must be put under a good juniper or piñon tree."

In seeking comparative data on this painting, I found that Washington Matthews had gained information on a prayer which he recorded as "QA-YA-TYI, The Prayer of the Rendition," or Restoration. His informant was over seventy years old at the time of the recording, and he told Matthews that he had learned it in his youth from an old man, who in turn, had it transmitted from an elder man. Matthews commented that: "My informant said it was the most potent prayer that he knew. So sacred is it held that no one may repeat it, or any part of it, twice on the same day, nor may any portion of it be repeated by itself. It must be said through from beginning to end without stopping" (1888, p. 149). Matthews observed that the prayer was not in the form of a supplication, nor was it preceded by the offering of a sacrifice, as were the other prayers he recorded; it sometimes had a prelude sung in praise of the war god. He described the prayer as a narrative given in the present tense from the beginning almost to the end. He added, "It is evidently primarily intended to counteract witchcraft."

The fact that ST's sandpainting depicts the twin war gods as the primary characters participating in the prayer, a prayer in praise of such deities would be appropriate.

Study of Matthews' article indicates that it pertains to a prayer such as that on which I recorded information. Inasmuch as he first heard it at Fort Defiance, Arizona, from a venerable singer (who repeated it several times later for Matthews' listening), it appears possible that ST continued the succession of medicine men of that region who learned the prayer and resorted to its use in dire situations. ST died some years ago; his acolyte, AA preceded him in death. Thus it may be that the present article relates to a ceremony which came to its end with the demise of these two men. At any rate,
it would seem that Matthews, according to his earlier writings at least, was not aware that this important prayer, could be accompanied by a sandpainting. In short, he got the prayer without a sandpainting, while I got a sandpainting without the prayer.

In brief, the prayer concerns two Navajo deities, elder brother, the war god, Naaye’e’ Neizgháni’, "Slayer of the Monsters," Monster Slayer, and his kinsman, younger brother, the war god To’ Bajíšchíhí’, "Child of Water." When a person is desperately ill, these two may be intreated to give aid to the sufferer. Although the reciting of the prayer takes a long time, Matthews said only about one hundred Navajo words were used (1888, p. 151).

The prayer relates that from the mountain which limits Navajoland on the east, "Black Mountain" (identified by ST and Matthews' informant as "Jemez Mountain" (Pelado Peak), Naaye’e’ Neizgháni’ approaches the patient; from the yellow mountain (San Francisco Peak), which bounds the western limit of the Navajo world, To’ Bajíšchíhí’ approaches. The two meet at the Carrizo mountains in the center of the Navajo country and proceed to a place in the San Juan Mountains where, according to tradition, the first of the human beings emerged from the nether worlds, or subterranean chambers, to this world.

It is told that the twin war gods descend into the lower worlds—by virtue of the power of magic wands (the canes)—through mythical places each guarded by fearful sentinels, to the lodge of "the goddess of witches" where they secure the element that bewitched the sick person and triumphantly depart with it. Matthews remarked that: "Up to this time only the two war-gods are named as journeying through the lower regions, but thereafter the supplicant speaks of his re-united self returning accompanied by the two gods, one of whom walks before and the other behind, to guard him from further dangers. They retrace their way through the land of shades exactly as they went and in describing the return the prayer carefully reiterates the names of all the places traversed in the advancing journey, but in an exact inverse order" (1888, p. 164).
Continuing the myth: When they reach the present world, the deities continue to guard the one who had been bewitched until his home locale is reached. Here, danger is supposed to be no longer imminent; the war gods leave, and the peaceful personages, Hasheh'ëëzëtîtì'ë (Talking God), and Hasheh'ëëooghoan (Growling God), serve as guides. Matthews stated, "These gods bring the spiritual or astral man to the home of the corporeal man, where the two elements are happily united, and in the language of the prayer all 'is restored in beauty'" (1888, p. 164).

Research Associate, Laboratory of Anthropology
Museum of New Mexico, Santa Fe, N. M.
NOTES *

* See Yazzi, 1971 and Young and Morgan, 1972 for examples of modern Navajo orthography. Young (1975) gives ha'atiin, "exit road, path leading out."

1. In early works the "place where they came out, place of emergence" was written qadjinat (Matthews, 1888, pp. 152, 168) and ha·di·nač, said to be a locality in the San Juan mountains (Matthews, 1897, p. 219 fn. 43); and "haji nai, moving upwards, the emergence into the present world, the place of emergence" (Franciscan Fathers, 1910 and 1929, p. 36; 1912, vol. II, p. 91). Henceforth, herein the Franciscan Fathers are referred to as F. F.

Young (Personal Notes, 1975) gives hajítnat as meaning "where people moved up (out) en masse," the Emergence Hole.

2. F. F. (1912, vol. II, p. 189) give qashd, "go out, go abroad," and hok'á hašd, "up to a higher place" (Ibid., p. 95). Young (1975) records haашčd, "I climb up or out" (as out of a hole or upstairs). He gives hok'á as summit," and hok'á haашčd, "I climb to the summit."

In Navajo mythology a square commonly symbolized a house; this square is turquoise blue in color. Matthews (1897, p. 111) notes that "The house of Sun God was built of turquoise; it was square like a pueblo house, and stood on the shore of a great water."

3. F. F., 1910 and 1929, p. 359. In another version, Tó Bajísh-chí histó was sired by Sun, but born of Earth Mother's sister, White Shell Woman (Matthews, 1897, p. 34). Versions of the Navajo myths vary from teller to teller to some extent.


6. Sis Naajíiní is also given for Blanca Peak (Yazzi, 1971, p. 93). And Pelado Peak also is called Yoolgai Dzil, "White Shell Mountain" (Young, 1975).

8. Wyman and Bailey, 1964, Pl. II, Fig. L, show a Big Fly with feet of similar form, and the authors cite comparative sources and update scientific identifications in some instances.

9. F. F. (1910 and 1929) give Hach Aeyatawel as "Prayer to the Gods." Other scholars report that "There are a number of types of these 'strong prays' (as English-speaking Navajos most often call them). Some are considered the protection par excellence against witchcraft. Others are considered powerful in cases of severe injury" (Kluckhohn and Wyman, 1940, p. 101). The latter source notes that these prayer ceremonials can be given by a singer or by a prayer-maker (Sodisin titt],[tt]).

Although my informants did not voice the Navajo name of the prayer discussed in this paper, research led me to believe that it was concerned with ceremonial efforts to wrest the patient's illness from the clutches of supernatural beings in the underworld and by so doing to restore her health. With the aid of Dr. Young for recording earlier transcriptions in the system now widely employed in Navajo writings, Matthews' Qu-ya-tyi became recognizable as Hāt ḡyātih. Young translates this, or ḡyāt, as a "spell breaking ceremony," thus "a talking out" prayer. He explains:

A death spell used to be cast on an enemy before an attack. It was a sort of witchcraft ceremony in which the medicine man 'talked the victim into the grave' -- ḡyāt, 'I cast a death spell on him, talked him into the grave.'

A counter ceremony was designed 'to talk him back up out of the grave,' -- hāt ḡyātih, 'I broke the spell on him, I talked him back up out; hāt ḡyāt, 'I'm doing it hāt ḡyātih, 'I do it customarily.' With an indefinite direct object pronoun one has the form hāt ḡyātih, 'I'm performing a spell breaking ceremony; hāt ḡyāt, 'I perform spell breaking ceremonies.' And with no subject pronoun a passive construction is formed, as hāt ḡyāt, 'talking someone back up out' occurs; hāt ḡyātih, 'talking someone back up out' occurs customarily.
ST's prayer appears to be identifiable as a Talking Out Prayer, Haa' t'iyáá'ih.

In the 1960s, Dr. L. C. Wyman received permission from the Museum of New Mexico to photograph its collection of sandpaintings, including the one discussed in this paper. A copy of this is in his Sandpainting File in the library of the Museum of Northern Arizona at Flagstaff as URC-11, with comparative publications cited. (It may be added that, as a matter of convenience and also a protective factor of his valuable material, Dr. Wyman decided that it would be wise to deposit a duplicate copy of his Sandpainting File in the archive of the Museum of Navajo Ceremonial Art in Santa Fe. During 1974, Dr. Caroline B. Olin, then curator of archives at MNCA, with the cooperation of Dr. E. B. Danson and the library staff of MNA, spent sufficient time in Flagstaff to make a photocopy. She then arranged the copies in the same order that they appear in the MNA file and placed them in the Museum of Navajo Ceremonial Art.)

Wyman notes that prayers of the type treated in this paper are usually called Liberation Prayers. Gill focuses on Navajo prayers (1974, pp. 306-367), and Reichard discusses the content of Navajo prayers (1944, pp. 19-34).

10. F. F. (1910 and 1929, p. 348) state "First Man and his eight companions are the first witches ['ah't'ihi], and the cause of sickness and fatal diseases." See also Young, 1961, pp. 518, 524.

11. See Matthews (1888, p. 152-153) for the recital of this journey.

12. Reichard (1974, p. 502) found the Navajo name of this deity to be untranslatable. She states that "Matthews translated it 'House God,' and strangely, his translation has been followed by all his successors except Goddard." Haile (1947, p. 13) translates the name as Calling God. Young now (1975) renders it (Hashch'çooglaa', Hashch'çoogo'hoan) as Growling God.
BIBLIOGRAPHY

Franciscan Fathers, The
1010/1929  An Ethnologic Dictionary of the Navajo Language. Saint Michaels, Arizona.

Gill, Samuel Dale

Haile, Berard

Kluckhohn, Clyde, and Leland C. Wyman

Matthews, Washington

Reichard, Gladys A.

Wyman, Leland C., and Flora L. Bailey
1964  Navajo Indian Ethnoentomology. University of New Mexico Publications in Anthropology, No. 12, University of New Mexico Press, Albuquerque.

Yazzie, Ethelou (Editor)
Young, Robert W.

1975  Personal information notes.

Young, Robert W., and William Morgan

Although Maria Martinez of San Ildefonso Pueblo is a potter whose name enjoys international renown, the signature "Poveka" elicits much less universal recognition. Each year Maria's pottery--and its identification--becomes of increasing significance to museums and private collectors alike. Therefore, it would seem useful to describe the circumstances in which this name, rather than others, was signed to her work.

The story of Maria herself is too well documented to require elaboration here: how she and her husband, Julian, embarked upon their pottery making careers in the first decade of the 20th century, and how they subsequently developed the distinctive black-on-black ware predominant at San Ildefonso Pueblo today.

As it became a salable commodity, produced by a number of individuals, market considerations led these potters to sign their handiwork, a practice said to have begun about 1923. At first not every vessel was signed, but by 1926 almost all of them were.

As a rule, pottery made by Maria was decorated by Julian. Maria produced extremely fine undecorated ware; and she did create a few experimental painted pieces as well, but not for sale (they are mentioned by Marriott, 1950, p. 288). Despite these exceptions, the major portion of her early work was done in collaboration with her husband. And at that time, pottery was considered to be primarily a woman's craft--although husband and wife teams had been at work in the pueblo prior to 1900 (Chapman, 1970, p. 26). So the signature applied to their joint efforts was simply "Marie" (An explanation for this spelling has been recorded by Marriott, 1950, p. 324). After 1934, it became "Marie and Julian". Following Julian's death in 1943, Maria collaborated for a time with Santana, wife of her son Adam. Vessels of this period were signed "Marie and Santana" (In-
formation concerning various signature periods was supplied to the Museum of New Mexico by the late Popovi Da in 1966).

It was in 1956 that Maria began her partnership with another son (Antonio) best known by his Tewa name, Popovi Da, a talented artist in his own right. And at about this same time, the spelling "Maria" supplanted "Marie". This was not an instantaneous change, for some vessels do bear the signature "Marie - Popovi", but soon thereafter the spelling became "Maria - Popovi".

However, in addition to pottery decorated by others, Maria was still producing undecorated wares--polished blacks and reds--for which she alone was responsible. So now, if a piece was to bear the name of a single individual, it became necessary to distinguish her work from that of Maria Santana (who sometimes used "Maria" and sometimes "Santana"). At the suggestion of Popovi Da, she added her Tewa appellation, Poveka.

This modification met with little success. The unfamiliar signature "Maria Poveka" did not sell and was shortly abandoned. Thereafter, the problem of identification was resolved by imprinting the names of Maria and Popovi Da on every vessel, decorated and undecorated alike. That joint signatures had long previously been applied to undecorated ware is demonstrated by examples in the collections of the Museum of New Mexico signed "Marie and Julian" and "Marie and Santana".

But the Tewa name "Poveka", denoting a type of flower, first occurred as a signature at the beginning of Maria's career, long before its latter-day use on undecorated pottery.

A few rare examples are to be found on the old San Ildefonso polychrome ware popular before the shift to matte-on-black in the 1920s. There are two such specimens in the collections of the Museum of New Mexico.

One is a very early bowl (Figure 1). It is decorated on the exterior with a black and red design on a chalk-white slip. The interior is plain white except for the painted letters, "Poh've'ka".
This bowl, dated 1910-1920, was cataloged early in the Museum's history. If the timespan noted is correct, not only would it represent one of the oldest signed pieces, but it would indicate that signatures had occurred prior to the tentative date of 1923 generally assigned to the beginning of the "Marie" period.

The second specimen is an unusual double shouldered tinaja (Figure 2). The lower portion of this undated (but early) jar is brown and yellow on cream; the upper tier has a black-on-red design which incorporates the painted word "Poh've'ha". Maria herself does not recall exactly when it was manufactured but believes that it was about the same time as the above described bowl (personal communication, 1975).

Another interesting example is a black and red on cream plaque, signed "Poh've'ka", preserved in the collections of the American Museum of Natural History (Marriott, 1950, p. 285, illustrated p. 137). As described by Phillip C. Gifford (personal communication, 1975), the signature, incised on the red on cream reverse, is located in the top left quadrant and is not oriented in relation to the design on the opposite face. This plaque is dated circa 1925 by Marriott, but according to the records of the American Museum of Natural History, it was one of a lot purchased from the Museum of New Mexico in 1918. Thus, it too would represent one of Maria's earliest signed examples.

The name Poveka, therefore, can be associated with two distinct types of Maria pottery:

1. A few early polychromes, on which the signature may be either incised or painted and located on any portion of the vessel.

2. Undecorated polished red and black ware, made for a short period after 1956, with the name "Maria Poveka" usually incised in the base.
Figure 1. Polychrome bowl with signature "Poh've'ka". Museum of New Mexico catalog no. 12345/12
Figure 2. Polychrome jar signed, "Poh've'ha". Museum of New Mexico catalog no. 18798/12.
BIBLIOGRAPHY

Chapman, Kenneth M.

Marriott, Alice
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 state-wide 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 state-wide rock art survey, a certification program, and publication of its own journal, *Awanyu*. The society today has 15 affiliated societies, including two in Texas and one in Arizona.